



HYPOPARATHYROIDISM TREATMENT GUIDELINES

Management of Hypoparathyroidism: Summary Statement and Guidelines was developed by an Expert Panel of physicians and scientists and was published June 2016 in the *Journal of Clinical Endocrinology and Metabolism (JCEM)*. It summarizes current information regarding epidemiology, presentation, diagnosis, clinical features and management of Hypoparathyroidism (HPTH).

INCIDENCE

- In the USA, there are approximately 60,000–115,000 cases of HPTH.
- HPTH is estimated to occur as a post-surgical complication in 0.12–4.6% of neck surgeries.

CAUSES

- The most common cause (>75%) is post-surgical (following neck surgery).
- The second most common cause of HPTH is autoimmune disease of the endocrine glands.
- Remaining causes of HPTH include several different genetic disorders that impact PTH secretion or action.

DIAGNOSIS/ PRESENTATION

- Hallmarks of HPTH include low serum calcium (hypocalcemia) and low PTH levels.
- Urinary calcium may be increased, though it varies with calcium intake.
- Chronic postoperative HPTH is diagnosed after 6 months following neck surgery.
- Pseudo-hypoparathyroidism is associated with resistance to PTH and presents with high PTH and low serum calcium.

CLINICAL FEATURES

- Life threatening, acute symptoms include seizures, laryngospasm and cardiac arrhythmias.
- Chronic, non-life threatening symptoms include numbness, tingling, muscle cramping, cognitive difficulties (“brain fog”), and a prolonged QT seen on electrocardiogram (EKG).
- Chronic hypocalcemia and hyperphosphatemia (elevated phosphate levels) may lead to increased risk of soft tissue calcifications and kidney stones.
- Bone mineral density is typically higher than average. Low bone turnover is characteristic, causing dense bone that may still be prone to fracture.
- In treated HPTH patients, higher urine calcium levels (hypercalciuria) are seen, due to large doses of calcium and active vitamin D needed.
- Other complications that have been seen include serious infection, cardiovascular disease, cataracts, and fracture of the upper extremities.

GUIDELINES FOR DIAGNOSIS AND EVALUATION

- Diagnosis is established by measurement of low albumin-corrected serum calcium or low ionized calcium level and low or undetectable levels of PTH on at least 2 occasions (separated by at least 2 weeks).
- Additional evaluation should include basic metabolic panel, 25-hydroxyvitamin D, 1,25-dihydroxyvitamin D, 24-hour urinary calcium excretion, estimated or calculated glomerular filtration rate (GFR), and specialized biochemical stone risk profile (additional urine studies), if the clinical situation warrants.
- Imaging studies may be done to evaluate bone mineral density, basal ganglia calcifications and kidney stones.
- Genetic studies should be considered if the patient's history suggests a genetic basis (e.g., young age, positive family history of HPTH, multiple autoimmune features).
- Historical evaluation should include personal history of neck surgery, family history, gastrointestinal (GI) symptoms, kidney stones, fractures, general QOL, medications and supplements.
- Physical examination should include exam of eyes for cataracts, front of neck for previous surgical scars, signs of neuromuscular irritability (Chvostek's and Trousseau's signs), nail beds and skin for fungal infections and vitiligo (a type of patchy, depigmented skin suggesting autoimmunity), and joint range of motion.

MANAGEMENT OF HYPOPARATHYROIDISM

- Six goals of chronic management:
 1. To prevent signs and symptoms of hypocalcemia
 2. To maintain the serum calcium slightly below normal or low-normal (no more than 0.5 mg/dl below normal range)
 3. To maintain the Ca x phos product less than 55 mg²/dl²
 4. To avoid hypercalciuria
 5. To avoid hypercalcemia (high serum calcium levels)
 6. To avoid renal and other soft tissue calcifications
- Chronic treatment of hypocalcemia includes use of calcium supplements and active vitamin D. Thiazide diuretics may be used to manage hypercalciurea
- Urgent management of severe acute hypocalcemia requires intravenous (IV) calcium
- During adjustments to calcium and/or active vitamin D, serum calcium should be measured at least weekly or monthly, depending on clinical situation and in stable patients, the serum calcium should be measured, on average, twice a year.
- In those with tendency to become hypercalciuric, 24-hour urine calcium should be measured at least annually.
- If serum phosphorus is well above normal (i.e., >6.5 mg/dl) phosphate binders and/or low-phosphorus diets employed.
- PTH replacement therapies include Forteo® (off-label in the US for HPTH) and Natpara® (indicated for HPTH that is not well-controlled on calcium and active vitamin D)