National Health and Nutrition Examination Survey 2003-2004

Documentation, Codebook, and Frequencies

Laboratory Component:
Hepatitis B Surface Antibody

Survey Years:
2003 to 2004

SAS Export File:
L02HBS_C.XPT

First Published: May 2008
Last Revised: June 2008

NHANES 2003–2004 Data Documentation

Laboratory Assessment: Laboratory 2-Hepatitis B surface antibody (l02HBS_C)

First Published: May 2008 **Last Revised:** June 2008

Component Description

Hepatitis viruses constitute a major public health problem because of the morbidity and mortality associated with the acute and chronic consequences of these infections. New immunization strategies have been developed to eliminate the spread of hepatitis B virus (HBV) and hepatitis A virus (HAV) in the United States. Recommendations have also been developed for the prevention and control of hepatitis C virus (HCV) infection. Because of the high rate of asymptomatic infection with these viruses, information about the prevalence of these diseases is needed to monitor prevention efforts. By testing a nationally representative sample of the U.S. population, NHANES will provide the most reliable estimates of age-specific prevalence needed to evaluate the effectiveness of the strategies to prevent these infections. In addition, NHANES provides the means to better define the epidemiology of other hepatitis viruses. NHANES testing for markers of infection with hepatitis viruses will be used to determine secular trends in infection rates across most age and racial/ethnic groups, and will provide a national picture of the epidemiologic determinants of these infections

Eligible Sample

All participants aged 2 years and older are eligible to be tested.

Description of Laboratory Methodology

The AUSAB EIA for anti-HBs uses the “sandwich principle” a solid phase enzyme-linked immunoassay technique (1, 2) to detect anti-HBs levels in serum or plasma. Polystyrene beads coated with human Hepatitis B Surface Antigen (HBsAg) are incubated with either the patient specimen or the appropriate controls.

During incubation, antibody, if present, is immunologically coupled to the solid phase antigen. After removal of the unbound material and washing of the bead, human HBsAg tagged with biotin (B-HBsAg) and rabbit anti-biotin, conjugated with horseradish peroxidase (anti-H-HRPO), are incubated with the antibody-antigen complex on the beads. The biotinylated surface antigen binds to this complex crating an antigen-antibody-antigen “sandwich”. The anti-biotin horseradish peroxidase binds to the biotin component of the “sandwich”, forming a sold phase network. Unbound conjugates are removed and the beads

are washed. Next, o-Phenylenediamine (OPD) solution containing hydrogen peroxide is added to the bead, and after incubation, a yellow color develops in proportion to the amount of anti-HBs which is bound to the bead. Within limits, the greater the amount of antibody in the sample, the higher the absorbance. The enzyme reaction is stopped by the addition of acid. The absorbance of controls and specimens is determined using a spectrophotometer with wavelength set at 492 nm. Testing for anti-HBs can be useful for: a) evaluating the recovery and prognosis of patents infected with HBV, b) screening for potential vaccine recipients, and c) epidemiologic factors associated with transmission of HBV. The detection of anti-HBs is indicative of a prior immunologic exposure to the antigen or vaccine.

The anti-HBs standards contained in the AUSAB quantitation panel kit are assayed with the AUSAB EIA for the quantitative determination of anti-HBs in human serum or plasma. The concentration of anti-HBs expressed in milli-international units per mL (mIU/mL) is determined by comparison with a standard curve generated from measurement of the standards run in duplicate with the AUSAB EIA kit. A curve is obtained by plotting the anti-HBs concentration of the standard vs. the absorbance. The anti-HBs concentration of specimens run concurrently with the standards can then be read from the curve. Specimens with values above the highest standard can be diluted with the specimen dilution buffer and retested. For the purposes of this study, samples with an absorbance above the highest standard curve will not be diluted, but reported out as > 150 mIU/mL.

Laboratory Quality Control and Monitoring

The NHANES quality assurance and quality control (QA/QC) protocols 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

Blood specimens are processed, stored, and shipped to the Division of Viral Hepatitis, National Center for Infectious Diseases, National Centers for Disease Control and Prevention. 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 Description of Laboratory

Methodology section above. Detailed instructions on specimen collection and processing can be found on the NHANES website.

Analytic Notes

The analysis of NHANES laboratory data must be conducted with the key survey design and basic demographic variables. The NHANES Household Questionnaire Data Files contain demographic data, health indicators, and other related information collected during household interviews. They also contain all survey design variables and 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

Locator Fields

Title: Hepatitis B Surface Antibody

Contact Number: 1-866-441-NCHS

Years of Content: 2003–2004

First Published: May 2008

Last Revised: June 2008

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Hepatitis B Surface Antibody

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

National Health and Nutrition Examination Survey
Codebook for Data Production (2003-2004)

Hepatitis B Surface Antibody (L02HBS_C)
Person Level Data

May 2008

SEQN	Target
	B(2 Yrs. to 150 Yrs.)
Hard Edits	**SAS Label**
	Respondent sequence number
English Text: Respondent sequence number.	
English Instructions:	

LBXHBS	Target
	B(2 Yrs. to 150 Yrs.)
Hard Edits	**SAS Label**
	Hepatitis B Surface Antibody
English Text: Hepatitis B surface antibody (anti-HBs)	
English Instructions: Hepatitis B Surface Antibody	

Code or Value	Description	Count	Cumulative	Skip to Item
1	Positive	2961	2961	
2	Negative	5032	7993	
.	Missing	854	8847	