## Mannitol Intravenous for Adults



### Who can administer

May be administered by registered competent doctor or nurse/midwife

# Important information

- Crystallisation may occur see under 'storage requirements' for further information
- See 'Monitoring requirements' below
- Flush line with Glucose 5% as there is a risk of precipitation with Sodium chloride 0.9% (ref 1)
- Administer via central line or large peripheral vein
- Extravasation causes inflammation and thrombophlebitis

# Available preparations

Mannitol 10% 500mL infusion (50g in 500mL)

Mannitol 15% 500mL infusion (75g in 500mL)

Mannitol 20% 500mL infusion (100g in 500mL) (this product may not be available- it has been discontinued by some manufacturers)

### Reconstitution

Already in solution

### Infusion fluids

Not required - product ready for infusion

## Methods of intravenous administration

Slow intravenous injection (test dose for patients with marked oliguria or suspected inadequate renal function)

• Test dose over 3 to 5 minutes

#### Intermittent intravenous infusion

- See under 'dose' for details
- Administer via a giving set that incorporates a 15 micron in-line filter (ref 1) check packaging of administration set for details)- see photo



- The rate of infusion is usually adjusted to maintain a urine flow of at least 30 to 50mL/hour
- In emergency situations, the maximum infusion rate can be as high as 0.2g/kg over five minutes

### Dose in adults

Volume in ml of Mannitol solution required							
	Required dose	15g	25g	50g	75g	100g	150g
10% solution		150ml	250ml	500ml	750ml	1000ml	1500ml
15% solution		100ml	167ml	333ml	500ml	667ml	1000ml
20% solution		75ml	125ml	250ml	375ml	500ml	750ml

#### Reduction of intracranial pressure, cerebral volume and intraocular pressure

- Usual dose: 1.5 to 2g/kg infused over 30 to 60 minutes (some references suggest a range of 0.25 to 2g/kg <sup>(ref 2)</sup>)
- Dose may be repeated once or twice after 4 to 8 hours (ref 2)
- See table above for guidance on the different volumes of mannitol required (depending on concentration)
- When used pre-operatively, the dose should be administered 60 to 90 minutes before surgery to obtain the maximum effect

#### Use in patients with oliguria or renal impairment

- A test dose (to assess renal function) of about 0.2g per kg should be administered over three to five minutes this should produce a diuresis of at least 30 to 50ml/hour during the next two to three hours
- A second test dose may be given if there is inadequate response to the first test dose
- See table above for guidance on the different volumes of mannitol required (depending on concentration)
- If the second test dose does not produce an adequate urine output, then need to reassess management

#### Acute renal failure

- The general dose range for adults is 50 to 200g mannitol in a 24 hour period, with a dosage limit of 50g mannitol on any one occasion
- In most instances, adequate response will be achieved at a dosage of 50 to 100g mannitol per day
- The rate of administration is usually adjusted to maintain a urine flow of at least 30 to 50mL/hour
- See table above for guidance on the different volumes of mannitol required (depending on concentration)

#### Promotion of elimination of renally excreted toxic substances in poisoning

- An initial loading dose of 25g may be given
- Adjust dose to maintain urinary output of at least 100ml/hour and positive fluid balance of 1 to 2 litres
- See table above for guidance on the different volumes of mannitol required (depending on concentration)

#### **Renal impairment**

- Use with caution in severe renal impairment
- If the second test dose does not produce adequate urine output, reassess options

# Monitoring

- Renal function, fluid balance, serum electrolytes, serum and urine osmolality
- Monitor central venous pressure
- Assess cardiac function before and during treatment

## Storage

- $\bullet$  Store between 20 and 30 $^{\circ}$ C  $^{(ref 1)}$
- Do not refrigerate or freeze
- Solutions may crystallise, especially if stored at low temperatures
- The administration set should contain a **15 micron in-line filter** see under method of administration above

#### Crystals may be redissolved by warming before use as follows:

- Re-dissolve any crystals by warming to 37°C (Baxter products), or 60°C (Fresenius Kabi products) (ref 1)
- Use of dry heat (eg warming cabinet) is recommended solutions should not be heated in water due to risk of contamination
- Shake vigorously occasionally (ref 1)
- Microwave heating should not be used
- The product should be allowed to cool to 37°C before infusion

### References

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- 1. Injectable medicines administration guide, Medusa Accessed online 7th July 2023
- 2. BNF- accessed online 7th July 2023

# Therapeutic classification

Osmotic diuretic