NHANES 2001-2002 Public Release Dataset

Laboratory 17 –Toxoplasma (IgG), Toxoplasma (IgM),Toxoplasma (Dye),Toxoplasma Differential Agglutination, and Toxoplasma (Avidity)

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(2) Documentation File Name - Laboratory 17 –Toxoplasma (IgG), Toxoplasma (IgM), Toxoplasma (Dye), Toxoplasma Differential Agglutination, and Toxoplasma (Avidity)

(3) Survey Years Included in this File Release-2001-2002

(4) Component Description

Serologic tests are available to determine who has become infected with toxoplasmosis. Toxoplasma-specific IgG antibodies are detectable 1-3 weeks after infection and remain detectable for the life of the individual. Toxoplasma-specific IgM antibodies are also detectable 1-3 weeks after infection but generally decline to nil by one year after infection. The presence of both IgG and IgM is evidence for infection within the last year. The presence of IgG antibody without IgM is considered indicative of past infection. All eligible participants were tested for serum IgG and positive sera were tested for the presence of IgM. These data will be used to estimate the prevalence of toxoplasmosis in the U.S. and to determine if the rates are changing over time. Toxoplasma IgG antibody was measured in NHANES III with an overall prevalence of 22.5%.

(5) Sample Description

5.1 Eligible Sample

Participants aged 6 to 49 years were tested.

(6) Description of the Laboratory Methodology

6.1 Toxoplasma (IgG)

The presence and quantity of IgG antibodies to *Toxoplasma gondii* in the test sample were determined by performing an EIA test with Toxoplasma antigen. A standard curve was constructed using optical density readings from positive control sera wells; these readings were calibrated to WHO Toxo 60 serum and read as International Units (IU/mL). Those test samples with results *below 10 IU/mL* indicated a non-significant level of antibody; thus, they were considered to be negative, indicating no infection. Those test samples with results *greater than*

9 IU/mL were considered to be positive, indicating Toxoplasma infection at some undetermined time.

6.2 Toxoplasma (IgM)

The presence and quantity of IgM antibodies to *Toxoplasma gondii* in the test sample were determined by performing an IgM capture EIA test with Toxoplasma antigen. Results are obtained by dividing the optical density of the test sample well by the optical density of the positive standard well and multiplying the result by 100. Those test samples exhibiting ratios below 2.0 indicated a non-significant level of IgM antibody according to this technique; thus, they were considered to be negative for IgM antibodies. Those test samples with ratios equal to or greater than 2.0 were considered to be IgM positive, indicating either Toxoplasma infection within the last 2 years or a false-positive reaction.

6.3 Toxoplasma (Dye)

The presence and quantity of antibodies to *Toxoplasma gondii* in the test sample were determined by performing the Sabin-Feldman Dye Test with live Toxoplasma organisms. Test samples are diluted and mixed with dye and live organisms. If the sample dilution contains antibodies to Toxoplasma, the organisms are lysed and unable to take up the dye. The titer reported is that dilution of serum at which half of the organisms are not killed (stained) and the other half are killed (unstained). Those test samples with results less than 1:16 indicated a non-significant level of antibody; thus, they were considered to be negative, indicating no infection. Those test samples with results equal to or greater than 1:16 were considered to be positive, indicating Toxoplasma infection at some undetermined time.

6.4 Toxoplasma Differential Agglutination and Toxoplasma Differential Agglutination Interpretation

The presence and quantity of antibodies to *Toxoplasma gondii* in the test sample were determined by performing the Differential Agglutination Test with Toxoplasma organisms. Test samples are diluted; one aliquot is mixed with formalin-fixed organisms and another aliquot is mixed with methanol-fixed organisms. Agglutination titers are reported for both types of fixed organisms and the combined results are interpreted by comparison of titers.

Test samples are classified as having a nonacute pattern, an equivocal pattern, or an acute pattern. The results may be useful in determining whether the patient has an acute infection or not.

6.5 Toxoplasma (Avidity) and Toxoplasma (Avidity) IgG Interpretation

The avidity of IgG antibodies to *Toxoplasma gondii* in the test sample was determined by performing the IgG Avidity Assay with Toxoplasma organisms.

Optical density results of the test sample well are compared with and without dissociation treatment. The index is the percentage of antibodies that resist dissociation. Test samples are classified as having low, equivocal, or high avidity. The results may be useful in determining whether the patient has an acute infection or not.

(7) 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.

(8) Data Processing and Editing

Blood specimens were processed, stored and shipped to Division of Parasitic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia for analysis. Detailed specimen collection and processing instructions are discussed in the NHANES Laboratory/Medical Technologists Procedures Manual (LPM). Read the LABDOC file for detailed data processing and editing protocols. The analytical methods are described in the Description of the Laboratory Methodology section.

One derived variable (LBDTO1) was added to the file. Since the upper detection limit of the assay is 240 all values greater than 240 were recoded to 240.

(9) Data Access

All data are publicly available.

(10) Analytic Notes for Data Users

10.1 The analysis of NHANES 2001-2002 laboratory data must be conducted with the key survey design and basic demographic variables. The NHANES 2001-2002 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.

10.2 Toxoplasmosis antibody

These data are released as International Units (IU). Though the data are released as individual units the data should be analyzed qualitatively and categorized as positive = IU >=10 and negative 0-9IU.

10.3 LBDT01

This test was performed on all examinees aged 6-49 years.

10.4 LBXT02

This test was performed only if LBXT01 was equal to or greater than 10.

10.5 LBXT03, LBXT04 AND LBXT04IN

These tests were performed only if LBXTO2 was equal to or greater than 2.0.

10.6 LBXT05 AND LBXT05IN

These tests were performed only if LBXTO3 was equal to or greater than 16.