

# Intranasal Midazolam protocol:

## Indications:

1. For treatment of persistent seizure activity
2. Procedural Sedation

## Procedure:

1. Assess ABC's – Airway, Breathing, Circulation
2. Apply 100% Oxygen NRB mask to all patients
3. Refer to age based table to determine proper volume of Midazolam for atomization
4. To calculate it manually, use the below formula
  - o Assess weight: **weight in kg = (Age in years + 4) x 2**
  - o Calculate appropriate dose of Midazolam using the following formula:
    - kg wt X 0.2 mg = total mg dose of Midazolam, maximum of 10 mg
    - Adults over 50 kg: 10 mg (2 ml) of Midazolam
    - Total volume in millilitres of Midazolam (5mg/ml concentration) = (Total mg dose divided by 5mg/ml) + 0.1 ml for dead space of device.
5. Load syringe with appropriate volume of Midazolam (use only 5mg/ml concentration) and attach MAD nasal atomizer
6. Place atomizer within the nostril
7. Briskly compress syringe to administer 1/2 of the volume as atomized spray.
8. Remove and repeat in other nostril, so all the medication is administered

## For Seizure Control

- BVM ventilation as required
- Don't forget many patients are primarily seizing because they are hypoxic
- ACLS protocols if pulse less
- If seizures persist 5 minutes after treating, consider repeating ½ dose of Midazolam either intranasally, intramuscularly or intravenously. Secure airway if necessary.
- Gain IV access as soon as safe and practically possible

### For Procedural Sedation

- It is department policy that 2 clinicians are involved in any sedation procedure (one to monitor the patient and one to carry out the procedure).
- All procedures are to be clearly consented, documented and monitored, as per existing department policy.
- **Sedation is NOT pain relief and is NEVER a substitute for poor analgesia**
- Discuss sedation procedure with senior grade doctor for “at-risk” patients. \*\*
- Consider alternatives to IN sedation.
- Obtain written (or verbal witnessed x2) consent for procedure under sedation.
- Move patient to resuscitation area ensuring:
  - Tipping trolley
  - Suction available to hand
  - Oro-pharyngeal airway to hand
  - Bag-valve-mask to hand
- Estimate patient weight and clearly document drug doses, including antagonists.
- Preparation of drugs:
  - Sedative in labelled syringe
  - Analgesic in labelled syringe
  - Antagonists immediately available
- Be prepared to cannulate patient:
  - Range of IV cannula to hand, including flushes, connectors etc.
  - Intra-osseous device (COOK/EZIO) available in the case of failed cannulation

*\*\* “At risk” patients include the elderly, the morbidly obese and those with concomitant medical disease including: cerebro-vascular disease, heart disease, lung disease, renal disease, liver disease and jaundice, bleeding disorders, acute gastrointestinal bleeding, shock, anaemia and concomitant drug therapy.*

## Midazolam Dosing chart

Total kg wt X 0.2 mg = total mg dose of Midazolam (maximum of 10 mg)

Patient age (years)	Weight (kg)	IN Midazolam volume in ml*	
		5mg/ ml concentration	
		Volume	Dose (mg)
<b>Neonate</b>	3 kg	0.3 ml	0.6 mg
<b>&lt; 1 yr</b>	6 kg	0.4 ml	1.2 mg
<b>1 yr</b>	10 kg	0.5ml	2.0 mg
<b>2 yr</b>	14 kg	0.7 ml	2.8 mg
<b>3 yr</b>	16 kg	0.8 ml	3.2 mg
<b>4 yr</b>	18 kg	0.9 ml	3.6 mg
<b>5 yr</b>	20 kg	1.0 ml	4.0 mg
<b>6 yr</b>	22 kg	1.0 ml	4.4 mg
<b>7 yr</b>	24 kg	1.1 ml	4.8 mg
<b>8 yr</b>	26 kg	1.2 ml	5.2 mg
<b>9 yr</b>	28 kg	1.3 ml	5.6 mg
<b>10 yr</b>	30 kg	1.4 ml	6.0 mg
<b>11 yr</b>	32 kg	1.4 ml	6.4 mg
<b>12 yr</b>	34 kg	1.5 ml	6.8 mg
<b>Small teenager</b>	40 kg	1.8 ml	8.0 mg
<b>Adult or full-grown teenager</b>	> 50 kg	2.0 ml	10.0 mg

\* This volume is based on the calculated dose *plus* 0.10 ml dead space in the device (the amount of medication that will remain within the syringe and atomizer tip and therefore will not be delivered to the child). The total volume is then rounded off to the next highest 0.1 ml. Slightly higher doses may be appropriate at the lower range of volume (in smaller children) due to measurement difficulties and possible under dosing which may not stop the seizure.

In some children a higher dose (0.3 mg/kg) may be more appropriate.