# 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 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Â** | **Required dose** | **15g** | **25g** | **50g** | **75g** | **100g** | **150g** |
| **10% solution** | Â | **150ml** | **250ml** | **500ml** | **750ml** | **1000ml** | **1500ml** |
| **15% solution** | Â | **100ml** | **167ml** | **333ml** | **500ml** | **667ml** | **1000ml** |
| **20% solution** | Â | **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 [ref 2])
- 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

- Store between 20 and 30$^{0}$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$^{0}$C (Baxter products), or 60$^{0}$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$^{0}$C before infusion

# References

SPC March 2019

1. Injectable medicines administration guide, Medusa Accessed online 7th July 2023

2. BNF- accessed online 7th July 2023

# Therapeutic classification

Osmotic diuretic