Name of Policy:	**IVP Medications**
Policy Number:	3364-133-135
Department:	Pharmacy
Approving Officer:	Senior Hospital Administrator
Responsible Agent:	Director of Pharmacy, Chief Nursing Officer
Scope:	University of Toledo Medical Center

THE UNIVERSITY OF TOLEDO MEDICAL CENTER

Effective Date: 4/25/2022

Initial Effective Date: 7/1/2018

_____ New policy proposal
_____ Major revision of existing policy
_____ Minor/technical revision of existing policy
__x__ Reaffirmation of existing policy

(A) Policy Statement

This policy provides guidelines for appropriate administration of medications given via intravenous push (IVP)

(B) Purpose of Policy

To establish guidelines for safe duration, dilution, dosing, and monitoring of IVP medications.

(C) Procedure

IV Push may be administered in all patient care areas
IV Push only on patient care areas equipped for continuous electrocardiographic monitoring
IV Push may be administered only in critical care areas (ED, ICU, Peri-Operative)
IV Push should only be given in the event of an emergency

Generic Name	Maximum Single Dose for IV Push	Recommended Dilution	Rate of Administration for IV Push	Comments/Monitoring	Restriction Area
AcetaZOLAMIDE [1, 3-4]	1 gram	Dilute to 100mg/mL solution	Push over 1-3 minutes	Monitor serum electrolytes and acidosis	-
Adenosine[1]	12 mg	Do not Dilute	SVT: push over 1-2 seconds, flush line with NS	Monitor ECG, HR, BP	**ACLS**
Alteplase[1,5]	50 mg	Do not dilute	Push over 1-2 minutes	Bleeding Precautions	**Code Blue Push only for PE with cardiac arrest**
Amiodarone[1]	300 mg	Do not Dilute	Push over seconds	Continuous cardiac and hemodynamic monitoring required; BP, HR, prolonged QT and rhythm	**Code Blue**
Atropine Sulfate[1]	1 mg	Do not Dilute	Push over seconds	Slow injection and/or doses < 0.5 mg may result in paradoxical bradycardia. Monitor ECG, HR	**ACLS**
Bumetanide[1]	4 mg	Do not dilute	Push over 1-2 minutes		-
Calcium Chloride[1,6-7]	Severe cardiotoxicity or cardiac arrest due to hypermagnesemia: 1000 mg	Do not dilute	Severe cardiotoxicity or cardiac arrest due to hypermagnesemia: Push over 2-5 minutes Beta Blocker or	Administer into a large vein; a deep or central vein is preferred. ECG monitoring	**Code Blue**

	Beta Blocker or Calcium Channel Blocker Overdose: 2000 mg		Calcium Channel Blocker Overdose: Push over 5 minutes	Stop infusion if patient complains of discomfort.	
Calcitriol[1]	4 mcg	Do not dilute	Push over seconds		-
CeFAZolin[1]	2 grams	Do not dilute	Push over 3-5 minutes		-
Generic Name	**Maximum Single Dose for IV Push**	**Recommended Dilution**	**Rate of Administration for IV Push**	**Comments/Monitoring**	**Restriction Area**
Ceftriaxone[1]	1 g	Do not dilute	Push over 1-4 minutes		-
Chlorothiazide[1,9]	1000 mg	Do not dilute	Push over 5 minutes	Monitor BP and electrolytes Avoid extravasation of parenteral solution since it is extremely irritating to tissues	-
ChlorproMAZINE Hydrochloride[1]	2 mg	Dilute to 1 mg/mL with NS	Push 1 mg/minute	Monitor BP Patient must remain laying down for 30 minutes following administration	-
Cisatracurium[1]	0.15-0.2 mg/kg	Do not dilute	Push over 5-10 seconds		**ED, SICU, MICU, CCU, Peri-op**
Cosyntropin[1]	0.25 mg	Do not dilute	Push over 2 minutes		-
Dantrolene[1]	2.5 mg/kg	Do not dilute	Push over seconds	Monitor vital signs, cardiac function and respiratory status	**Push Only for Malignant Hyperthermia**
Dexamethasone Sodium Phosphate[1,10]	10 mg	Do not dilute	Push over 1 minute	Perineal irritation	-
Dextrose 50%[1,6]	25 grams	Do not dilute	Push 3 mL/min	Blood glucose monitoring Vesicant	-
Diazepam[1]	10 mg	Do not dilute	Push 5 mg/minute	Monitor HR, BP, respiratory and mental status Do not administer through small veins (eg, dorsum of hand/wrist)	-
Digoxin[1,11]	0.5 mg	Do not dilute	Push over 5 minutes	HR, rhythm and ECG monitoring recommended Vesicant	**Patient must have CEM**
Dihydroergotamine[1,12-13]	1 mg	Do not dilute	Push over 2 minutes	Monitor HR and BP	-
Diltiazem[1,6]	25 mg	Do not dilute	Push over 2 minutes	Continuous ECG and BP monitoring	**Patient must have CEM**
DiphenhydrAMINE[1]	50 mg	Do not dilute	Push 25 mg/minute		-
Generic Name	**Maximum Single Dose for IV Push**	**Recommended Dilution**	**Rate of Administration for IV Push**	**Comments/Monitoring**	**Restriction Area**
Enalaprilat[1]	1.25 mg	Do not dilute	Push over 5 minutes	Continuous ECG, BP and RR monitoring.	**Patient must have CEM**
EPHEDrine[1]	10 mg	Dilute to 5-10 mg/mL with	Over 1 minute	Monitor BP, HR and pulse	**ED, SICU, MICU, CCU,**

		D5W or NS			**Peri-op**
EPINEPHrine[1,14-15]	1 mg	Do not dilute	Push over seconds	Follow with 20 mL saline flush	**Code Blue**
Etomidate[1]	0.6 mg/kg	Do not dilute	Push over 30-60 seconds	Respiratory, cardiac and BP monitoring required Avoid administration into small vessels	**ED, SICU, MICU, CCU, Peri-op**
Famotidine[1]	20 mg	Dilute with 5-10 mL NS	Push over 2 minutes		-
FentaNYL[1]	-	Do not Dilute	Push over 1-2 minutes	Monitor BP, HR and RR Rapid administration can result in muscle rigidity	-
Flumazenil[1]	Conscious Sedation: 0.2 mg Benzodiazepine Overdose: 0.5 mg	Do not Dilute	Conscious Sedation: Push over 15 seconds Benzodiazepine Overdose: Push over 30 seconds	Administer into a large vein. A secure airway and venous access should be established prior to administration. Monitor vital signs and airways closely	-
Furosemide[1,2]	80 mg	Do not Dilute	Push over 1-2 minutes	Monitor hearing after rapid IV administration	-
Glucagon[1]	1 mg	Do not dilute	Push over 1 minute	Rapid administration can cause N/V Monitor BG	-
Glycopyrrolate[1]	0.2 mg	Do not dilute	Push over 1-2 minutes	Monitor HR	-
Haloperidol Lactate[1,17]	10 mg	Do not dilute	Push 5 mg/minute	ECG monitoring for QT prolongation and arrhythmias recommended Monitor BP, HR and EPS.	
Generic Name	**Maximum Single Dose for IV Push**	**Recommended Dilution**	**Rate of Administration for IV Push**	**Comments/Monitoring**	**Restriction Area**
Heparin Sodium[1]	10,000	Do not dilute	Push over 1 minute	Bleeding precautions	-
HydrALAZINE[1,9]	20 mg	Do not dilute	Push 10 mg/min	Monitor BP	**Patient must have CEM**
Hydrocortisone Sodium Succinate[1]	100 mg	Do not dilute	Push over 30 seconds		-
HYDROmorphone[1]	-	Do not dilute	Push over 2-3 minutes	Monitor BP and RR	-
Insulin Regular[1,19]	Hyperkalemia 10 units	Do not dilute	Hyperkalemia Push over seconds	Blood glucose and K levels as appropriate Insulin effects on K are transient. Implement additional measures for K removal	-

Iron sucrose[1]	200 mg	Do not dilute	Push over 2-5 minutes	BP, hypersensitivity reactions	-
Ketamine[1]	4.5 mg/kg	Do not dilute	Push over 1 minute or 0.5 mg/kg/min	Monitor HR, BP, RR, O2 sat. Cardiac and BP monitor required	**ED, SICU, MICU, CCU, Peri-op**
Ketorolac Tromethamine[1]	30 mg	Do not dilute	Push over >15 seconds	Monitor vital signs	-
Labetalol[1]	80 mg	Do not dilute	Push 10 mg/min	Cardiac and BP monitor recommended.	**Patient must have CEM**
Levothyroxine Sodium[1]	400 mcg	Dilute with 5 mL NS	Push over 1 minutes or 100 mcg/minute	Do not mix with any other iv solutions	-
Lidocaine[1,20]	1.5 mg/kg	Do not dilute	Push over seconds	Continuously monitor ECG and vital signs	**Code Blue**
LORazepam[1,21-22]	4 mg	Dilute with equal amount of NS	Push 2 mg/minute	Monitor respiration, HR and BP Monitor IV site during administration.	-
Magnesium Sulfate[1,23]	2 g	Dilute to 10% concentration	Administer over 1 minute	Monitor RR, ECG, deep tendon reflex	**Code Blue**
Generic Name	**Maximum Single Dose for IV Push**	**Recommended Dilution**	**Rate of Administration for IV Push**	**Comments/Monitoring**	**Restriction Area**
Mannitol[1]	12.5 g	Do not dilute	Push over 3-5 minutes Administer using a 0.22 micron filter.	Monitor infusion site for extravasation. Visually inspect solution prior to administration to avoid injecting crystals	**ED, SICU, MICU, CCU, Peri-op**
Meperidine[1]	50 mg	10 mg/mL concentration	Push over 4-5 minutes	Monitor RR, BP and mental status	-
Methylene Blue[1]	2 mg/kg	Do not dilute	Push over at > 5 minutes	Cardiac monitoring should be used in patients with pre-existing pulmonary and/or cardiac disease	
MethylPREDNISolone Sodium Succinate[1]	125 mg	Do not dilute	Push over 3-15 minutes	BP and blood glucose should be monitored	-
Metoclopramide[1]	10 mg	Do not dilute	Push over 1-2 minutes	Rapid IV administration may result in transient feeling of anxiety and restlessness. Vitals should be monitored during administration.	-
Metoprolol[1]	5 mg	Do not dilute	Push over 1 minute	Monitor ECG, HR, and BP	**Patient must have CEM**
Midazolam[1]	Sedation/Anxiolysis/Amnesia 2.5 mg Induction Anesthesia	1 mg/mL	Sedation/Anxiolysis/Amnesia Push over 2 minutes Induction Anesthesia Push over 5-15 seconds	Monitor RR, BP, and O2sat during administration.	**ED, SICU, MICU, CCU, Peri-op**

	0.2 mg/kg				
Morphine Sulfate[1]	-	Do not dilute	Push over 4-5 minutes	Monitor RR and CNS status periodically	-
Naloxone[1]	2 mg	Do not dilute	Push over 30 seconds	Monitor RR, HR, BP, and CNS status	-
Neostigmine[1]	0.07 mg/kg	Do not dilute	Push over 1 minute	Monitor ECG, BP and HR	**ED, SICU, MICU, CCU, Peri-op**
Generic Name	**Maximum Single Dose for IV Push**	**Recommended Dilution**	**Rate of Administration for IV Push**	**Comments/Monitoring**	**Restriction Area**
Octreotide[1]	500 mcg	Do not dilute	Push over 3 minutes	May affect response to insulin or sulfonylureas	-
Ondansetron[1]	8 mg	Do not dilute	Push over 2-5 minutes	Avoid use in presence or potential for cardiac conduction abnormalities (QT prolongation or electrolyte abnormalities).	-
Pantoprazole[1]	40 mg	Do not dilute	Push over 2 minutes	Flush IV line before and after administration	-
PENTobarbital[1]	100 mg	Do not dilute	Push 50 mg/min	Respiratory status, cardiac monitor and BP monitoring required	**ED, SICU, MICU, CCU, Peri-op**
PHENobarbital[1,21]	20 mg/kg	Do not dilute	Push 50-100mg/min	Monitor BP, RR and level of sedation.	**ED, SICU, MICU, CCU, Peri-op**
Phenylephrine[1,24]	500 mcg	Dilute with NS for a final concentration of 0.1 mg/mL	Push over 20-30 seconds	Monitor BP, HR, ABG and infusion site for extravasation	**ED, SICU, MICU, CCU, Peri-op**
Prochlorperazine[1]	10 mg	Do not dilute	Push < 5 mg/min	Monitor BP and HR during administration. Monitor for seizures and excessive sedation	-
Promethazine[1]	12.5 mg	Dilute 25 mg with 10-20 mL NS	Push 25 mg/minute	If available, inject through tubing of free flowing IV infusion. Administration via central or deep vein preferred	-
Propofol[1]	40 mg	Do not dilute	Push over 30 seconds	Continuous monitoring of vitals, cardiac, respiratory and sedation status	**ED, SICU, MICU, CCU, Peri-op**
Propranolol[1]	3 mg	Do not dilute	Push 1 mg/minute	Monitor ECG, HR, BP	**Patient must have CEM**
Protamine Sulfate[1]	50 mg	Do not dilute	Push over 10 minutes	Cardiac and BP monitor required during administration	-

Generic Name	Maximum Single Dose for IV Push	Recommended Dilution	Rate of Administration for IV Push	Comments/Monitoring	Restriction Area
Rocuronium[1]	1.2 mg/kg	Do no dilute	Push over 10-30 seconds	Continuous monitoring of vitals, cardiac status, respiratory status and degree of neuromuscular block mandatory during administration	**ED, SICU, MICU, CCU, Peri-op**
Sodium Bicarbonate[1]	50 mEq	Do not dilute	Push over seconds	Monitor infusion site for extravasation Flush line before and after use with NS.	**Code Blue**
Sodium Chloride 23.4%[1]	30 mL	Do not dilute	Push over 2 minutes	For traumatic brain injury with elevated ICP. May cause hypotension. Administer through central venous access device only	**ED, SICU, MICU, CCU, Peri-op**
Succinylcholine[1]	1.5 mg/kg	Do not dilute	Push over 10-30 seconds	Continuous monitoring of vitals, cardiac status, respiratory status and degree of neuromuscular block mandatory during administration	**ED, SICU, MICU, CCU, Peri-op**
Vasopressin[1]	40 units	Do not dilute	Push over seconds	Monitor BP and HR	**Code Blue**
Vecuronium Bromide[1]	12 mg	Dilute vial to attain 1mg/mL	Push over 1-2 minutes	Cardiac status, respiratory status and vitals should be monitored during administration	**ED, SICU, MICU, CCU, Peri-op**
Verapamil[1]	10 mg	Do not dilute	Push over 2-3 minutes	Continuous cardiac/hemodynamic monitoring required. Monitor ECG	**Patient must have CEM**

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Approved by:		**Review/Revision Date:**
/s/ Lindsey Eitniear, PharmD, BCPS, AAHIVP Director of Pharmacy	04/25/2022 Date	4/22
/s/ Russell Smith, PharmD, MBA, BCPS Senior Hospital Administrator	04/25/2022 Date	
Review/Revision Completed By: *Pharmacy*		
		Next Review Date: 4/1/2025
Policies Superseded by This Policy:		