

Increasingly buccal or intranasal Midazolam is becoming the drug of choice as the emergency management of prolonged seizures. There are many reasons why midazolam is now superseding the well known rectal valium as the drug and method of administration.

MIDAZOLAM: emergency management of seizures



Alison Hitchcock

Registered Nurse, Epilepsy Educator
and Emergency Medication Trainer
Epilepsy Foundation of Victoria

For some people with epilepsy, seizures will not stop and will continue unless there is medical management. These kinds of seizures may be referred to as clusters, prolonged seizures or status epilepticus. The implications of long lasting seizures can vary between extended post seizure recovery to a potentially life threatening situation.

Midazolam, also known as Hypnovel, belongs to a group of drugs called benzodiazepines. Its main purpose is as a sedative or hypnotic and it is used for medical and surgical procedures.

In epilepsy, midazolam is used for emergency management of seizures as it has the ability to stop the seizures quickly. Once absorbed into the blood, Midazolam travels to the brain attaching to brain receptors that control electrical impulses that are firing at an unusually rapid rate. Midazolam also works by relaxing the muscles which is particularly of benefit in many types of seizures. The effect of midazolam should occur rapidly.

Midazolam may be prescribed for someone with epilepsy when

- A person has seizures that last longer than 5 minutes
- A person has a pattern of cluster seizures – seizures that recur close together
- A person has a history of status epilepticus
- A person lives in a rural area and emergency services are unable to respond quickly.

When midazolam is prescribed by the neurologist it can be administered in two ways, either

- **Intranasal** - dripped slowly into the nasal passage or
- **Buccal** – trickling the medication into the side of the mouth, between the gums and cheek.

Both methods of administration have advantages and disadvantages.

Intranasal administration

Intranasal administration requires dripping the midazolam into each nostril in an alternating pattern. This method of administration is often easier to manage if the person having a seizure is a child. The person administering the midazolam can easily roll a child over on to their back and cradle them whilst administering, however being accurate with dripping the midazolam into the nostril may be challenging. Children generally receive a smaller dose of midazolam than an adult, therefore dripping ½ ml (8 drops) nasally for a child is much quicker than having to drip 2 ml (32 drops) nasally for an adult. Rolling an adult onto their back for intranasal administration might not be preferable in maintaining a clear airway so for comfort and safety reasons having a person in the recovery position is probably ideal.

Buccal administration

Administering the midazolam into the lower cheek is often the easiest route in an adult. The ampoule slides into

the mouth against the inner cheek. The ampoule is squeezed to release the liquid which trickles into the cheek area and is absorbed. Following many training sessions, the feedback regarding the easiest method to administer midazolam is via the buccal route.

Midazolam is a clear, colourless liquid and is available in both plastic and glass ampoules however it is the plastic ampoules that are used in this case.

Unfortunately the ampoules are labelled for “slow IV or IM use” but are used for buccal or intranasal use. The ampoule contains midazolam 5mg in 1 ml, but a variety of doses may be prescribed depending on the weight and age of the person needing the medication.

All medications have side effects and it is very important to know what to look out for when giving midazolam. Possible side effects include drowsiness, tiredness, weakness and nausea. Rare side effects include agitation, mood alteration, shallow or slow breathing where mouth to mouth resuscitation is required. Midazolam should be administered during the seizure unless specific instructions are given by a specialist for an alternative time. This ensures the drug acts to stop the seizure and relax the muscles and minimise the side effects. Administering the drug after the seizure has ceased may enhance the drowsiness often experienced in the post seizure recovery.

In my experience it is rare for a test dose to be given under medical

supervision. A script for the drug is usually organised and it should be recommended at this point that families and/or carers seek out some training around administration and creating an epilepsy emergency management care plan.

Emergency care plan

The information you need from the doctor for the plan should include:

- The name of the drug and how much to give in a mg/ml format.
- When to give the first dose (what time) and for what seizure type.
- If a second dose can be given (what time from the initial dose).
- How many doses can be given in a 24 hour period.
- When to call an ambulance.

Families and carers must contribute to the plan also by providing the following information about seizures:

- a brief description of how they normally look
- how long they last and
- how the person usually recovers.

Depending on who is using the plan, some instructions about post emergency medication monitoring may be important, including instructions on who else to call.

Conclusion

Not all people with epilepsy require emergency medication, but for a small group of people who seizures are difficult to control or for people who are isolated from emergency care, midazolam is an excellent medication.

Midazolam is rapid acting and can be easily administered by family and carers in a variety of settings. Its ease of use is a huge advantage over the administration of rectal valium, which now seems like quite an invasive procedure. Some training around administration and emergency care plan documentation is recommended. ■



Buccal administration



Intranasal administration