NEW ZEALAND DATA SHEET

1 PRODUCT NAME

Magnesium Sulfate Heptahydrate 50% Medsurge (magnesium sulfate heptahydrate) Concentrated Injection

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each mL of injection contains magnesium sulfate heptahydrate 500 mg. This is equivalent to 2 mmol (4 mEq) of magnesium ions and 2 mmol (4 mEq) of sulfate ions in each mL.

For the full list of excipients, see Section 6.1 List of Excipients.

3 PHARMACEUTICAL FORM

Magnesium Sulfate Heptahydrate 50% Medsurge Concentrated Injection is a clear, colourless, slightly viscous, sterile solution. The pH of the solution ranges between 5.5 and 7.0.

4 CLINICAL PARTICULARS

4.1 THERAPEUTIC INDICATIONS

Parenteral administration of Magnesium Sulfate Heptahydrate 50% Concentrated Injection is indicated for:

- the treatment of acute hypomagnesaemia.
- the prevention of hypomagnesaemia in patients receiving total parenteral nutrition.
- the prevention and treatment of life-threatening seizures in the treatment of toxemias of pregnancy (pre-eclampsia and eclampsia).

4.2 DOSE AND METHOD OF ADMINISTRATION

Careful monitoring of plasma magnesium and other electrolyte concentration is essential whenever using this preparation. An intravenous preparation of a calcium salt should always be available in case of toxicity.

Dosage should be reduced in renal impairment.

Magnesium Sulfate Heptahydrate 50% Medsurge is administered intravenously or intramuscularly.

Product is for single use in one patient only. Discard any residue.

Intravenous dose

Intravenous doses should be diluted to a concentration of 20% magnesium or less.

Each 2 mL ampoule of Magnesium Sulfate Heptahydrate 50% Medsurge should be diluted by adding at least 3 mL of a compatible solution.

Each 5 mL ampoule of Magnesium Sulfate Heptahydrate 50% Medsurge should be diluted by adding at least 7.5 mL of a compatible solution.

Each 10 mL ampoule of Magnesium Sulfate Heptahydrate 50% Medsurge should be diluted with at least 15 mL of a compatible solution (see **Compatibilities**).

Intramuscular dose

A concentration of less than 25-50% is satisfactory for adults, while a concentration of less than 20% should be used for infants or children. For adult intramuscular administration dilution of Magnesium Sulfate Heptahydrate 50% Medsurge is not required, but each 2 mL ampoule may be diluted by adding up to 2 mL of a compatible solution, each 5 mL ampoule may be diluted by adding up to 5 mL of a compatible solution and each 10 mL ampoule with 10 mL of a compatible solution.

The dose of magnesium should be adjusted according to the patient's individual requirements and response.

The total adult daily dose should not exceed 30-40 g of magnesium sulfate per day.

Mild hypomagnesaemia

Adults: A dose of 1 g magnesium sulfate intramuscularly every 6 hours for 4 doses is recommended.

Severe hypomagnesaemia

Adults: A dose of 0.25 g/kg magnesium sulfate intramuscularly over 4 hours is recommended. Alternatively a dose of 5 g may be given by slow intravenous infusion over 3 hours.

Total parenteral nutrition

Adults: A dose of 0.5-3.0 g magnesium sulfate daily may be administered.

Infants: A dose of 0.25-1.25 g magnesium sulfate daily may be administered.

Toxemia of pregnancy

An initial intravenous dose of 4 g of magnesium sulfate is suggested. This is followed by an intramuscular dose of 4-5 g into each buttock. This may be followed by a dose of 4-5 g into alternate buttocks every 4 hours as needed.

4.3 CONTRAINDICATIONS

Magnesium Sulfate Heptahydrate 50% Medsurge is contraindicated in patients with:

- Heart block, since magnesium may exacerbate this condition.
- Renal failure (creatinine clearance < 20 mL/min), or hepatic disorders since there is an increased risk of hypermagnesaemia in these patients.

Magnesium Sulfate Heptahydrate 50% Medsurge should not be administered to pregnant women in the two hours prior to delivery, unless it is the only therapy available to prevent eclamptic seizures. There is a risk that the neonate will be born with hypermagnesaemia and depressed breathing.

4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE

Magnesium Sulfate Heptahydrate 50% Medsurge may precipitate an acute myasthenic crisis. Sensitivity to parenteral magnesium has been reported. An intravenous preparation of a calcium salt (e.g. calcium gluconate) should be readily available for use when magnesium sulfate is given intravenously.

Use in hepatic impairment

Magnesium should be administered with caution in patients with impaired hepatic function, since the risk of hypermagnesaemia is increased in these patients.

Use in renal impairment

Magnesium should be administered with caution in patients with impaired renal function, since the risk of hypermagnesaemia is increased in these patients.

Use in the elderly

No data available.

Paediatric use

See Section 4.2 Dose and Method of Administration, Intramuscular dose and Total parenteral nutrition.

Effects on laboratory tests

Monitoring of serum magnesium levels is advised at periodic intervals during therapy to ensure that normal serum magnesium levels are not exceeded.

The patellar reflex should be tested prior to administering repeat doses of Magnesium Sulfate Heptahydrate 50% Medsurge. Suppression of the reflex is an indication of magnesium intoxication.

Respiration rate should be determined and should be at least 16 per minute prior to each dose of magnesium sulfate, as respiratory depression is the most critical side effect of the medication.

Urine output should be monitored and should be at least 100 mL during the four hours preceding dosing, to ensure adequate excretion of magnesium.

4.5 INTERACTIONS WITH OTHER MEDICINES AND OTHER FORMS OF INTERACTIONS

Magnesium Sulfate Heptahydrate 50% Medsurge can interact with the following drugs:

Cardiac glycosides/digitalis: Magnesium salts should be administered with caution in patients treated with cardiac glycosides, since heart block may occur if calcium salts are required to treat magnesium toxicity (see Section 4.9 Overdose).

CNS depressants: Concurrent use of magnesium salts and CNS depressant drugs may result in an enhanced CNS depressant effect.

Neuromuscular blocking agents: Concurrent use of magnesium salts with neuromuscular blocking agents such as tubocurarine, suxamethonium and vercuronium may result in an excessive neuromuscular blockade.

Nifedipine: Concurrent use of magnesium sulfate and nifedipine may result in an exaggerated hypotensive response.

4.6 FERTILITY, PREGNANCY AND LACTATION

Effects on fertility

No data available.

Use in pregnancy

(Category D)

Magnesium sulfate heptahydrate has been administered to pregnant women to treat seizures associated with severe pre-eclampsia and eclampsia. However, increased paediatric mortality has been noted when it was used in pre-term labour.

Magnesium sulfate readily crosses the placenta. Fetal serum concentrations are approximately those of the mother. If magnesium sulfate is administered in the two hours preceding delivery, the neonate may be born with signs of hypermagnesaemia, including respiratory depression, and therefore Magnesium Sulfate Heptahydrate 50% Medsurge should not be given in the two hours preceding delivery unless it is the only therapy available to prevent or treat eclamptic seizures. Fetal heart rate should be monitored.

Bony abnormalities and congenital rickets have been reported in neonates born to mothers treated with parenteral magnesium sulfate for prolonged periods of time (5 to 7 days duration).

Magnesium sulfate should only be used in pregnancy where the benefit outweighs the risk.

Use in lactation

Magnesium Sulfate Heptahydrate 50% Medsurge should not be used during lactation. After intravenous administration, magnesium is distributed into breast milk, and the concentration of magnesium in the breast milk is approximately twice that in the maternal serum. However, magnesium is cleared from the breast milk within 24 hours of the cessation of the infusion.

4.7 EFFECTS ON ABILITY TO DRIVE AND USE MACHINES

The effects of this medicine on a person's ability to drive and use machines were not assessed as part of its registration.

4.8 UNDESIRABLE EFFECTS (ADVERSE EFFECTS)

Excessive administration of magnesium sulfate may result in hypermagnesaemia. The signs of hypermagnesaemia may include drowsiness, loss of deep tendon reflexes, nausea, vomiting, flushing, hypotension, bradycardia, muscle weakness, muscle paralysis, blurred or double vision and CNS depression.

More severe hypermagnesaemia may result in respiratory depression, respiratory paralysis, renal failure, coma, cardiac arrhythmias and cardiac arrest. Hypocalcaemia with tetany, secondary to hypermagnesaemia, has been reported.

After intramuscular injection, irritation and pain at the injection site may result.

Reporting suspected adverse reactions

Reporting suspected adverse reactions after registration of the medicinal product is important. It allows continued monitoring of the benefit-risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions at https://pophealth.my.site.com/carmreportnz/s/}.

4.9 OVERDOSE

Hypermagnesaemia may occur when large doses of magnesium are given, especially in patients with renal failure. Signs of hypermagnesaemia include nausea, vomiting, flushing, hypotension, muscle weakness, muscle paralysis,

blurred or double vision, CNS depression and loss of reflexes. More severe hypermagnesaemia may result in respiratory depression, respiratory paralysis, renal failure, coma, cardiac arrhythmias and cardiac arrest.

Treatment of overdosage

In the treatment of hypermagnesaemia, the following measures may be required:

- Blood pressure and respiratory support.
- Intravenous administration of 2.5 -10 mmol calcium salts (such as calcium gluconate) reverses the effects of magnesium toxicity.
- Dialysis may be required, particularly if renal function is impaired.
- If renal function is normal, adequate fluids should be given so that urine output is at least 60 mL/hr to assist removal of magnesium from the body.
- Physostigmine (0.5 - 1.0 mg subcutaneously) may be helpful, but routine use is not recommended due to the potential toxicity.

For risk assessment and advice on the management of overdose please contact the National Poisons Centre on 0800 POISON (0800 764766).

5 PHARMACOLOGICAL PROPERTIES

5.1 PHARMACODYNAMIC PROPERTIES

Chemical structure

The molecular weight of the compound is 246.5. The molecular formula is $MgSO_4.7H_2O$.

CAS number

10034-99-8

Mechanism of action

Magnesium is an essential body cation and the second most abundant cation of intracellular fluid. It is an essential cation in numerous enzymatic processes, and is necessary for several steps in glycolysis, the Krebs cycle and in protein and nucleic acid synthesis. It is thus vital for normal energy storage and transfer, skeletal development, nerve conduction and muscle contraction. Magnesium plays an important role in neurochemical transmission, and is essential for proper neurochemical functioning.

Magnesium has an anticonvulsant effect. It possibly has antiarrhythmic effects and a role in calcium homeostasis and bone mineralisation. There is conflicting evidence that the routine use of intravenous magnesium sulfate in the setting of acute myocardial infarction is beneficial.

Deficiency of magnesium is closely associated with other electrolyte disturbances, particularly hypocalcaemia and hypokalemia. The specific symptoms of hypomagnesaemia are therefore difficult to determine, but may include nausea, vomiting, muscle weakness, neuromuscular dysfunction such as paraesthesia, tremor and cramp, tachycardia and cardiac arrythmias.

Clinical trials

No data available.

5.2 PHARMACOKINETIC PROPERTIES

The 95% confidence intervals for magnesium levels in healthy Australian subjects are: neonate 0.6-0.9 mmol/L and adult 0.8-1.0 mmol/L.

The onset of action after intramuscular injection is about 1 hour and after intravenous injection is nearly immediate. The duration of action after intramuscular injection is 3 to 4 hours, and after intravenous injection is about 30 minutes.

Distribution

Approximately 50% of magnesium in the body is found in bone, with the majority of the remainder stored in muscle and soft tissue. 1% or less is contained in the extracellular compartment, of which approximately 33% is protein-bound, with a further 12% bound to anions.

Metabolism

No data available.

Excretion

Magnesium is primarily excreted in the urine, with small amounts excreted in faeces, saliva and breast milk. Over 90% of magnesium filtered by the kidneys is reabsorbed, mainly in the ascending limb of the Loop of Henle, with significant amounts also absorbed in the proximal and distal tubules. The clearance is proportional to the plasma magnesium concentration and the glomerular filtration rate.

5.3 PRECLINICAL SAFETY DATA

Genotoxicity

No data available.

Carcinogenicity

No data available.

6 PHARMACEUTICAL PARTICULARS

6.1 LIST OF EXCIPIENTS

Water for injections

Sulfuric acid

Sodium hydroxide

6.2 INCOMPATIBILITIES

Magnesium sulfate is incompatible with calcium salts. Calcium sulfate may precipitate when calcium salts are mixed with magnesium sulfate in the same intravenous solution.

Magnesium salts have also been reported to be incompatible with alkali carbonates and bicarbonates and soluble phosphates.

6.3 SHELF LIFE

60 months from the date of manufacture.

6.4 SPECIAL PRECAUTIONS FOR STORAGE

Store below 25°C.

6.5 NATURE AND CONTENTS OF CONTAINER

Magnesium Sulfate Heptahydrate 50% Medsurge is presented as:

2 mL ampoule as a pack of 10 ampoules.
5 mL ampoule as a pack of 10 ampoules.
10 mL ampoule as a pack of 10 ampoules.

6.6 SPECIAL PRECAUTIONS FOR DISPOSAL AND OTHER HANDLING

Compatibilities
Magnesium Sulfate Heptahydrate 50% Medsurge is reported to be chemically stable and compatible with:

- Sodium chloride 0.9%
- Lactated Ringer's injection
- Glucose 5% in water
- Glucose 5% in sodium chloride 0.9%

In order to reduce microbial contamination, diluted solutions should be prepared, stored and used within 24 hours at 2-8°C or 6 hours at room temperature.

No special requirements for disposal.

7 MEDICINE SCHEDULE

General Sale

8 SPONSOR

Medsurge Pharma Limited
PO Box 331054
Takapuna
Auckland 0622
Telephone: 0800 788 261

Marketed and Distributed by Medsurge Healthcare Pty Ltd

Telephone**: 1300 788 261**
Website: www.medsurgehc.com

9 DATE OF FIRST APPROVAL

24 September 2026

10 DATE OF REVISION

Not Applicable

SUMMARY TABLE OF CHANGES

Section Changed	Summary of new information