# NEW ZEALAND DATA SHEET

## 1. PRODUCT NAME

DBL™ Magnesium Chloride Concentrated Injection 480 mg/5ml Solution for injection

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each 5 mL solution contains magnesium chloride hexahydrate equivalent to 480 milligrams of magnesium chloride anhydrous. Each mL of injection contains 1 mmol (2 mEq) of magnesium ions and 2 mmol (2 mEq) of chloride ions. The product contains no preservative. Magnesium chloride hexahydrate exists as colourless, odourless, deliquescent or hygroscopic crystals or flakes. It is very soluble in water and freely soluble in alcohol.

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection

DBL™ Magnesium Chloride Concentrated Injection is a clear, colourless, sterile solution. The pH of the solution ranges between 5.0 and 8.0.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Parenteral administration of magnesium is indicated in the treatment of acute hypomagnesaemia.

Magnesium salts are also indicated to prevent hypomagnesaemia in patients receiving total parenteral nutrition.

### 4.2 Dose and method of administration

DBL™ Magnesium Chloride Concentrated Injection is administered intravenously, usually by slow intravenous infusion. Intravenous doses should be diluted in glucose 5%.

Maximum dose: 1.9 grams of magnesium chloride anhydrous (40 mEq of magnesium) may be diluted with 250 mL of 5% glucose and infused at a rate not to exceed 3 mL per minute (0.5 mEq/min).

The dose of magnesium should be adjusted according to the patient's individual requirements and response. The total adult daily dose should not exceed 18.7 grams of magnesium chloride anhydrous per day.

Acute hypomagnesaemia:

*Adults*: It is suggested that a dose of 3.3 to 7.2 grams of magnesium chloride anhydrous (70 to 150 mEq of magnesium) be given by slow intravenous infusion on the first day, followed by 2.4 grams of magnesium chloride anhydrous (50 mEq of magnesium) daily until hypomagnesaemia is corrected. A total of 15.3 grams of magnesium chloride anhydrous (320 mEq of magnesium) may be required.

Total Parenteral Nutrition:

*Adults*: A dose of 0.2 to 1.2 grams magnesium chloride anhydrous (4 to 24 mEq of magnesium) daily may be administered.

*Infants*: A dose of 0.1 to 0.5 grams magnesium chloride anhydrous (2 to 10 mEq of magnesium) daily may be administered.

## 4.3 Contraindications

Magnesium may form precipitates if mixed with other electrolyte solutions (see section 6.2 for important information).

Magnesium is contraindicated in patients with heart block, since magnesium may exacerbate this condition.

Magnesium is also contraindicated in patients with renal failure (creatinine clearance <20 mL/min), since there is an increased risk of hypermagnesaemia in these patients.

Magnesium chloride should not be given to a pregnant woman within two hours preceding delivery as there is a risk of respiratory depression due to hypermagnesaemia in the neonate.

## 4.4 Special warnings and precautions for use

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

Magnesium 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 when magnesium chloride is given.

The patellar reflex should be tested prior to administering repeat doses of magnesium chloride. 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 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.

***Laboratory Tests***

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

## 4.5 Interaction with other medicines and other forms of interaction

**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).

**CNS depressants**

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

**Magnesium containing preparations (including antacids, laxatives)**

Concurrent use of magnesium salts with other magnesium containing preparations may cause magnesium toxicity especially in patients with renal insufficiency.

**Neuromuscular blocking agents**

Concurrent use of magnesium salts with neuromuscular blocking agents may result in an excessive neuromuscular blockade.

**Antihypertensive agents**

Concurrent use of magnesium and nifedipine or other antihypertensive agents may result in an exaggerated hypotensive response.

## 4.6 Fertility, pregnancy and lactation

**Fertility**

No data available.

**Pregnancy**

Magnesium readily crosses the placenta. Foetal serum concentrations approximate those of the mother. Magnesium chloride should not be given to a pregnant woman within two hours preceding delivery as there is a risk of respiratory depression due to hypermagnesaemia in the neonate.

Bony abnormalities and congenital rickets have been reported in neonates born to mothers treated with parenteral magnesium for prolonged periods of time (4 to 13 weeks duration).

**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. Magnesium chloride is therefore not recommended in lactating patients.

## 4.7 Effects on ability to drive and use machinery

No data available.

## 4.8 Undesirable effects

Excessive administration of magnesium chloride may result in hypermagnesaemia. The signs of hypermagnesaemia may 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. Hypocalcaemia with tetany, secondary to hypermagnesaemia, has been reported.

**Reporting of suspected adverse reactions**

Reporting suspected adverse reactions after authorisation of the medicine is important. It allows continued monitoring of the benefit/risk balance of the medicine. Healthcare professionals are asked to report any suspected adverse reactions https://nzphvc.otago.ac.nz/reporting/.

## 4.9 Overdose

***Clinical features***

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***

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

- blood pressure and respiratory support
- intravenous administration of 2.5 to 5.0 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/hour to assist removal of magnesium from the body
- physostigmine (0.5 to 1.0 milligrams subcutaneously) may be helpful, but routine use is not recommended due to the potential toxicity.

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

# 5. PHARMACOLOGICAL PROPERTIES

## 5.1 Pharmacodynamic properties

### Mechanism of action

Magnesium is the second most abundant cation of intracellular fluid. It is an essential cation in over 300 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. 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 in the setting of acute myocardial infarction is beneficial.

Deficiency of magnesium is closely associated with other electrolyte disturbances, particularly hypocalcaemia and hypokalaemia. 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.

## 5.2 Pharmacokinetic properties

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

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.

After intravenous infusion the duration of action of magnesium is approximately 30 minutes. 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.

**Reproductive and developmental toxicity**

No data available.

# 6. PHARMACEUTICAL PARTICUALRS

## 6.1 List of excipients

- Water for injection

## 6.2 Incompatibilities

As mixtures of the following products with DBL™ Magnesium Chloride Concentrated Injection may cause precipitates to form, products containing these anions should not be mixed or co-administered with DBL™ Magnesium Chloride Concentrated Injection.

Magnesium salts have been reported to be incompatible with alkali carbonates, bicarbonates and soluble phosphates. Magnesium salts may also react with arsenates, phosphates and tartrates.

## 6.3 Shelf life

60 months

## 6.4 Special precautions for storage

Store below 25$^{o}$C. Protect from light

## 6.5 Nature and contents of container

DBL™ Magnesium Chloride Concentrated Injection is available as follows:

Strength Magnesium chloride (anhydrous) 480 milligrams in 5 mL

Pack 10 x 5 mL ampoules

## 6.6 Special precautions for disposal and other handling

Any unused medicine or waste material should be disposed of in accordance with local requirements. ***Compatibilities***

Magnesium salts are reported to be chemically stable and compatible with either sodium chloride 0.9%, glucose 5% in water or glucose 5% in sodium chloride 0.9%. Solutions diluted for infusion should be prepared and used immediately as they are not preserved.

# 7. MEDICINE SCHEDULE

General Sale Medicine

## 8. SPONSOR

Pfizer New Zealand Limited

P O Box 3998

Auckland, New Zealand, 1140

Toll Free Number: 0800 736 363

## 9. DATE OF FIRST APPROVAL

11 Jul 1988

## 10. DATE OF REVISION OF THE TEXT

12 February 2019

**Summary table of changes**

| Section changed | Summary of new information |
|---|---|
| All | Reformat to MedSafe Data Sheet guidance |