Barnsley Hospital NHS Foundation Trust

Barnsley Clinical Commissioning Group
Putting Barnsley People First

Oral Magnesium Supplementation for Hypomagnesaemia

In the absence of national guidelines or published trials evaluating clinical outcomes with the various magnesium salts in the treatment or prevention of hypomagnesaemia[1] this document aims to support suitable and cost effective prescribing for hypomagnesaemia within primary care in Barnsley.

Signs and Symptoms:
The signs and symptoms of hypomagnesaemia are generally non-specific, but may include:

- Muscle weakness, twitching or tremor, ataxia, seizures, carpopedal spasm or hyperactive deep tendon reflexes
- Arrhythmias such as:
  - Supraventricular tachycardia
  - Ventricular tachycardia
  - Ventricular fibrillation
  - Premature ventricular contractions
- ECG abnormalities such as:
  - Prolonged PR interval
  - Prolonged QRS complex
  - Broad, flattened T wave
  - Depressed ST segment
  - Prolonged QT interval
  - Prominent U wave
- Confusion, depression, hallucinations, psychosis, emotional lability
- Hyperinsulinism
- Dysphagia, anorexia or nausea

Precipitating factors:
As part of your treatment plan, consider if the patient has any identifiable (and potentially reversible) causes of their hypomagnesaemia, including the following:

- Gastrointestinal loss; i.e. diarrhoea, high output stoma
- Malabsorption or malnutrition
- Acute pancreatitis
- Chronic alcoholism
- Renal tubular reabsorption defects
- Hyperaldosteronism
- Hyperparathyroidism
- Long term parenteral nutrition or IV fluid therapy
- Drug causes:
  - Diuretics
  - PPI's
  - Insulin
  - Ciclosporin
  - Chemotherapy agents (particularly platinum based drugs)

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Magnesium Replacement:

- Supplementation is recommended if magnesium levels fall below 0.4mmol/L (reference range 0.7 – 1.0mmol/L).
- At levels of between 0.4 and 0.7mmol/L, magnesium replacement should be considered in symptomatic patients or those at high risk of the effects of hypomagnesaemia.
- Available preparations* and recommended doses are listed in the table below:

	Licensed status in the UK	**Recommended starting dose****	**Cost per 14 days of treatment** (MIMS March 2016)	**Comments**
Magnaspartate sachets (6.5g magnesium-L-aspartate oral powder)	Prescription only medicine	1 sachet BD (equivalent to 20mmol Mg^{2+} per day)	£25.06	Currently only licensed oral supplement available and **preferred option.** Suitable for Oral/NG/PEG administration.
Magnaphate (magnesium glycerophosphate 1g tablets)	Borderline substance	2 tablets TDS (equivalent to 24mmol Mg^{2+} per day)	£38.04	Available from Arjun products Ltd.
Other brands of magnesium glycerophosphate 4mmol tablets)	Unlicensed medicine	2 tablets TDS (equivalent to 24mmol Mg^{2+} per day)	Ranges from £33.60-£236.60 and may include a sourcing fee	Available from Special Products Ltd, IDIS World Medicines and UL Medicines
Co-Magaldrox suspension (Maalox or Mucogel)	Not licensed for magnesium supplementation but licensed as an antacid	5mls TDS (equivalent to 24mmol Mg^{2+} per day)	Maalox = £3.35 for 500ml bottle Mucogel = £2.99 for 500ml bottle	Extra caution in renal impairment. May be useful to attenuate magnesium induced diarrhoea

*Other preparations are available but are unlicensed and not cost effective, hence they aren't listed here.
**Doses can be titrated according to Mg^{2+} levels and clinical response.

Precautions for prescribing:

- Patients with renal impairment are at higher risk of adverse effects from magnesium supplementation and it's generally advisable to dose conservatively where clinically appropriate.
- Additional electrolyte abnormalities are often associated with hypomagnesaemia, particularly calcium and potassium, so it's good practice to check and monitor these levels too.
- Patients who are taking concurrent digoxin may exhibit signs and symptoms of digitalis toxicity which require omission or reduction of digoxin dose until hypomagnesaemia is corrected.

Adverse effects of Magnesium supplementation:

Diarrhoea is the most common adverse effect following oral magnesium replacement, and can be minimised by using co-magaldrox suspension if supplementation needs to continue. However, co-magaldrox is not appropriate in patients with renal impairment. Hypermagnesaemia may occur in patients with renal failure but is unlikely in other patients with oral supplementation.

Further advice on the management of specific patients can be obtained from the Medicines Information team at BHNFT on 01226 432857 (Mon-Fri, 9am-5pm).

References:

1. UKMi Medicines Q&A 111.5 What oral magnesium preparations are available in the UK and which preparation is preferred for the treatment and prevention of hypomagnesaemia? Accessed online via www.evidence.nhs.uk
2. UKMI Medicines Q&A 350.4 How is acute hypomagnesaemia treated in adults? Accessed online via www.evidence.nhs.uk

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