

Parathyroid hormone; PTH

Pseudonyms: parathormone; parathyrin

Parathyroid hormone (PTH) is a key hormone modulating calcium and phosphate homeostasis. The control of serum ionised calcium concentration is mediated by PTH through stimulation of renal tubular calcium reabsorption and bone resorption. PTH also stimulates the conversion of 25-hydroxyvitamin D to active 1,25-dihydroxyvitamin D in renal tubular cells, thereby stimulating intestinal calcium absorption as well as bone turnover. Its release from the chief cells of the parathyroid gland requires magnesium (Mg).

PTH is used for the investigation of abnormalities of calcium metabolism and can only be interpreted with a concomitant calcium result. PTH is used in the monitoring of chronic kidney disease and in patients with known metabolic bone disease and the investigation of osteoporosis.

General information

Collection container:

Adults – EDTA plasma (3.4mL pink top Sarstedt tube)

Paediatrics – EDTA plasma (1.2mL pink top Sarstedt tube)

Type and volume of sample: The tubes should be thoroughly mixed before transport to the lab. 1mL whole blood is required as a minimum volume.

Specimen transport/special precautions:

Samples should ideally be received in the laboratory within 4 hours of collection.

Samples should not be taken from patients receiving therapy with high biotin doses (i.e. > 5 mg/day) until at least 8 hours following the last biotin administration.

Laboratory information

Method principle:

Intact PTH is analysed on the automated instruments by a 2 site immunoassay with electrochemiluminescence detection.

Biological reference range: 1.6-6.9 pmol/L

Turnaround times: Results should be available the same working day.

A request can be added on for this test to a separated plasma sample collected no older than 5 days.

Clinical information

Factors known to significantly affect the results: Intact PTH assays show some cross-reactivity with the 7-84 fragment of PTH, found in higher concentrations in patients with chronic kidney disease, due to reduced renal clearance.

Clinical decision points: A raised PTH, with corresponding high calcium concentration indicates primary hyperparathyroidism. A PTH result within the reference range with hypercalcaemia is consistent with primary hyperparathyroidism as this is inappropriately high for the raised calcium concentration. Benign hypocalciuric hypercalcaemia should also be excluded.

High PTH concentrations in the presence of hypocalcaemia indicate secondary hyperparathyroidism and can be found in chronic kidney disease or vitamin D deficiency.

Low PTH concentrations, or a PTH within the reference range, with corresponding hypocalcaemia are consistent with hypoparathyroidism, vitamin D or Mg deficiency.

(Last updated September 2020)