

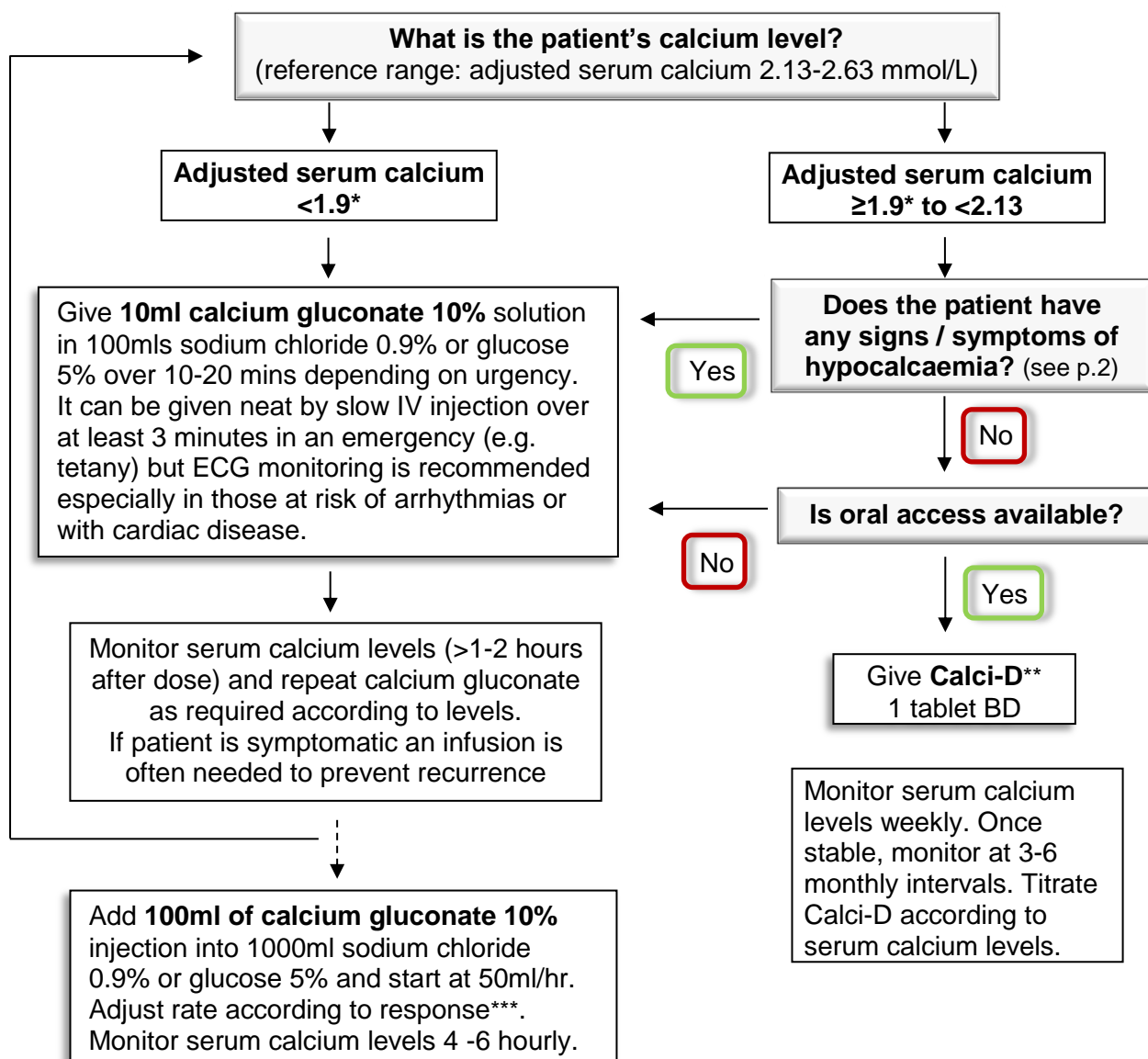
Acute Treatment of Hypocalcaemia (adults)

Limitations:

This guidance is **not** suitable for the treatment of chronic hypocalcaemia, patients with complex medical problems, renal impairment or for the treatment of hypocalcaemia post-parathyroidectomy. The dose and route of calcium to correct hypocalcaemia should be determined on an individual patient basis. There are no national UK guidelines for treatment, and practice varies across UK Hospital Trusts.

Initial Treatment¹⁻⁴

- Any underlying cause of hypocalcaemia should be investigated and corrected.
- **Low magnesium levels should be corrected first.** Without replenishing magnesium first any increase in calcium will be transient.
- Parathyroid hormone and vitamin D levels should ideally be checked before initiating treatment for hypocalcaemia.



* If patient has no IV access in place and calcium is >1.8 , asymptomatic, and is able to take an oral preparation then oral may be preferred. If calcium has fallen rapidly to <1.9 IV therapy may be a better choice.

** Calci-D contains calcium carbonate 2,500mg (1,000mg elemental calcium) and colecalciferol (Vitamin D₃) 1,000iu (25 mcg) per tablet.⁵

*** Usually 10ml/kg of this preparation will increase serum calcium by 0.3-0.5 mmol/l

Cautions/Side effects

As calcium is highly irritant it should be administered via a small needle into a large vein to avoid extravasation.⁶ Rapid administration of calcium gluconate may result in hot flushes, hypotension, bradycardia, arrhythmias and cardiac arrest.⁶ Great care is required when administering IV calcium to patients taking digoxin. Calcium enhances the effects of digoxin on the heart and may precipitate digitalis intoxication.

Oral calcium administration may lead to diarrhoea or constipation, nausea and gastric pain. Oral calcium impairs the absorption of a number of other medicines (including tetracyclines, iron and bisphosphonates) and an interval of at least three hours should be left between taking calcium and these medicines.⁷

Signs and symptoms of hypocalcaemia¹⁻⁴

Symptoms generally correlate with the magnitude and rate of fall in serum calcium. Patients in whom the onset of hypocalcaemia is gradual tend to have fewer symptoms. Symptoms may include:

- Peri-oral and peripheral paraesthesia
- Tetany, muscle cramps, Chvostek's sign (tapping over facial nerve causes facial muscles to twitch)
- Cardiac disturbances – bradycardia, arrhythmias, hypotension, prolonged QT interval
- CNS disturbances – irritability, confusion, intellectual deterioration, seizures

Causes of hypocalcaemia¹⁻⁴

- Hypoparathyroidism (congenital, autoimmune, after thyroid or parathyroid surgery)
- Vitamin D deficiency (decreased intake, malabsorption or failure of synthesis or activation), inadequate dietary calcium
- Renal disease
- Hypomagnesaemia (consider PPI associated hypomagnesaemia)
- Drugs (e.g. phenytoin, bisphosphonates, rifampicin, chemotherapy), blood transfusion, contrast dye)
- Hyperphosphataemia
- Respiratory alkalosis (increased albumin binding, relative fall in free ionised calcium)
- Acute pancreatitis (free fatty acids chelate calcium)
- Malignancy: osteoblastic metastases (e.g. breast cancer, prostate cancer), tumour lysis syndrome (following chemotherapy)

For further information please see IV drug administration guide or call Medicines Information GRH ext 6108, CGH ext 3030

References

1. Goltzman D. Treatment of hypocalcaemia. UpToDate (Wolters Kluwer Health) last reviewed May 2014
2. Hypocalcaemia. Martindale: The Complete Drug Reference 35th Ed; 2008. Accessed 19/11/14. Available from: <http://www.medicinescomplete.com>
3. Cooper M.S and Gittoes N.J.L. Diagnosis and management of hypocalcaemia. *British Medical Journal* 2008;336: 1298-1302
4. How is acute hypocalcaemia treated in adults? UKMI Medicines Q&As 373.3 prepared 9th April 2014 <https://www.evidence.nhs.uk/search?q=%22How+is+acute+hypocalcaemia+treated+in+adults%22>
5. Summary of Product Characteristics. Calci-D3®. Electronic Medicines Compendium; accessed 16/01/18. Available from: <https://www.medicines.org.uk/>
6. Summary of Product Characteristics. Calcium gluconate 10% injection Hameln Pharmaceuticals Ltd. Electronic Medicines Compendium; accessed 19/11/14. Available from <http://www.medicines.org.uk/emc/>
7. Society for Endocrinology. Acute Hypocalcaemia in adult patients 2103 Guideline 14. Accessed via www.endocrinology.org