

Administration of IV Push Medications
Approved List for Pediatric Patients ages 1 month-17 years (updated 12/08)

*** This chart is **not** intended to be used as a dosage reference. Use age and weight appropriate dosing for your patient.***

DRUG	MAXIMUM APPROVED DOSE FOR IVP*	DILUTION	RATE OF ADMINISTRATION OTHER COMMENTS/MONITORING
Atropine	Do not IV Push dose > 1 mg	Undiluted or may dilute dose in 10mL Sterile Water.	Each dose over 1 minute.
Aztreonam (Azactam®)	Do not IV Push dose > 2000 mg	Dilute to maximum concentration of 66mg/mL.	Each dose over 3-5 minutes.
Bumetanide (Bumex®)	Do not IV Push dose > 1 mg	Undiluted.	Each dose over 1-2 minutes.
Cefazolin (Ancef®)	Do not IV Push dose > 2000 mg	Dilute each 1 gm vial with at least 10 mL normal saline. (max conc =100mg/mL)	Each 1 gm dose over 3-5 minutes.
Cefotaxime (Claforan®)	Do not IV Push dose > 2000 mg	Dilute each 1gm vial with at least 10mL normal saline. (max conc =100mg/mL)	Each 1 gm dose over 3-5 minutes.
Cefoxitin (Mefoxin®)	Do not IV Push dose > 2000 mg	Dilute each 1 gm vial with at least 10mL normal saline. (max conc =100mg/mL)	Each 1 gm dose over 3-5 minutes.
Ceftazidime (Fortaz®)	Do not IV Push dose > 2000 mg	Dilute each 1 gm vial with at least 10mL of normal saline. <i>Vials and syringes must be vented after dilution and before administration.</i> (max conc =100mg/mL)	Each 1 gm dose over 3-5 minutes.
Ceftriaxone (Rocephin®)	Do not IV Push dose > 2000 mg	Dilute each 1 gm vial with at least 25 mL of normal saline. (max conc = 40 mg/mL)	Each 1 gm dose over 3-5 minutes.
Cefuroxime (Zinacef®)	Do not IV Push dose > 2000 mg	Dilute each 750mg with 10 mL of normal saline. (final conc = 50-100mg/mL)	Each 750mg over 3-5 minutes.
Dexamethasone (Decadron®)	Do not IV Push dose > 10 mg	Diluted in 5-10 mL of NS or D5W	Each dose over 5 minutes (doses <10mg).
Dextrose 50% (50gm/100mL)	Do not IV Push dose > 25 gm	Undiluted. For patients ≥ 3 years old only.	Each 200 mg/kg over 1 minute. (NTE 5 gm/ minute)
Diazepam (Valium®)	Do not IV Push dose > 10 mg	Undiluted. Not compatible with any IV solution. Flush cautiously with sterile water.	<u>Infants/children:</u> Each dose over at least 3 minutes. (NTE 1-2 mg/minute or 0.25mg/kg over 3 minutes) <u>Adolescents >60 kg:</u> Each 5mg dose over 1-2 minutes. ***Rapid injection may cause respiratory depression or hypotension***
Diphenhydramine (Benadryl®)	Do not IV Push dose > 50 mg	Undiluted. (max conc = 25 mg/mL)	Each dose over 2-5 minutes. (NTE 25mg/minute) Do not administer IVP to neonates.
Droperidol (Inapsine®)	Do not IV Push dose > 5 mg	Undiluted.	Each dose over 2-5 minutes. <i>(Monitor for extrapyramidal symptoms.)</i>
Epoetin Alpha (Epopgen®)	Do not IV Push dose > 500 un/kg	Undiluted or dilute with equal volume normal saline. ***DO NOT SHAKE***	Each dose over 1-3 minutes, followed by normal saline flush.
Famotidine (Pepcid®)	Do not IV Push dose > 20 mg	Dilute to a concentration of 4mg/mL or less.	Each dose over at least 2 minutes. (NTE 10 mg/min)
Furosemide (Lasix®)	Do not IV Push dose > 100mg	Undiluted.	0.5-1mg/kg over 1-2 minutes (NTE 20 mg/min). <i>Ototoxicity has been associated with faster infusion rates.</i>

Glycopyrrolate (Robinul®)	Do not IV Push dose > 0.2mg	Undiluted or may dilute to concentration of 2 mcg/mL.	Each 0.2mg dose or fraction thereof over 1-2 minutes.
Hydrocortisone sodium succinate (Solu-Cortef®)	Do not IV Push dose > 500mg	Dilute to concentration of 50mg/mL or less.	Each 500mg dose or fraction thereof over 3-5 minutes.
Hydromorphone (Dilaudid®)	Do not IV Push dose > 4mg	Undiluted or may be diluted with 5 mL normal saline or D ₅ W.	Each 2 mg over 2-5 minutes.
Insulin, Human Regular only	Do not IV Push dose > 50 units	Undiluted.	Each 50 units or fraction thereof over 1 minute.
Ketorolac (Toradol®)	Do not IV Push dose > 30 mg	Undiluted.	Each single dose over 1-5 minutes.
Levothyroxine sodium (Synthroid®)	Do not IV Push dose > 100 mcg	Dilute each 500 mcg with 5 mL <u>preservative-free</u> normal saline. <i>Use immediately after reconstitution.</i>	Each 100 mcg or fraction thereof over 2-3 minutes.
Lorazepam (Ativan®)	Do not IV Push dose > 4mg	Must be diluted with an equal volume of normal saline or D ₅ W.	Each 0.05 mg/kg over 2-5 minutes. (NTE 2 mg/minute)
Meperidine (Demerol®)	Do not IV Push dose > 100 mg	Dilute to a final concentration of 10mg/mL or less.	Each dose over at least 5 minutes. (Very slow)
Meropenem (Merrem®)	Do not IV Push dose > 2000 mg	Dilute each 500mg vial with 10 mL sterile water. (Max conc = 50mg/mL)	Each 1 gm over 3-5 minutes.
Morphine	Do not IV Push dose > 10mg	Dilute to a final concentration of 0.5-5mg/mL.	Each dose over at least 5 minutes.
Naloxone (Narcan®) <i>Emergency situations</i>	Do not IV Push dose > 2mg	Undiluted.	Each dose over 30 seconds (rapid).
Ondansetron (Zofran®)	Do not IV Push dose > 4mg	Undiluted.	Each dose over 2-5 minutes.
Phenobarbital	Do not IV Push dose > 120mg	Must be diluted in equal volume normal saline or D ₅ W.	<u>Infants & children:</u> Each 1mg/kg over at least 1 minute (NTE 30 mg/min). <u>Adolescents > 60kg:</u> Each 60mg over 1 minute.
Piperacillin (Pipracil®)	Do not IV Push dose > 4000 mg	Dilute each 1 gm with at least 5 mL sterile water or normal saline.	Each dose over 3-5 minutes.
Sodium bicarbonate	Variable	<u>Infants 1 month - 2 yrs old:</u> Dilute to final conc of 0.5meq/mL or less. <u>Children > 2 yrs old:</u> Dilute to final conc of 1 meq/mL or less. ** Use sterile water to dilute**	Each 1-2 meq/kg over 1 minute. (Max rate in neonates and infants: 10 meq/min)

Note: Some doses may exceed the maximum dose recommended for IV Push administration. These doses must be administered via intermittent IV infusion.

References:

Gahart BL, Nazareno AR. Intravenous Medications. 16th edition; 2000.

Phelps SJ, Hak EB. Guidelines for Administration of Intravenous Medications to Pediatric Patients. 5th edition. 1996.

Taketomo CK, Hodding JH, Kraus DM, et al. Pediatric Dosage Handbook. 6th edition. 1999-2000.

Trissel LA. Handbook on Injectable Drugs. 10th edition. 1998.

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Restricted Medications with Special Precautions

The following medications may also be pushed when necessary; however, these medications have specific guidelines for monitoring parameters and/or competency requirements. **The patient will be located in an area that is able to provide appropriate monitoring. The pharmacist will ensure that the patient's location coincides with any area restrictions as outlined in the RESTRICTED INTRAVENOUS MEDICATIONS list found on Formweb before dispensing the medication. It is the nurse's responsibility to ensure appropriate administration and monitoring requirements are met (i.e. cardiac monitor if medication is restricted to telemetry level of care or higher).**

***Refer to RESTRICTED INTRAVENOUS MEDICATIONS document located on FormWeb for Location Restrictions and Approved Areas for Administration**

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DRUG	MAXIMUM APPROVED DOSE FOR IVP*	DILUTION	RATE OF ADMINISTRATION OTHER COMMENTS/MONITORING
Cosyntropin (Cortrosyn®)	Do not IV Push dose > 0.75mg	Reconstitute with diluent provided. (1.1 mL of normal saline)	Single dose over at least 2 minutes. Continuous observation for at least 30 minutes. Monitor BP every 5 minutes for 30 minutes.
Diazoxide (Hyperstat®)	Do not IV Push dose > 150mg	Undiluted.	Single dose over 30 seconds. Keep patient supine during and at least 1 hour after infusion. Monitor vital signs every 5 minutes for at least 1 hour following each dose.
Digoxin (Lanoxin®)	Do not IV Push dose > 1mg	Dilute to a final concentration of 100 mcg/mL or less with normal saline, D ₅ W, or sterile water.	Slow IV push over at least 5-10 minutes. Monitor apical pulse and BP before and after dose.
Enalaprilat (Vasotec®)	Do not IV Push dose > 1.25mg	Undiluted. (Neonates/small infants: Dilute to 25mcg/mL)	Each dose (1.25mg or less) over 5 minutes. Monitor vital signs every 15 minutes for 1 hour following each dose. May have significant drop in BP following the first dose.
Fentanyl (Sublimaze®)	Do not IV Push dose > 2 mcg/kg	Undiluted.	Slow IV push over at least 3-5 minutes. <u>If given for procedures, this drug requires Level II moderate sedation competency to administer.</u>
Flumazenil (Romazicon®)	Do not IV Push dose > 0.2mg	Undiluted. *Safety and efficacy have not been established in children < 1 year of age.	Each dose (NTE 0.2mg) over 15-30 seconds via freely running IV infusion. Monitor BP, HR, RR. ECG and pulse oximetry recommended. <u>If given for procedures, this drug requires Level II moderate sedation competency to administer.</u>
Labetolol (Normodyne®, Trandate®)	Do not IV Push dose > 20mg in children	Undiluted. (Max conc = 5mg/mL)	Each dose 2mg or fraction thereof over at least 2-3 minutes. Keep patient supine for 3 hours after infusion. Monitor BP before dose and every 5 minutes for 15 minutes after each dose.
Midazolam (Versed®) <i>CONSIDERED CONSCIOUS SEDATION PER PROTOCOL</i>	Do not IV Push dose > 2.5mg	Dilute to final concentration of 0.5mg/mL.	Each dose titrated slowly over 2-5 minutes. <u>This drug requires Level II moderate sedation competency to administer.</u>

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References:

Gahart BL, Nazareno AR. Intravenous Medications. 16th edition; 2000.

Phelps SJ, Hak EB. Guidelines for Administration of Intravenous Medications to Pediatric Patients. 5th edition. 1996.

Taketomo CK, Hodding JH, Kraus DM, et al. Pediatric Dosage Handbook. 12th edition. 2005-2006.

Trissel LA. Handbook on Injectable Drugs. 10th edition. 1998