

**High Risk CNS IV Push Medications and Doses** (note: for Procedural/Moderate Sedation dosing – refer to Procedural/Moderate Sedation IV guidelines)

Doses prescribed outside of the usual dosage range will be questioned and appropriate documentation will be entered into the EMR.

Doses prescribed above the Maximum Limit will be rejected by the pharmacist. The pharmacist will offer alternate suggestions to achieve the desired patient outcome.

If the pharmacist and physician agree that a higher single or cumulative dose above the maximum dose is warranted, the pharmacist will escalate to the Medical Director, VPMA, or CCO for approval and document accordingly.

If the prescriber wants a higher single or cumulative dose above the maximum but the pharmacist has a safety concern with the request, the concern may be escalated but the pharmacist will not approve the medication order if they continue to have a safety concern.

Drug	Monitoring When Given IV Push	Usual Adult IV Push Dose	Single Dose IV Push Max Limit & Cumulative Dose Max	Administration	Onset of Action	Peak Time	Duration of Action	Usual Concentration	Adverse Effect from Administering Too Rapidly	Comments
<b>Analgesia</b>										
Fentanyl	Vital signs (BP, HR, RR) & oxygen saturation	25-100 mcg	<b>Single Dose IV Push Hard Limit: 150 mcg</b>  <b>Cumulative Dose Max: 250 mcg within 60 min (split into intermittent doses)</b>	Slowly over 1 to 2 minutes.  Given under constant RN supervision	2-3 mins	5-10 mins	30-60 mins	50mcg/mL	Muscle rigidity may occur with rapid IV administration, hypotension, respiratory depression	Muscle rigidity may cause decrease in pulmonary compliance and/or apnea, laryngospasm & bronchoconstriction
Hydromorphone (Dilaudid)	Vital signs (BP, HR, RR) & oxygen saturation	0.5 – 2mg	<b>Single Dose IV Push Hard Limit: 2 mg</b>  <b>Cumulative Dose Max: 8 mg within 60 min (split into intermittent doses)</b>	Slowly over 2-3 minutes not to exceed 1mg/min  Given under constant RN supervision	5 mins	10-20 mins	3-4 hours	1mg/mL or 2mg/mL	Hypotension, respiratory depression	<b>Contraindications:</b> Acute or severe asthma, severe respiratory depression if no resuscitative equipment available, severe CNS depression, obstetrical analgesia, pregnancy (prolonged use or high doses at term); GI obstruction, including paralytic ileus (known or suspected)

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<b>Analgesia (continued)</b>										
Morphine	Vital signs (BP, HR, RR) & oxygen saturation	1-10mg	<b>Single Dose IV Push Hard Limit: 15mg</b>  <b>Cumulative Dose Max: 50mg within 60 min (split into intermittent doses)</b>	Slowly over 2 mins  Given under constant RN supervision	5 mins	20min	3-5 hours	2mg/mL or 4mg/mL	Hypotension, respiratory depression	<b>Contraindications:</b> Acute or severe asthma, severe respiratory depression if no resuscitative equipment available, concurrent use of MAOIs or use within the last 14 days; GI obstruction, including paralytic ileus (known or suspected)
<b>Sedatives / Anxiolytics</b>										
Etomidate	Vital signs (BP, HR, RR)	<b>Rapid Sequence Intubation:</b> 0.15-0.3mg/kg (rounding to 20mg may be appropriate)	<b>Single Dose IV Push Hard Limit: 0.3mg/kg or 40mg</b>	Slowly over 30-60 seconds  Under direct supervision of LIP	30-60 seconds	1 min	2-5 mins	2mg/mL		Use lower dosage range for elderly. Medication For RSI Only. Does not provide analgesia.
Diazepam (Valium)  <i>*when product is available</i>	Vital signs (BP, HR, RR)	<b>Anxiety/Skeletal muscle spasms:</b> 2-10mg	<b>Single Dose IV Push Hard Limit: 10mg</b>	Max rate 5mg/min  LIP must be present for doses over 10mg	1-5 mins	1 min	20-30 min	10mg/2mL		<b>Contraindications:</b> acute narrow angle glaucoma, untreated open angle glaucoma, myasthenia gravis, severe hepatic disease.

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<b>Sedatives / Anxiolytics (continued)</b>										
Ketamine	Vital signs (BP, HR, RR)	<b>Emergent Intubation:</b> 2mg/kg, <b>Sedation/ Analgesia:</b> 0.1 – 0.5 mg/kg <b>Refractory Pain/Palliative Care:</b> 0.3mg/kg	<b>Single Dose IV Push</b> <b>Hard Limit: 2mg/kg or 300mg</b>	Slowly over 1 min  Given under constant RN supervision	30-40 seconds	Less than 1 min	1-2 hours	10mg/mL	Respiratory depression and enhanced pressor response	<b>Contraindications:</b> conditions in which an increase in blood pressure would be hazardous  Emergence adverse reactions may be reduced if verbal, tactile, and visual stimulation of the patient is minimized.
Lorazepam (Ativan)	Vital signs (BP, HR, RR)	0.02-0.06mg/kg (approx. 1-4mg)	<b>Single Dose IV Push</b> <b>Hard Limit: 4mg</b>	Max of 2mg/min or 0.05 mg/kg over 2-5 mins  Given under constant RN supervision	2-10 mins	20-60 mins	6-8 hours	2mg/mL	Dilute with equal parts 0.9% NaCl or D5W, do not shake vigorously. Hypotension, respiratory depression	<b>Contraindications:</b> Acute narrow angle glaucoma, severe respiratory insufficiency, sleep apnea
Midazolam (Versed)	Vital signs (BP, HR, RR)	0.01-0.05 mg/kg (approx. 0.5-4mg) Max dose without physician present= 0.035 mg/kg	<b>Single Dose IV Push</b> <b>Hard Limit: 6mg</b>	Given over 2-5 mins  Bolus dosing under direct supervision of LIP	3-5 mins	3-5 mins	Less than 2 hours (dose dependent)	1mg/mL	Respiratory depression, hypotension, cardiac/ respiratory arrest, arrhythmias	

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<b>Sedatives / Anxiolytics (continued)</b>										
Propofol	Vital signs (BP, HR, RR)	0.5-1.5 mg/kg (RSI dosing may require up to 1.5 mg/kg)	<b>Single Dose IV Push Hard Limit: 2mg/kg or 300mg</b>	Give over 3 – 5mins  Bolus dosing under direct supervision of physician	30 Secs	Less than 2 mins	3-10 mins	10mg/mL	Hypotension	Do not use in obstetrics.  <b>Contraindicated:</b> Allergies to eggs/soy  Baseline TGs or lipid profile must be repeated Q48hrs

Reference for usual dosing: MCHS IV Guidelines