

## Southern Derbyshire Shared Care Pathology Guidelines

### Hypomagnesaemia in Adults

#### Purpose of Guideline

The management of patients with newly diagnosed hypomagnesaemia.

#### Definition

Magnesium < 0.70 mmol/L

Magnesium is crucial in the appropriate reabsorption of both potassium and calcium in the kidney. Therefore, in some cases of hypocalcaemia and hypokalaemia it is essential to replace magnesium to enable the correction of both calcium and potassium.

#### When is hypomagnesaemia considered a medical emergency?

- Magnesium 0.50 – 0.70 mmol/L                      Not a medical emergency
- Magnesium 0.30 – 0.50 mmol/L                      Possible medical emergency
- Magnesium <0.30 mmol/L                              May be medical emergency

These limits are for guidance only; the severity of the patient's symptoms, and other factors, e.g. rapidity of the fall in magnesium, serum calcium and potassium concentrations, renal function, will also determine whether the patient requires emergency admission.



The laboratory will telephone all magnesium results <0.50 mmol/L, Monday to Friday when GP practices are open.

Magnesium results <0.30 mmol/L may be telephoned to Derbyshire Health United when the GP practice is closed, dependent on other results.

## When is hypomagnesaemia suspected?

Hypomagnesaemia is more common than people think with probably 90% not identified clinically.

### Incidence of Hypomagnesaemia

- 2% of the general population
- 7-11% of hospital patients
- Poorly Controlled Diabetes up to 25%
- Critically Ill Patients up to 65%
- Alcoholics up to 80%
- Haematological Malignancies up to 90%

Symptoms are similar to hypocalcaemia, and for mild hypomagnesaemia are not specific.

## What are the causes of hypomagnesaemia?

Hypomagnesaemia is usually caused by GI and renal loss and redistribution.

*Renal causes include:*

- Drugs
  - Proton Pump Inhibitors (common cause)
  - Diuretics, especially Loop diuretics
  - Cytotoxic
  - Aminoglycosides
  - Immunosuppressants
  - Theophylline
- Osmotic diuresis (diabetes)
- Inherited Disorders (rare, but include Gitelman's syndrome)

*GI causes include:*

- Reduced Intake
  - Dietary deficiency (rare)
- Reduced Absorption
  - Diseases causing Malabsorption (e.g. Coeliac Disease)
  - Chronic Diarrhoea
  - Laxative Abuse
  - Fistula
  - Short Bowel Syndrome
  - Inherited Transport Defect (rare)

## What happens next?

Review the medication - stop PPI's and review diuretics.

The majority of patients who develop hypomagnesaemia are already under the care of hospital physicians, and referral is usually straight forward (e.g. Oncology).

For unknown causes of severe hypomagnesaemia (<0.50 mmol/L), consider referral to hospital dependent upon symptoms and other results.

- If asymptomatic, immediate referral is not required. Consider oral replacement (as below) and referral to appropriate specialty dependent on the patients history. Endocrine advice is available by choosing 'Advice and Guidance' from NHS e-Referrals.
- Symptomatic patients tend to have more profound hypomagnesaemia (often <0.30 mmol/L) with concomitant hypokalaemia and hypocalcaemia. Consider referral to Emergency Medicine in these cases.

## Treatment

Treatment of severe hypomagnesaemia is usually intravenous, and should always be carried out in hospital. Intramuscular magnesium injections are very painful and are not recommended.

### *Oral administration*

This is used for chronic magnesium loss or moderately severe hypomagnesaemia i.e. where there is a serum magnesium level of approximately 0.4 - 0.7mmol/L and patients are asymptomatic. Give up to 50 mmol/L day.

Suggested initial treatment is;

- Mucogel 10-20 mL qds (10mL Mucogel = 6.6mmol Mg)

During oral replacement monitor response by rechecking magnesium 1-2 weekly initially depending on clinical context. Reversal of hypomagnesaemia with oral replacement may take 6-8 weeks. Long term maintenance replacement may be needed if a reversible cause is not found and removed. In these circumstances, aim to maintain normal serum magnesium using the lowest effective dose of oral replacement.

Diarrhoea tends to limit the amount of magnesium that can be given orally; if diarrhoea develops reduce the dose. The aluminium contained in Mucogel may reduce the chance of diarrhoea.

*(Note; The other product occasionally appropriate for use in this context is Magnesium glycerophosphate (1 tablet = 4mmol Mg, Dose= 1-2 tablets three to four times daily (12-32 mmol/day). This is an unlicensed medication but is available on a named patient basis. Prescription should be reserved for cases of intolerance to Mucogel.)*

***Patients with Renal Impairment should be treated with caution. Suggest obtain renal advice before commencing treatment if CKD 3 – 5.***

## **Contacts**

Duty Biochemist	01332 789383 (8am to 7pm, Mon – Fri)
On Call Consultant Biochemist	Via RDH switchboard, 01332 340131 (24/7)
Endocrinology Advice	07879 115507 (9am – 5pm, Mon – Fri)
Consultant Phone Triage	Via RDH switchboard, 01332 340131 (10am to 6pm Monday-Friday)
MAU and ACC	01332 788707 <b>OR</b>
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Reviewed by:	Date:	Expiry date:
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Dr R Stanworth, Dr P Blackwell, Mrs H Seddon	June 2016	30 <sup>th</sup> Jun 2018
Dr R Stanworth, Dr P Blackwell, Mrs H Seddon	Aug 2018	31 <sup>st</sup> Aug 2020