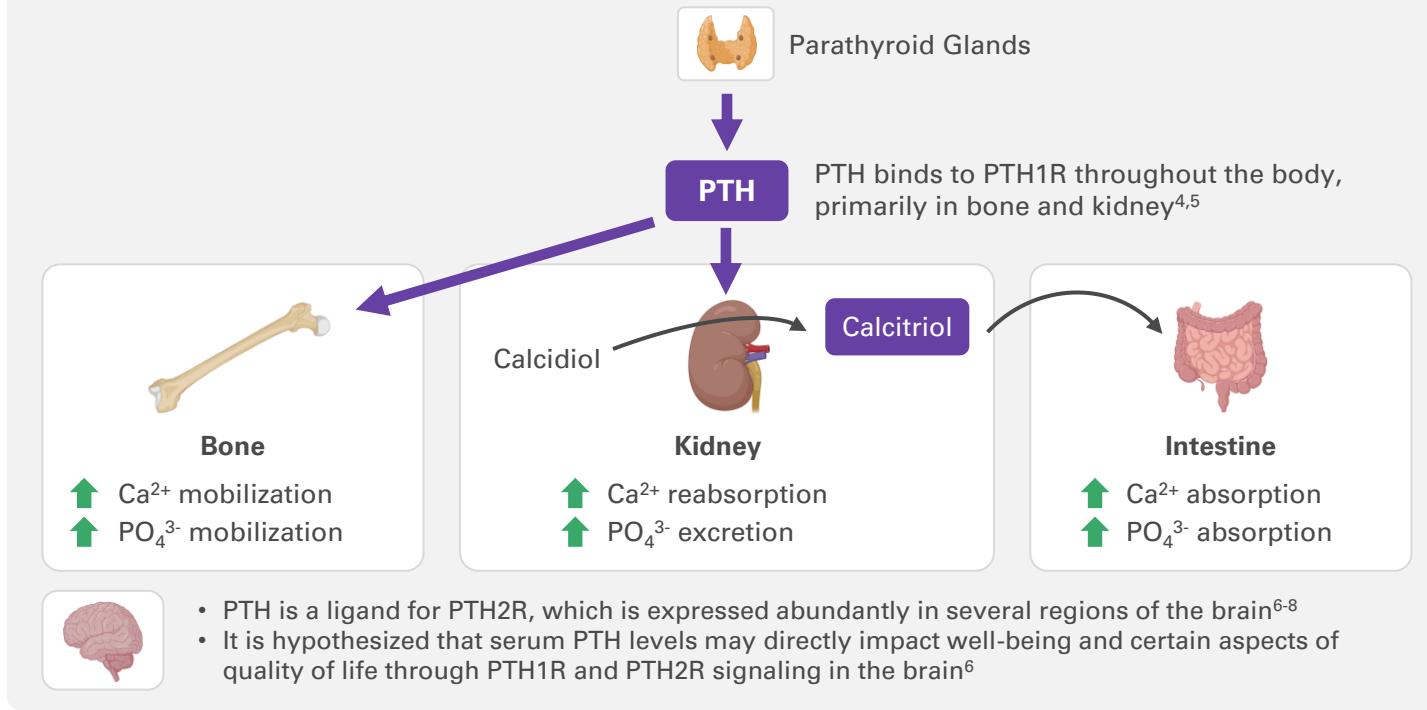


Hypoparathyroidism

Parathyroid Hormone (PTH) Physiology

PTH is the primary regulator of serum calcium and phosphate balance, acting directly on bone and kidney, and indirectly on the intestine¹⁻³



Hypoparathyroidism Introduction

Hypoparathyroidism is an endocrine disease caused by insufficient levels of PTH⁹



Diagnosis

Hypoparathyroidism is diagnosed when serum PTH levels are low or insufficient in the presence of hypocalcemia, confirmed twice at least 2 weeks apart.^{1,16} Elevated serum phosphate, reduced calcitriol, and elevated urinary FECa support diagnosis.^{2,16} Hypoparathyroidism may be considered chronic if it persists > 6 months after surgery^{1,17-18}

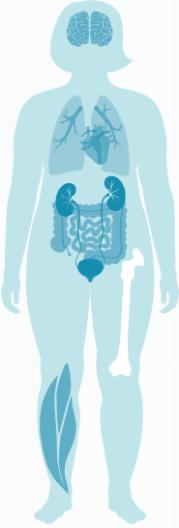
Abbreviations: Ca²⁺, ionized calcium; FECa, fractional excretion of calcium; PO₄³⁻, orthophosphate; PTH1R, PTH 1 Receptor; PTH2R, PTH 2 Receptor

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Hypoparathyroidism

Clinical Presentation

Individuals with hypoparathyroidism may experience a range of severe and potentially life-threatening short-term and long-term complications¹⁻¹¹

Neuro-psychiatric	Anxiety & Depression, Cognitive Impairment ("Brain Fog")		Ophthalmological
CNS	Seizures, Basal Ganglia Calcifications, Parkinsonism or Dystonia		Dental
Renal^a	Nephrocalcinosis, Nephrolithiasis, Chronic Kidney Disease		Cardiovascular
PNS	Paresthesia, Muscle Cramps, Pain, Tetany		Respiratory
Derm-atological	Dry skin, Brittle Nails, Thinning Hair		Musculoskeletal

The burden of hypoparathyroidism negatively impacts HRQoL, irrespective of serum calcium levels, as well as physical functioning and psychological well-being^{12,13}

Management of Hypoparathyroidism

Conventional Therapy (Active Vitamin D and Calcium) for Hypoparathyroidism

- Conventional therapy aims to alleviate hypocalcemia, but does not address insufficient PTH levels¹⁴
- High doses of active vitamin D and calcium may lead to hypercalciuria and predispose individuals with hypoparathyroidism to nephrolithiasis, nephrocalcinosis, and the development of chronic kidney disease^{2,9}
- Individuals with hypoparathyroidism receiving conventional therapy may still report reduced QoL and experience impaired physical functioning and well-being^{8,15,16}

PTH Therapy Considerations from the 2022 Guidelines from the Second International Workshop

- Consider the use of PTH when individuals with hypoparathyroidism are inadequately controlled with conventional therapy. Inadequate control of hypoparathyroidism is considered any one of the following: symptomatic hypocalcemia, hyperphosphatemia, renal insufficiency, hypercalciuria, or poor QoL¹⁷
- Individuals with hypoparathyroidism with poor compliance, malabsorption, or intolerance of large doses of active vitamin D and calcium may benefit from PTH therapy¹⁷

^aRenal complications occurring in hypoparathyroidism are primarily attributed to use of conventional therapy rather than the disease itself³

Abbreviations: CNS, central nervous system; PNS, peripheral nervous system; PTH, parathyroid hormone; HRQoL, health-related quality of life

References: 1. Shoback DM, et al. *Clin Endocrinol Metab*. 2016; 2. Brandi ML, et al. *J Clin Endocrinol Metab*. 2016; 3.

Mannstadt M, et al. *Nat Rev Dis Primers*. 2017; 4. Brod M, et al. *Patient*. 2020; 5. Rubin MR, et al. *J Endocr Soc*. 2022; 6.

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