are injected IM into alternate buttocks every four hours as needed, depending on the continuing presence of the patellar reflex and adequate respiratory function. Alternatively, after the initial IV dose, some clinicians administer 1 to 2 g/hour by constant IV infusion. Therapy should continue until paroxysms cease. A serum magnesium level of 6 mg/100 mL is considered optimal for control of seizures. A total daily (24 hr) dose of 30 to 40 g should not be exceeded. In the presence of severe renal insufficiency, the maximum dosage of magnesium sulfate is 20 g/24 h/hour and frequent serum magnesium concentrations must be obtained. Continuous use of magnesium sulfate in pregnancy beyond 5 to 7 days can cause fetal abnormalities.

Other uses

In countering the muscle-stimulating effects of barium poisoning, the usual dose of magnesium sulfate is 1 to 2 g given IV.

For controlling seizures associated with epilepsy, gliclazemide orophylaxis or hyperthyroidism, the usual adult dose is 1 g administered IM or IV.

In paroxysmal supraventricular tachycardia, magnesium should be used only if simpler measures have failed and there is no evidence of myocardial damage. The usual dose is 3 to 4 g (30 to 40 mL of a 10% solution) administered IV over 30 seconds with extreme caution. For reduction of cerebral edema, 2.5 g (25 mL of a 10% solution) is given IV. In paroxysmal atrial tachycardia, magnesium should be used only if simpler measures have failed and there is no evidence of myocardial damage. The usual dose is 4 g (30 to 40 mL of a 10% solution) administered IV over 30 seconds with extreme caution. For reduction of cerebral edema, 2.5 g (25 mL of a 10% solution) is given IV. In hypothyroidism, the usual adult dose is 1 g administered IM or IV.

For controlling seizures associated with epilepsy, glomerulonephritis or renal insufficiency, the maximum dosage of magnesium sulfate is 20 grams/48 hours. In counteracting the muscle-stimulating effects of barium poisoning, the usual dose is 4 g (30 to 40 mL of a 10% solution) administered IV over 30 seconds with extreme caution. The potential incompatibility will often be influenced by the changes in the concentration of reactants and the pH of the solutions. It has been reported that magnesium may reduce the antibiotic activity of streptomycin, tetracycline and tobramycin when given together. Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit.

**REFERENCES:**

Magnesium Sulfate Injection, USP 50%

DESCRIPTION
Magnesium Sulfate Injection, USP 50% is a sterile, nonpyrogenic, concentrated solution of magnesium sulfate heptahydrate in Water for Injection. It is administered by the intravenous (IV) or intramuscular (IM) routes as an electrolyte replenisher or anticonvulsant. But is dilute before IV use.
Each mL contains: Magnesium sulfate heptahydrate 500 mg; Water for Injection. Normal saline solution or USP 5% dextrose injection may be added to the anticonvulsant solution to reduce osmolality.

INDICATIONS AND USAGE
Magnesium Sulfate Injection, USP is suitable for replacement therapy in magnesium deficiency, especially in acute hypomagnesemia accompanied by signs of tetany similar to those observed in hypocalcemia. In such cases, the serum magnesium level is usually below the lower limit of 11 normal (1.5 to 2.5 mEq/L) and the serum calcium level is normal (4.3 to 5.3 mEq/L). The use of magnesium sulfate is also indicated for the prevention and control of seizures in pre-eclampsia and eclampsia, respectively.

CONTRAINDICATIONS:
Parenteral administration of the drug is contraindicated in patients with heart block or myocardial damage.

WARNING:
Fetal Risk:
Continuous administration of magnesium sulfate beyond 5 to 7 days to pregnant women may lead to hypocalcemia and bone abnormalities in the developing fetus. These bone abnormalities include skeletal demineralization and osteopenia. In addition, cases of neonatal fracture have been reported. The shortest duration of treatment that can lead to fetal harm is not known. Magnesium sulfate should be used during pregnancy only if clearly needed. If magnesium sulfate is given for treatment of preterm labor, the woman should be informed that the efficacy and safety of such use have not been established and that use of magnesium sulfate beyond 5 to 7 days may cause fetal abnormalities.

ALUMINUM TOXICITY:
This product contains aluminum that may be toxic. Aluminum may reach toxic levels in patients with impaired renal function or in those with prolonged parenteral administration (IV, IM, or subcutaneously). Aluminum can also accumulate in patients with impaired renal function, and May rise to toxic levels in infants with renal impairment. Aluminum overload is also associated with a risk of seizures.

DOSEAGE AND ADMINISTRATION:
Magnesium Sulfate Injection, USP is suitable for replacement therapy in magnesium deficiency, especially in acute hypomagnesemia accompanied by signs of tetany similar to those observed in hypocalcemia. In such cases, the serum magnesium level is usually below the lower limit of 11 normal (1.5 to 2.5 mEq/L) and the serum calcium level is normal (4.3 to 5.3 mEq/L). The use of magnesium sulfate is also indicated for the prevention and control of seizures in pre-eclampsia and eclampsia, respectively.

IN MAGNESIUM DEFICIENCY
In the treatment of mild magnesium deficiency, the usual adult dose is 1 g equivalent to 40 mEq administered as magnesium sulfate (2 mL of a 50% solution) intravenously over a period of two to three hours. In the treatment of severe magnesium deficiency, 2 g (equivalent to 80 mEq) may be administered slowly intravenously over a period of two to three hours. In the treatment of infants and children, 2 mEq in 50 mL of 5% Dextrose Injection should be given by slow intravenous injection over a period of two to three hours. In the treatment of moderate or severe magnesium deficiency, 2 to 4 g (equivalent to 80 to 160 mEq) may be given slowly over a period of six hours. In the treatment of hypocalcemia, 2 g (equivalent to 80 mEq) may be given slowly at 1 to 2 hour intervals. In the treatment of hypocalcemia due to magnesium poisoning, 2 g (equivalent to 80 mEq) may be given slowly over a period of six hours. In the treatment of magnesium deficiency in children, 10 mg/kg (2 mL of a 50% solution) per hour may be given slowly over a period of six hours. In the treatment of magnesium deficiency in infants, 20 mg/kg (4 mL of a 50% solution) per hour may be given slowly over a period of six hours. In the treatment of magnesium deficiency in premature infants, 40 mg/kg (8 mL of a 50% solution) per hour may be given slowly over a period of six hours. The usual maintenance dose is 1 g (40 mEq) given slowly intravenously every six hours.

In the treatment of magnesium deficiency in adults, 1 to 2 g (40 to 80 mEq) of magnesium sulfate (2 mL of a 50% solution) intravenously every six hours is given for the acute phase (of 2 to 4 days). In the treatment of chronic magnesium deficiency, 1 to 2 g (40 to 80 mEq) of magnesium sulfate (2 mL of a 50% solution) intravenously every six hours is given until the serum magnesium level is normal.

OVERDOSAGE:
Magnesium intoxication is manifested by a sharp drop in blood pressure and respiratory paralysis. Disappearance of the patellar reflex is a useful clinical sign to detect the onset of magnesium intoxication. In the event of severe magnesium intoxication, artificial ventilation must be used until a calcium salt can be injected to antagonize the effects of the magnesium.

For Treatment of Overdose
Artificial respiration is often required. Intravenous calcium, 10 to 20 mL of a 5% solution (1 to 2 mEq/mL of calcium chloride for injection) is used to counteract effects of hypermagnesemia. Cautiously adjust the rate of magnesium sulfate infusion to prevent calcium-chelating effects. A rate of 1 to 2 mg/mL may be used or 5 to 10 mg/mL may be used. Intravenous calcium, 10 to 20 mL of a 5% solution (1 to 2 mEq/mL of calcium chloride for injection) is used to counteract effects of hypermagnesemia. Calcium chloride, 0.5 to 1.0 g (5 to 10 mL of a 5% solution) may be used.

In hypermagnesemia, magnesium Sulfate Injection, USP is suitable for replacement therapy in magnesium deficiency, especially in acute hypomagnesemia accompanied by signs of tetany similar to those observed in hypocalcemia. The total initial dose is 10 to 14 g of magnesium sulfate intravenously. Magnesium sulfate infusion is given at a rate of 4 to 5 g in 250 mL of 5% Dextrose Injection, USP or 0.9% Sodium Chloride Injection, USP. Magnesium sulfate (2 mL of a 50% solution) should be given slowly over a period of six hours in each buttock. Alternatively, the initial IV dose of 4 g may be given by slow intravenous injection over a period of six hours. In the treatment of hypermagnesemia, the usual maintenance dose is 1 to 2 g (40 to 80 mEq) given slowly intravenously every six hours.

In pre-eclampsia or eclampsia
In severe pre-eclampsia or eclampsia, the total initial dose is 10 to 14 g of magnesium sulfate intravenously. Magnesium sulfate infusion is given at a rate of 4 to 5 g in 250 mL of 5% Dextrose Injection, USP or 0.9% Sodium Chloride Injection, USP. Magnesium sulfate (2 mL of a 50% solution) should be given slowly over a period of six hours in each buttock. Alternatively, the initial IV dose of 4 g may be given by slow intravenous injection over a period of six hours. In the treatment of hypermagnesemia, the usual maintenance dose is 1 to 2 g (40 to 80 mEq) given slowly intravenously every six hours.