National Health and Nutrition Examination Survey 2005–2006

Documentation, Codebook, and Frequencies

Urinary Albumin and Urinary Creatinine

Laboratory

Survey Years:
2005 to 2006

SAS Transport File:
ALB_CR_D.XPT

November 2007

NHANES 2005–2006 Data Documentation

Laboratory Assessment: Urinary Albumin and Urinary Creatinine (ALB_CR_D)

First Published: November 2007 **Last Revised:** N/A

Component Description

Urinary albumin is measured. Related survey questionnaire data include information on analgesic product use and incontinence. Urinary creatinine is measured. Urine creatinine concentrations from these specimens have been used (instead of a 24-hour volume correction) to correct for the degree of dilution or concentration of some of the urine analytes, such as the phenols or microalbumin.

Eligible Sample

Participants aged 6 years and older.

Description of Laboratory Methodology

Urinary albumin

A solid-phase fluorescent immunoassay for the measurement of human urinary albumin is described by Chavers et al. (1). The fluorescent immunoassay is a non-competitive, double-antibody method for the determination of human albumin in urine. Antibody to human albumin is covalently attached to derivatized polyacrylamide beads. The solid-phase antibody is reacted with a urine specimen, and the urine albumin-antigen complexes with the solid-phase antibody. This complex then reacts with fluorescein-labeled antibody. The unattached fluorescent antibody is then removed by washing during centrifugation. The fluorescence of the stable solid-phase antibody complex is determined with a fluorometer; the fluorescence is directly proportional to the amount of urine albumin present. The standard curve is 0.5–20 µg/mL of albumin.

Increased microalbuminuria is a sign of renal disease and may be predictive of nephropathy risk in patients with insulin-dependent diabetes. Results of the fluorescent immunoassay (FIA) are reproducible, and the test is accurate and sensitive for the detection of human urinary albumin excretion. It is especially useful for the measurement of low levels of urinary albumin not detectable by dipstick methods. The FIA assay resembles the radio-immunoassay (RIA) in technique and sensitivity without the potential health hazards associated with the handling of isotopes in the laboratory (1).

Urinary Creatinine

Creatinine analysis uses a Jaffé rate reaction, in which creatinine reacts with picrate in an alkaline solution to form a red creatinine-picrate complex. The reaction is measured with a CX3 analyzer. The rate of the color development is measured 25.6 sec after sample injection at 520 and 560 nm. The rate difference between the two wavelengths is proportional to the concentration of creatinine in the reaction cup. The procedures described below are the standard protocols of the Fairview University Medical Center (2–6).

Creatinine, the waste product derived from creatine, is released into the plasma at a relatively constant rate. The amount of creatinine per unit of muscle mass is constant; therefore, creatinine is the best indicator of impaired kidney function.

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.

Laboratory Quality Control and Monitoring

The NHANES quality control and quality assurance protocols (QA/QC) meet the 1988 Clinical Laboratory Improvement Act mandates. Detailed quality control and quality assurance instructions are discussed in the NHANES Laboratory/Medical Technologists Procedures Manual (LPM). Read the LABDOC file for detailed QA/QC protocols.

A detailed description of the quality assurance and quality control procedures can be found on the NHANES website.

Data Processing and Editing

Urine specimens are processed, stored and shipped to University of Minnesota, Minneapolis, MN. 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.

Randomly collected or “spot” urine specimens were collected by clean-catch technique into sterile 250-mL polyethylene containers (from a large production lot, previously prescreened for trace element contamination.

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 Questionnaire Data Files contain demographic data, health indicators, and other related information collected during household interview and MEC examination. 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

1. Chavers BM, Simonson J, Michael AF. A solid-phase fluorescent immunoassay for the measurement of human urinary albumin. Kidney Int. 1984;25:576–578.
2. Creatinine Measurement Module Operating and Service Instructions, Beckman ASTRA. Brea (CA): Beckman Instruments, Inc., 1979.
3. Operating and Service Instructions, Beckman ASTRA. Brea (CA): Beckman Instruments, Inc., 1986.
4. Maintenance Guide, Beckman ASTRA. Brea (CA): Beckman Instruments, Inc., 1982.
5. Tietz NW, editor, Textbook of Clinical Chemistry. Philadelphia: WB Saunders Company, 1986;775–1392.
6. Kaplan LA, Pesce AJ, editors, Clinical Chemistry Theory, Analysis and Correlation. St. Louis: CV Mosby Company, 1984:416–1261.

Locator Fields

Title: Urinary Albumin and Creatinine

Contact Number: 1-866-441-NCHS

Years of Content: 20053–2006

First Published: November 2007

Revised: N/A

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Urinary Albumin and Creatinine

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:
Urinary Albumin and Urinary Creatinine (ALB_CR_D)

November 2007

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

URXUMA	Target
	B(6 Yrs. to 150 Yrs.)
Hard Edits	**SAS Label**
	Albumin, urine (ug/mL)
English Text: Albumin, urine (ug/mL)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.3 to 14170	Range of Values	7832	7832	
0.21	At or below detection limit fill value	11	7843	
.	Missing	243	8086	

URXUMS	Target
	B(6 Yrs. to 150 Yrs.)
Hard Edits	**SAS Label**
	Albumin, urine (mg/L)
English Text: Albumin, urine (mg/L)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.3 to 14170	Range of Values	7832	7832	
0.21	At or below detection limit fill value	11	7843	
.	Missing	243	8086	

URXUCR	Target
	B(6 Yrs. to 150 Yrs.)
Hard Edits	**SAS Label**
	Creatinine, urine (mg/dL)
English Text: Creatinine, urine (mg/dL)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
5 to 678	Range of Values	7844	7844	
.	Missing	242	8086	

URXCRS	Target
	B(6 Yrs. to 150 Yrs.)
Hard Edits	**SAS Label**
	Creatinine, urine (umol/L)
English Text: Creatinine, urine (umol/L)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
442 to 59935	Range of Values	7844	7844	
.	Missing	242	8086	