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## Overview

### Useful For

Discriminating thyroid tissue from enlarged parathyroid glands

Facilitating parathyroid localization prior to surgery

An adjunct to cytology examination of fine-needle aspiration specimens to confirm or exclude presence of parathyroid tissue in the biopsied area.

### Highlights

Measurement of parathyroid hormone (PTH) in fine-needle aspiration biopsy (FNAB) washings could be used to discriminate thyroid tissues from enlarged parathyroid glands and also to facilitate parathyroid localization prior to surgery.

This test is best used as an adjunct to cytology examination to confirm or exclude the presence of parathyroid tissue in the biopsied area.

PTH values of 100 pg/mL and above are suggestive of the presence PTH-secreting tissue at the site biopsied or along the needle track.

### Method Name

Electrochemiluminescence Immunoassay

### NY State Available

Yes

## Specimen

### Specimen Type

Fine Needle Wash

### Shipping Instructions

Send specimen frozen to Mayo Clinic Laboratories for analysis.

### Necessary Information

The biopsied site of each specimen must be clearly identified in LIS and/or batch sheet.

### Specimen Required

**Patient Preparation: For 12 hours before this procedure do not take multivitamins or dietary supplements containing**

biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

**Collection Container/Tube:** Plain, plastic, screw-top tube

**Specimen Volume:** 1 to 1.5 mL

**Collection Instructions:**

1. Needle wash specimens for analysis should be collected in conjunction with cytology specimens.
2. Have saline available prior to start of procedure. Saline is the only acceptable solution for needle washings.
3. After each fine-needle aspiration biopsy (FNAB) has been collected and the material in the needle has been expelled onto a slide for cytologic analysis, attach the used FNAB needle to an empty syringe.
4. Withdraw between 0.10 mL and 0.25 mL of saline up through the needle until the saline starts to fill the hub of the needle or end of the syringe.
5. Expel this fluid back through the needle into a separate plastic aliquot tube. This is the needle washing used for analysis.
6. Repeat steps 2 through 4 for each needle pass of the same biopsied site and empty into the same tube, accumulating a total of 0.5 mL to 1.5 mL of fluid to send to the laboratory. (If more than 1 site is biopsied, see Additional Information)
7. Inspect specimen for visible blood or tissue contamination:
  - a. If bloody, centrifuge specimen and transfer supernatant to a new plastic aliquot tube (5-mL standard tube) to send to laboratory. The supernatant, not the cellular material, is used for analysis.
  - b. If specimen is clear, centrifugation is not necessary.
8. Freeze within 2 to 4 hours of collection.

**Additional Information:**

1. If more than 1 site is biopsied, each washing material should be submitted on a separate tube and under a different order number.
2. A minimum of 0.5 mL is required for testing; however, the total collection volume should not exceed 1.5 mL. Sample volumes outside these parameters may be rejected.
3. **Do not send saline control. This test has been validated to rule-out saline matrix effect.**

**Specimen Minimum Volume**

1 to 1.5 mL

**Reject Due To**

Gross hemolysis	Reject
Gross icterus	Reject

**Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Fine Needle Wash	Frozen (preferred)	30 days	
	Refrigerated	4 hours	

**Clinical & Interpretive**

**Clinical Information**

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Parathyroid hormone (PTH) is produced and secreted by the parathyroid glands, which are located along the posterior aspect of the thyroid gland. PTH analysis in rinse material obtained from fine-needle aspiration biopsies (FNAB) has gained popularity to discriminate thyroid tissues from enlarged parathyroid glands and to also facilitate parathyroid localization prior to surgery. Various groups have reported on the utility of this technique with specificity of 91% to 100% and sensitivity of 82% to 100%. Measuring PTH in the rinse material proved to be very useful in cases of nondiagnostic cytology. Comparing the results of the PTH rinse material with serum PTH is highly recommended. An elevated PTH in the serum could falsely elevate PTH in the washings if the rinse is contaminated with blood. In these cases, only PTH values significantly higher than the serum should be considered as true positives.

Cytologic examination and measurement of PTH can be performed on the same specimen. To measure PTH, the fine-needle aspirate (FNA) needle is rinsed with a small volume of normal saline solution immediately after a specimen for cytological examination has been expelled from the needle for a smear or CytoTrap preparation. Specimen collection is critical for the performance of the assay and the needle should be rinsed with a minimal volume. Each FNA needle from a single biopsied area is washed with 0.1 to 0.5 mL of normal saline. The washes from a single area are pooled (final volume 0.5-1.5 mL). PTH levels are measured in the saline wash.

**Reference Values**

An interpretive report will be provided.

**Interpretation**

Parathyroid hormone (PTH) values less than 100 pg/mL suggest the biopsied site does not contain PTH-secreting tissue.

PTH values greater than or equal to 100 pg/mL are suggestive of the presence PTH-secreting tissue at the site biopsied or along the needle track. This result is dependent on accurate sampling and a total needle wash volume between 0.5 and 1.5 mL.

This test should be interpreted in the context of the clinical presentation, imaging, and cytology findings.

If the results are discordant with the clinical presentation, a sampling error at the time of the biopsy should be considered.

**Cautions**

Samples should not be taken from patients receiving therapy with high biotin or vitamin B7 doses (ie, >5 mg/day) until at least 12 hours following the last biotin administration.

This test cannot distinguish between benign and malignant parathyroid tissue.

Immunometric assays can, in rare occasions, be subject to interferences such as "hooking" at very high analyte concentrations (false-low results) and heterophilic antibody interference (false-high results). If the clinical picture does not fit the laboratory result, these possibilities should be considered.

Results are dependent on accurate sampling and a maximum needle wash volume of 1.5 mL or less.

While the needle washes from several distinct needle passes or aspirations from a single area should be pooled, biopsies from different areas should be submitted as separate specimens.

**Clinical Reference**

1. Bancos I, Grant CS, Nadeem S, et al: Risks and benefits of parathyroid fine-needle aspiration with parathyroid hormone washout. *Endocr Pract.* 2012 Jul-Aug;18(4):441-449
2. Ketha H, Lasho MA, Algeciras-Schimnich A: Analytical and clinical validation of parathyroid hormone (PTH) measurement in fine-needle aspiration biopsy (FNAB) washings. *Clin Biochem.* 2016 Jan;49(1-2):16-21
3. Trimboli P, D'Aurizio F, Tozzoli R, Giovanella L: Measurement of thyroglobulin, calcitonin, and PTH in FNA washout fluids. *Clin Chem Lab Med.* 2017 Jun;55(7):914-925

**Performance****Method Description**

The saline needle-wash specimen is analyzed with the Roche Diagnostics Elecsys PTH reagent. The Roche cobas assay for determining intact parathyroid hormone (PTH) employs a sandwich test principle in which a biotinylated monoclonal antibody reacts with the N-terminal fragment (1-37) and a monoclonal antibody labeled with a ruthenium complex(a) reacts with the C-terminal fragment (38-84). Application of a voltage to the electrode then induces chemiluminescent emission, which is measured by a photomultiplier. The antibodies used in this assay are reactive with epitopes in the amino acid regions 26-32 and 37-42.(Package insert: Roche Elecsys PTH, Roche Diagnostics; 12/2020)

For all samples with high concentrations of PTH, a dilution series is performed. A linear dilution excludes hooking and most major interferences. Samples that contain low PTH concentrations are spiked with exogenous PTH to identify possible interferences that may cause a false-low result.

**PDF Report**

No

**Day(s) Performed**

Monday through Friday

**Report Available**

1 to 3 days

**Specimen Retention Time**

12 months

**Performing Laboratory Location**

Rochester

**Fees & Codes****Fees**

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- Authorized users can sign in to [Test Prices](#) for detailed fee information.
  - Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
  - Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

**Test Classification**

This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

**CPT Code Information**

83970

**LOINC® Information**

Test ID	Test Order Name	Order LOINC® Value
PTHFN	PTH, FNAB, Needle Wash	88106-0

Result ID	Test Result Name	Result LOINC® Value
PTHF	PTH, FNAB, Needle Wash	88106-0
SITEA	Site	39111-0