

Guidelines for the management of hypomagnesaemia in adults aged 16 years and over

- This guideline is intended for the management of hypomagnesaemia in adults who are NOT receiving enteral feeds or under the care of the Nutrition Team. Further advice should be sought from the hospital Nutrition Team if required.
- Symptoms of hypomagnesaemia usually become apparent when magnesium level $\leq 0.35\text{mmol/L}$ – including muscle cramps, vertigo, nystagmus, aphasia, arrhythmias and seizures.
- Serum magnesium concentration should be monitored daily while on infusion to check for toxicity ($>2.0\text{mmol/l}$) and 24 hours post infusion for adequacy of replacement to allow time for redistribution.

Degree Of Magnesium Deficiency (GFR \geq 30ml/min)	Magnesium level (mmol /L) (normal 0.7 – 1.1)	Treatment	Comments
Mild	0.55 – 0.7	No treatment required if acute and short term but may require oral treatment if chronic	
Moderate	0.36 – 0.54	IV: Give 20mmol magnesium over 12- 24 hours for 2-3 days.	Give in 500-1000 ml of either sodium chloride 0.18%/glucose 4 % or Glucose 5% or sodium chloride 0.9%.
		Oral: After the initial IV replacement, ongoing oral supplements may be required if the patient has chronic losses or malabsorption issues.	
Severe	≤ 0.35	IV: Give 30mmol magnesium over 12- 24 hours for 3-5 days.	Give in 500-1000 ml of either sodium chloride 0.18%/glucose 4% or glucose 5% or sodium chloride 0.9%. Also give IV calcium if there are signs of parasthesiae or tetany occurs. Calcium gluconate 10% 10ml (2.2mmol calcium) IV over at least 10 minutes with cardiac monitoring, then start a continuous infusion of 40ml (8.8mmol) of calcium gluconate 10% in 1 litre of sodium chloride 0.9% or glucose 5% over 24 hours.
		Oral: After the initial IV replacement, ongoing oral supplements may be required if the patient has chronic losses or malabsorption issues.	

- In renal impairment or in risk of fluid over load it can be given in a smaller volume or over a shorter time but seek specialist advice.
- If the patient's eGFR $< 30\text{ml/min}/1.73\text{m}^2$ reduce dose by 50%.

Oral Magnesium Replacement (eGFR \geq 30ml/min/1.73m²)

- Magnesium hydroxide is poorly tolerated, and is unsuitable for long term use.
- Magnaspartate® sachets are a licensed oral product for hypomagnesaemia. These provide 10mmol of magnesium per 6.5g sachet. The licensed dose is one to two sachets daily. Start at one sachet daily and increase as required and tolerated to two sachets daily. Avoid if patient has severe renal impairment (eGFR<30mmol/min/1.73m²).
- If two sachets are insufficient or the patient cannot tolerate the sachets at a sufficient dose to maintain adequate magnesium concentrations that they are asymptomatic, consider contacting the Nutrition Team or Biochemistry department for further advice.
- If the sachets are unsuitable, Magnesium Glycerophosphate (Neomag® 4mmol per tablet) is a chewable tablet which is also licensed. Start at doses of 12-24mmol/day in three to four divided doses. Titrate up to 36mmol/day depending on patient requirements and tolerance.

Oral Magnesium Replacement (eGFR < 30ml/min/1.73m²)

- Discuss with the renal team prior to prescribing an oral supplement. Avoid Magnaspartate® and if using other preparations reduce dose by 50% and use with caution.

Intravenous Magnesium Replacement

- Please note the use of magnesium as a replacement therapy is different from either its use in pre-eclampsia or coronary disease.
- Magnesium is available as magnesium sulphate injection 2mmol per milliliter in 4mmol/2ml ampoules.

Bibliography

1. Management of severe pre-eclampsia & eclampsia ADTC212 (1)
2. Coronary Care Unit Guidelines ADTC 176/2
3. Neomag® SPC available at <https://www.medicines.org.uk/emc/product/2678>, updated 10/01/2017 accessed 15/10/2018
4. Magnaspartate® SPC available at <https://www.medicines.org.uk/emc/product/1889> Updated 1/7/16, accessed 15/10/18
5. What oral magnesium preparations are available in the UK and which preparation is preferred for the treatment and prevention of hypomagnesaemia? UKMi Q&A 111.5 Date published 11th August 2015
6. Management of Hypomagnesaemia <http://handbook.ggcmedicines.org.uk/media/1021/191-hypomagnesaemia-flowchart-181030f.pdf> accessed 19/11/18
7. Magnesium Injection SPC <http://handbook.ggcmedicines.org.uk/media/1021/191-hypomagnesaemia-flowchart-181030f.pdf> accessed 19/11/18
8. BNF <https://bnf.nice.org.uk/drug/magnesium-sulfate.html> accessed 19/11/18