NHANES III Data Documentation

Laboratory Assessment: NHANES III Surplus Sera – Antibody to Pertussis Toxin

Years of Coverage: 1991–1994 (Phase 2) **First Published:** July 2005 **Last Revised:** N/A

Component Description

Pertussis antitoxin testing of stored sera specimens from Phase 2 (1991–1994) of NHANES III was conducted to examine the distribution of immunoglobulin g (IgG) levels against three Bordatella pertussis antigens (pertussis toxin [PT], filamentous hemagglutinin [FHA], and fimbria types 2 and 3 [FIM]) to determine population-based antibody levels for the purpose of establishing diagnostic cut points for a proposed serologic test to pertussis.

Eligible Sample

Participants aged 6–49 years from Phase 2 of NHANES III with stored sera (N = 6,040).

Description of Laboratory Methodology

IgG against PT, FHA, and FIM in serum were measured by ELISA methods (1) at Vanderbilt University Medical Center. Antibody levels were quantitated with respect to a reference serum sample that was calibrated against the U.S. Reference Pertussis Serum, Human Lot 3 (HRP3).The lower limit of quantitation (LLQ) was determined to be 20 EU (ELISA units/ml) (2). The diagnostic cut-off of anti-PT IgG was ≥94 EU (2). The cut-off has a diagnostic sensitivity of 80% and a specificity of 93%.

Laboratory Quality Control and Monitoring

See Ref. 2 for details on quality control for these data.

Data Processing and Editing

Data was received after all the antitoxin testing was complete. The data on these results were not edited.

Data Access: All data are publicly available.

See Ref. 2 to see complete description of the antigens included in the data file.

Analytic Notes

There are four variables in the pertussis antitoxin file:

SEQN: Survey participant identifier

PTPTX: Pertussis toxin

PTPFHA: Pertussis filamentous hemagglutinin

PTPFIM: Pertussis fimbria types 2 and 3

Missing results are due to quality control issues during testing. All antibody levels are reported in EU. These variables are available on Phase 2 participants. Please use "wtpfhx2" examination weights in all data analyses.

References

1. Meade BD, Deforest D, Edwards KM, *et al*. Description and evaluation of serologic assays used in a multicenter trial of acellular pertussis vaccines. Pediatrics. 1995;96:570–575.

2. Baughman AL, Bisgard KM, Edwards KM, *et al*. Establishment of diagnostic cutoff points for levels of serum antibodies to pertussis toxin, filamentous hemagglutinin, and fimbriae in adolescents and adults in the United States. Clin Diagn Lab Immunol. 2004;11:1045–1053.

Locator Fields

Title: Pertussis antitoxin

Contact Number: 1-866-441-NCHS

Years of Content: 1991–1994

First Published: July 2005

Revised: N/A

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Pertussis antitoxin

Record Source: NHANES 2003–2004

Survey Methodology: NHANES 2003–2004 is a stratified multistage probability sample of the civilian non-institutionalized population of the U.S.

Medium: NHANES Web site; SAS transport files