

**National Health and Nutrition
Examination Survey 2005–2006**

**Documentation, Codebook,
and Frequencies**

Parathyroid Hormone

Laboratory

**Survey Years:
2005 to 2006**

**SAS Transport File:
PTH.XPT**



January 2008

NHANES 2005–2006 Data Documentation

Laboratory Assessment: Parathyroid Hormone

(PTH_D)

First Published: January 2008

Last Revised: N/A

Component Description

Parathyroid Hormone (PTH)

Evaluation of bone mineral status will utilize an evaluation of vitamin D status based on two analytes: serum 25-hydroxyvitamin D and parathyroid hormone (PTH). Vitamin D is essential for active intestinal calcium absorption and plays a central role in maintaining calcium homeostasis and skeletal integrity. In addition, vitamin D has recently been linked to other non-skeletal conditions of public health significance, such as hypertension and cancer. Vitamin D is derived mainly from cutaneous synthesis in the presence of ultraviolet sunlight, whereas dietary intake constitutes a minor fraction. Serum 25(OH D) is the best indicator of vitamin D status. It is converted in the kidney, stimulated by PTH, to the hormonally active metabolite 1,25-dihydroxyvitamin D [1,25 (OH)2D]. Serum PTH concentration is a very sensitive indicator of calcium homeostasis and vitamin D deficiency. The inclusion of this measure to the NHANES laboratory protocol will increase the usefulness of the vitamin D measurement in evaluating vitamin D status, particularly as it relates to skeletal status. The inclusion of both of these markers in the NHANES survey will provide a more complete picture of vitamin D status.

Eligible Sample

Participants aged 6 years and older.

Description of Laboratory Methodology

The Elecsys 1010 analyzer is a fully automatic run-oriented analyzer system for the determination of immunological tests using the ECL/Origen electrochemiluminescent process. All components and reagents for routine analysis are integrated in or on the analyzer. Parathyroid hormone is measured on the Elecsys 1010 using a sandwich principle.

- 1st incubation: 50 µl sample, a biotinylated monoclonal PTH-specific antibody and monoclonal PTH-specific antibody labeled with a ruthenium complex form a sandwich complex.
- 2nd incubation: After addition of streptavidin-labeled microparticles, the complex produced is bound to the solid phase via biotin-

streptavidin interaction.

- The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with ProCell. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier.
- Results are determined via a calibration curve. This curve is instrument-specifically generated by a 2-point calibration and a master curve provided via the reagent barcode.
- Total duration of assay is 9 minutes on the Elecsys 1010.

Parathyroid hormone (PTH) is an 84 amino acid peptide produced by the parathyroid gland. Since the PTH molecule undergoes extensive proteolytic modifications, human serum contains both the intact molecule and several fragments. The biologically active N-terminal fragment has a half-life of only a few minutes. The secretory activity of the parathyroid gland can be determined by the selective measurement of the (mainly) intact parathyroid hormone. This Elecsys 1010 method is for the in vitro quantitative determination of intact parathyroid hormone in human serum and plasma. Together with vitamin D and calcitonin, PTH brings about the mobilization of calcium and phosphate from the skeletal system and increases the uptake of calcium in the intestine and the excretion of phosphate via the kidneys. Secretion of PTH is inhibited by high calcium concentrations and is promoted by low calcium concentrations. The ratios of intact hormone to peptide fragments may vary from individual to individual as well as between patients with hyperparathyroidism or chronic renal failure. The concentration of metabolically inactive PTH fragments increases in renal failure.

There were no changes to the equipment, lab method, or lab site from the previous 2 years.

A detailed description of the laboratory method used can be found on the NHANES website.

Data Processing and Editing

Blood specimens are processed, stored and shipped to University of Washington, Seattle, WA. Detailed specimen collection and processing instructions are discussed in the NHANES LPM. Read the LABDOC file for detailed data processing and editing protocols. The analytical methods are described in the Analytic methodology section.

There were no derived variables in this file.
Detailed instructions on specimen collection and processing can be found on the NHANES website.

**Analytic
Notes**

The analysis of NHANES 2005–2006 laboratory data must be conducted with the key survey design and basic demographic variables. The NHANES 2005–2006 Household Questionnaire Data Files contain demographic data, health indicators, and other related information collected during household interviews. They also contain sample weights for these age groups. The phlebotomy file includes auxiliary information such as the conditions precluding venipuncture. The household questionnaire and phlebotomy files may be linked to the laboratory data file using the unique survey participant identifier SEQN.

References

N/A

NCHS Locator Fields

Title: Parathyroid Hormone (PTH)

Contact Number: 1-866-441-NCHS

Years of Content: 2005–2006

First Published: January 2008

Revised: N/A

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Parathyroid Hormone (PTH)

Record Source: NHANES 2005–2006

Survey Methodology: NHANES 2005–2006 is a stratified multistage probability sample of the civilian non-institutionalized population of the U.S.

Medium: NHANES Web site; SAS transport files

**National Health and Nutrition Examination Survey
Codebook for Data Production (2005-2006)**

**Laboratory Section:
Parathyroid Hormone (PTH_D)**

January 2008



SEQN	Target
	B(6 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	Respondent sequence number
English Text: Respondent sequence number.	
English Instructions:	

LBXPT21	Target
	B(6 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	Parathyroid Hormone(Elecys method) pg/mL
English Text: Parathyroid Hormone(Elecys method) pg/mL	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
9 to 491	Range of Values	7331	7331	
6.36	At or below detection limit fill value	15	7346	
.	Missing	740	8086	