Antibody to Hepatitis B Surface Antigen (Mouse Monoclonal IgM)

Customer Service: Contact your local representative or find country specific contact information on www.abbottdiagnostics.com

Package insert instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

See REAGENTS section for a full explanation of symbols used in reagent component naming.

U.S. License No. 43

Abbott
NAME AND INTENDED USE
The ABBOTT PRISM HBsAg assay is an in vitro chemiluminescent immunoassay (ChLIA) for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma specimens. The ABBOTT PRISM HBsAg (ChLIA) is intended to screen individual human donors, including volunteer donors of whole blood and blood components, and other living donors for the presence of HBsAg. It is also intended for use in testing blood and plasma specimens to screen organ donors when specimens are obtained while the donor’s heart is still beating, and in testing blood specimens to screen cadaveric (non-heart-beating) donors. It is not intended for use on cord blood specimens.

SUMMARY AND EXPLANATION

OF THE TEST

Hepatitis B virus (HBV) is a small, partially double-stranded, DNA virus and a member of the Hepadnavirus family. The HBV genome contains four overlapping reading frames representing the core, polymerase, surface, and X genes. This virus is responsible for infecting approximately one third of the global population. Approximately 350 million individuals, worldwide, are chronic carriers of HBV, and HBV is primarily transmitted through sexual, parenteral, and perinatal routes. Premature mortality from chronic liver disease occurs in 15-25% of the chronically infected HBV patients. HBsAg, hepatitis B surface antigen, is the first viral antigen to circulate in the infected individual. HBV, unlike other DNA viruses, replicates through reverse transcription. The reverse transcription process lacks proofreading capability; therefore, HBV is subject to a mutation rate 10 times higher than the mutation rate of other DNA viruses. Some of these mutations may cause changes in the antigenic structure of HBsAg, resulting in epitopes that are no longer recognized by anti-HBs. Some of these mutations may cause changes in the antigenic structure of HBsAg, resulting in epitopes that are no longer recognized by anti-HBs.

Sensitiv immunoassays for the detection of HBsAg were first described in the early 1970s and were subsequently used to screen blood and blood products for the presence of HBsAg to prevent transmission of HBV infection to recipients of blood or blood products. In addition, assays for HBsAg are routinely used to diagnose suspected HBV infection and to monitor the status of infected individuals, i.e., whether the patient has resolved infection or has become a chronic carrier of the virus. The Centers for Disease Control and Prevention have recommended the prenatal screening of all pregnant women so that newborns from HBV carrier mothers may obtain antiviral treatment. Prenatal transmission of HBV infection from mother to neonate is a major mode of transmission in an HBV endemic population.

OTHER REAGENTS

ABBOTT PRISM HBsAg Wash Kit (REF 6D19-58)

- **TRANSFER WASH**
  - 1 Bottle (339 mL) Transfer Wash. Phosphate buffered saline. Preservative: 0.1% sodium azide. (Symbol: NC)

- **CONJUGATE WASH**
  - 1 Bottle (281 mL) Conjugate Wash. Borate buffered saline. Preservative: 0.1% sodium azide. (Symbol: NC)

ABBOTT PRISM Activator Concentrate (REF 1A75-02 or 3L27-02)

- **ACTIVATOR CONCENTRATE**
  - 4 Bottles (900 mL each) Activator Concentrate. 0.4% hydrogen peroxide/0.06% diethylenetriaminepentaacetic acid.

ABBOTT PRISM Activator Diluent (REF 1A75-01 or 3L27-01)

- **ACTIVATOR DILUENT**
  - 4 Bottles (900 mL each) Activator Diluent. 0.3% sodium hydroxide.

ABBOTT PRISM Run Control Kit (REF 3E06-10)

Or

ABBOTT PRISM Positive Control (REF 3E06-11)

NOTE: Each batch MUST end in a release control (ABBOTT PRISM Positive Control). The ABBOTT PRISM Positive Control (included in Kit REF 3E06-10 or 3E06-11) must be used as the release control which has been configured to validate the system functionality and release sample results. Refer to the ABBOTT PRISM Run Control Kit package insert or the ABBOTT PRISM Positive Control Kit package insert for detailed handling and use instructions.

WARRIORS AND PRECAUTIONS

- **IVD**
- For In Vitro Diagnostic Use
- The performance characteristics of this product have not been established for the laboratory diagnosis of HBV infection.
- The ABBOTT PRISM HBsAg assay meets FDA potency requirements.
- Package insert instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

Safety Precautions

**CAUTION:** This product contains human sourced and/or potentially infectious components. Refer to the REAGENTS section of this package insert. No known test method can offer complete assurance that products derived from human sources will not transmit infection. Therefore, all human sourced materials must be considered potentially infectious. It is recommended that these reagents and human specimens be handled in accordance with the OSHA Standard on Bloodborne Pathogens, Biosafety Level 2 or other appropriate biosafety practices should be used for materials that contain or are suspected of containing infectious agents. These precautions include, but are not limited to the following:

- Wear gloves when handling specimens or reagents.
- Do not pipette by mouth.
- Do not eat, drink, smoke, or handle contact lenses in work areas where specimens or reagents are handled.
- Clean and disinfect all spills of specimens or reagents using an appropriate disinfectant, such as 0.1% sodium hypochlorite, or other suitable disinfectants.
- Decontaminate and dispose of all specimens, reagents, and other potentially contaminated materials in accordance with local, state, and federal regulations.
- The human plasma used in the Conjugate is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, and anti-HCV.
- The human plasma used in the Negative Calibrator is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2, and anti-HCV.
- The human plasma used in the Positive Calibrator is reactive for HBsAg and nonreactive for HIV-1 RNA or HIV-1 Ag, anti-HIV-1/HIV-2 and anti-HCV.
- This product contains sodium azide; for a specific listing, refer to the REAGENTS section. Contact with acids liberates very toxic gas. This material and its container must be disposed of in a safe way.
- The following warnings and precautions apply to the Purge Concentrate.

**WARNING:** Contains methyisothiazolones. May cause an allergic skin reaction. Avoid breathing mist / vapours / spray. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves / protective clothing / eye protection.

**Response**
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P333+P313 If skin irritation or rash occurs: Get medical advice / attention.
- P362+P364 Take off contaminated clothing and wash it before reuse.

**Disposal**
- P501 Dispose of contents/container in accordance with local regulations.

Safety Data Sheets are available at www.abbottdiagnostics.com or contact your local representative.

### Handling Precautions
- Do not use kits beyond the expiration date.
- Gently invert each component several times prior to loading the original container on the ABBOTT PRISM System to ensure a homogenous solution.
- Additional gentle inversion may be required to thoroughly resuspend microparticles. Avoid foaming.
- Gently invert calibrators in the calibrator pack several times prior to each use.
- Each component of the ABBOTT PRISM HBsAg Wash Kit should be at room temperature (15 - 30°C) and then mixed before loading onto the ABBOTT PRISM System.
- Do not mix reagents or calibrators from different bottles. Do not mix or inter-change reagents from different ABBOTT PRISM HBsAg Assay Kits.
- Any lot of ABBOTT PRISM HBsAg Wash Kit can be used with any lot of ABBOTT PRISM HBsAg Assay Kit.
- Any lot of ABBOTT PRISM Activator Concentrate, ABBOTT PRISM Activator Diluent, and Control from ABBOTT PRISM Run Control Kit or ABBOTT PRISM Positive Run Control Kit may be used with any lot of any ABBOTT PRISM Assay Kit.
- Treat Negative and Positive Calibrators and Controls as specimens.
- Avoid microbial and chemical contamination of samples, reagents and equipment. The use of disposable pipette tips is recommended for any preliminary sample transfer.
- Use accurately calibrated equipment.
- Do not freeze reagents.
- Failure to adhere to instructions in the ABBOTT PRISM Operations Manual or package insert may result in erroneous test results.
- Use caution when handling samples, reagent bottles, and reagent caps to prevent cross contamination.

**Additional safety and handling precautions and limitations for the assay kit, calibrators, specimens, controls, and other reagents are described in the ABBOTT PRISM Operations Manual, Sections 7 and 8.**

### Preparation of Activator Solution
Activator solution must be prepared by mixing equal parts of ABBOTT PRISM Activator Concentrate and ABBOTT PRISM Activator Diluent. The activator solution expires 24 hours from preparation. The ABBOTT PRISM Activator Concentrate may be used immediately after removing from the refrigerator. The volume of activator solution required for multiple tests is calculated by the ABBOTT PRISM System software. Refer to the ABBOTT PRISM Operations Manual, Section 5, PLAN WORK LOAD for additional information. Use clean pipettes and/or metal-free containers (such as plasticware or acid-washed and purified or equivalent water-rinsed glassware) to measure. Refer to the ABBOTT PRISM Operations Manual Glossary for the definition of purified water. Prepare the activator solution in the bottle provided in the ABBOTT PRISM Accessory Kit (REF: EA66-60). Cover the bottle opening securely with the cap provided and invert gently five to ten times to mix. Load the activator solution on the ABBOTT PRISM System. Refer to the ABBOTT PRISM Operations Manual, Section 5, PREPARE AND LOAD ACTIVATOR SOLUTION, for additional information.

**NOTE:** The activator solution must be used within 24 hours of preparation.

### Storage Instructions
- Store the ABBOTT PRISM HBsAg Assay Kit, ABBOTT PRISM Run Control Kit, ABBOTT PRISM Positive Run Control Kit, and ABBOTT PRISM Activator Concentrate at 2 - 8°C.
- Store the ABBOTT PRISM HBsAg Wash Kit and ABBOTT PRISM Activator Diluent at room temperature (15 - 30°C).
- Store ABBOTT PRISM Pipette Tips and ABBOTT PRISM Reaction Trays in their original packaging until use.

**The activator solution must be stored at 15 - 30°C and used within 24 hours of preparation.**

### Indications of Instability or Deterioration of Reagents
The ABBOTT PRISM System will not continue to process samples when calibrator values do not meet specifications. This may indicate either deterioration or contamination of reagents, or instrument failure. Refer to the ABBOTT PRISM Operations Manual, Section 10, for additional information.

### INSTRUMENT PROCEDURE
- For the software versions that may be used to perform the assay, refer to the ABBOTT PRISM Assay / Software Version Matrix located in the Supplemental Information tab of the ABBOTT PRISM Operations Manual.
- Refer to the ABBOTT PRISM Operations Manual for a detailed description of Instrument Procedures.
- Refer to the ABBOTT PRISM Operations Manual, Section 7, for limitations associated with test management.
- Solutions required for instrument cleaning and maintenance are described in detail in the ABBOTT PRISM Operations Manual, Sections 5 and 9.

### SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS
- Serum (including serum collected in separator tubes), plasma collected in EDTA, potassium oxalate, sodium citrate, ACD-A, ACD-B, CP2D, CPD, or CPDA-1 anticoagulants, or plasma collected from segmented tubing may be used with the ABBOTT PRISM HBsAg assay. Follow the manufacturer’s processing instructions for serum and plasma collection tubes.

**CAUTION:** Do not use specimens collected in heparin. Use of heparin as an anticoagulant may cause a reduction in Sample Net Counts, therefore, heparin is not recommended for any ABBOTT PRISM assay.

This assay was designed and validated for use with individual human serum and plasma specimens. This assay has not been validated for use with pooled specimens.

- Do not use cadaveric plasma specimens.
- Do not use heat-inactivated specimens.
- Do not use specimens with obvious microbial contamination.
- When shipped, specimens must be packaged and labeled in compliance with applicable regulations covering the transport of clinical specimens and infectious substances. Specimens may be shipped at 30°C or colder for a period not to exceed 7 days. Prior to freeze-thawing, the serum or plasma should be removed from the clot or red blood cells.
- Failure to follow the specified centrifugation procedure on specimens tested with the ABBOTT PRISM HBsAg assay may cause a reduction in Sample Net Counts and/or Cutoff Value (S/CO) for ABBOTT PRISM HCV; therefore, heparin is not recommended for any ABBOTT PRISM assay.
- Specimens may be stored for up to 14 days at 2 - 8°C. If storage periods greater than 14 days are anticipated, the serum or plasma should be removed from the clot or red blood cells to avoid hemolysis. Store the serum or plasma frozen (-20°C or colder).
- For cadaveric specimens, follow general standards and/or regulations for collection, storage and handling. Cadaveric specimens may be stored frozen (-20°C or colder) or stored for up to 2 days at 2 - 8°C. If storage periods greater than 2 days at 2 - 8°C are anticipated, the serum should be removed from the clot to avoid hemolysis and stored frozen.
- Previously frozen specimens must be mixed gently and thoroughly after thawing and centrifuged according to Table II in this section.

- Twenty nonreactive and 20 low-level reactive specimens showed no qualitative performance differences when subjected to 6 freeze-thaw cycles. However, some specimens that have undergone multiple freeze-thaw cycles or have been stored frozen for prolonged periods may give erroneous or inconsistent test results.
- Clear, non-hemolyzed specimens should be used when possible. Specimens containing visible particulate matter may give erroneous or inconsistent test results.
• No qualitative performance differences were observed when 20 nonreactive and 18 low-level reactive specimens were spiked with elevated levels of bilirubin (≤ 20 mg/dL), hemoglobin (≤ 500 mg/dL), red blood cells (≤ 0.4% v/v), triglycerides (≤ 3000 mg/dL), or protein (≤ 12 g/dL). However, specimens that contain greater concentrations of these potentially interfering substances have not been tested. The impact of greater concentrations of these potentially interfering substances on the ABBOTT PRISM HBsAg assay is unknown.

• Performance has not been established using umbilical cord blood, or body fluids such as urine, saliva, semen, amniotic fluid, cerebrospinal fluid, or pleural fluid. These specimens should not be tested using the ABBOTT PRISM HBsAg assay.

• Specimens collected by plasmapheresis, that have not been frozen, do not require centrifugation. All other specimens (including previously frozen plasmapheresis specimens) must be centrifuged as follows:

  Non-frozen specimens (excluding non-frozen plasmapheresis specimens) must be centrifuged such that g-minutes is between 30,000 and 75,000. A refrigerated or non-refrigerated centrifuge is acceptable for use. The acceptable time and force ranges that meet this criterion are listed in Table I.

  Previously frozen specimens must be centrifuged such that g-minutes is between 180,000 and 300,000. A refrigerated or non-refrigerated centrifuge is acceptable for use. The acceptable time and force ranges that meet this criterion are listed in Table II.

  Failure to follow the specified centrifugation procedure may give erroneous or inconsistent test results.

Centrifuged cadaveric SERUM specimens tested with ABBOTT PRISM HBsAg may be filtered using the instructions indicated below. If testing includes ABBOTT PRISM HIV O Plus, then the following instructions must be performed.

NOTE: Failure to adhere to the following instructions may result in erroneous or inconsistent test results for ABBOTT PRISM HIV O Plus.

Filteration of Centrifuged Cadaveric SERUM Specimens

Wear personal protective equipment, including eyewear.

After centrifugation, filter each cadaveric specimen through a Millipore GV Filter as follows:

1. Label an empty tube with the specimen identification number matching the original tube.
2. Remove the plunger from a sterile 10 cc syringe.
   NOTE: Do not use a syringe smaller than 10 cc because excess pressure may build up, potentially causing damage to the filter unit or personal injury.
3. Remove the sterile filter from the package.
4. Securely screw the syringe to the filter.
   NOTE: Do not touch the tip of the filter to avoid possible contamination.
5. Pour a minimum of 1 mL of the centrifuged cadaveric serum into the syringe.
   NOTE: Additional volume may be required based on the number of ABBOTT PRISM assays performed. Refer to the Specimen Volume section of this package insert.
6. While holding the filter syringe unit over the tube, insert the plunger and slowly apply pressure to deliver the filtered cadaveric serum.
   NOTE: A clogged filter will resist pressure and no additional sample volume will pass through.
7. If necessary replace the clogged filter as follows:
   a. Remove the sterile filter from the package.
   b. Carefully invert the syringe to a filter-side-up position with the syringe plunger intact to prevent sample leakage. Gently remove the clogged filter and dispose of it in a potentially infectious waste container.
   c. Securely screw the syringe to the filter.
   d. Slowly apply pressure on the plunger to deliver the filtered cadaveric serum into the tube.
   e. Repeat this step as needed to successfully complete the filtration process.

NOTE: Filtered cadaveric specimens that are not tested within 24 hours of initial centrifugation must be recenterfuged, but do not need to be refiltered.

Specimen Volume

The specimen volume required to perform a single assay on the ABBOTT PRISM System varies according to the number and type of assays, and the different specimen containers. The ABBOTT PRISM HBsAg assay requires 100 μL sample dispense. For ABBOTT PRISM Sample Cups, the minimum specimen volume required for one ABBOTT PRISM HBsAg assay is 400 μL. For either primary or aliquot tubes or additional assay volume requirements, refer to the ABBOTT PRISM Operations Manual, Section 5.

PROCEDURE

Materials Provided

• REF 6D19-6  ABBOTT PRISM HBsAg Assay Kit

Materials Required but not Provided

• REF 6D19-58  ABBOTT PRISM HBsAg Wash Kit
• REF 1A75-02 or 3L27-02  ABBOTT PRISM ACTIVATOR CONCENTRATE
• REF 1A75-01 or 3L27-01  ABBOTT PRISM ACTIVATOR DILUENT  
• REF 5A07-01  ABBOTT PRISM REACTION TRAYS
• REF 5A07-10  ABBOTT PRISM PIPELINE TIPS
• REF 6A36-60  ABBOTT PRISM Accessory Kit
• REF 3E60-10  ABBOTT PRISM Run Control Kit
• or REF 3E60-11  ABBOTT PRISM Positive Run Control Kit
• REF 6A36-31  ABBOTT PRISM RUN CONTROL ADAPTERS
• Protective Disposable Gloves
• Disinfectant
• Purified Water-rinsed or Clean Disposable Measuring Equipment

Additional Materials Available

• REF 7B36-01  ABBOTT PRISM SAMPLE CUPS
• REF 1A75-10 or 3L27-10  ABBOTT PRISM ACTIVATOR LINE TREATMENT
• REF 7A03-01 or 3L00-01  ABBOTT PRISM PRIME/PURGE ACCESSORIES
• REF 7A03-30 or 3L00-30  ABBOTT PRISM PURGE CONCENTRATE
• REF 7A03-31  ABBOTT PRISM LINE CLEANER

For Cadaveric Specimens Only

• REF 2P41-01 Millipore GV Filters
• 10 cc Sterile Syringes

Table I

<table>
<thead>
<tr>
<th>Centrifugation Time (minutes)</th>
<th>RCF (x g)</th>
<th>g-minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>3,000</td>
<td>30,000</td>
</tr>
<tr>
<td>15</td>
<td>2,000 - 3,000</td>
<td>30,000 - 45,000</td>
</tr>
<tr>
<td>20</td>
<td>1,500 - 3,000</td>
<td>30,000 - 60,000</td>
</tr>
<tr>
<td>25</td>
<td>1,300 - 3,000</td>
<td>32,500 - 75,000</td>
</tr>
</tbody>
</table>

Convert rpm to RCF as follows: RCF = \(1,120 \times \frac{rpm}{1000} \)

Convert RCF to rpm as follows: rpm = \(1,000 \times \sqrt{\frac{RCF}{1,120}}\)

Table II

<table>
<thead>
<tr>
<th>Centrifugation Time (minutes)</th>
<th>RCF (x g)</th>
<th>g-minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>12,000</td>
<td>180,000</td>
</tr>
<tr>
<td>20</td>
<td>9,000 - 12,000</td>
<td>180,000 - 240,000</td>
</tr>
<tr>
<td>25</td>
<td>7,200 - 12,000</td>
<td>180,000 - 300,000</td>
</tr>
</tbody>
</table>

ANY specimen (excluding non-frozen plasmapheresis) not tested within 24 hours of initial centrifugation, must be recenterfuged from 30,000 to 75,000 g-minutes as defined for non-frozen specimens.

NOTE: Specimens retested within 24 hours of initial centrifugation do not require recenterfugation.
ABBOTT PRISM HBsAg ASSAY PROCEDURE

Key procedures that require operator interaction for testing samples are listed below. For detailed information concerning batch time, maximum batch size, reagent handling and loading, and associated procedural steps, refer to the ABBOTT PRISM Operations Manual, Sections 3, 5, and 7.

1. Enter a Plan Work Load (refer to the ABBOTT PRISM Operations Manual, Section 5).
2. Replace reagents as needed (refer to the ABBOTT PRISM Operations Manual, Sections 5 and 7).
3. Prepare activator solution (Refer to the Preparation of Activator Solution section of this package insert) and load onto the ABBOTT PRISM System.
4. Verify that an adequate number of ABBOTT PRISM Reaction Trays are in the Tray Loader.
5. Verify that an adequate number of ABBOTT PRISM Pipette Tips are in the Pipette Tip Racks.
6. Inspect the waste containers. Empty and clean as defined in the ABBOTT PRISM Operations Manual, Section 9, if necessary.
7. Prepare activator solution (Refer to the Preparation of Activator Solution section of this package insert) and load onto the ABBOTT PRISM System.
8. Verify that an adequate number of ABBOTT PRISM Reaction Trays are in the Tray Loader.
9. Prepare activator solution (Refer to the Preparation of Activator Solution section of this package insert) and load onto the ABBOTT PRISM System.
10. Load the calibrator rack and sample racks, including the calibrator rack. Load the calibrator rack and sample racks, including the run controls. (Refer to the QUALITY CONTROL PROCEDURES, Controls, Control Handling Procedure, in this package insert.)
11. After the calibrators have been automatically pipetted, remove the calibrator rack. Close the calibrator bottles and return them to 2 - 8°C storage.
12. Each specimen is initially tested once, unless the operator overrides this automatic function of the ABBOTT PRISM System.
13. Sample racks may be removed after the samples have been pipetted.
14. Prepare activator solution (Refer to the Preparation of Activator Solution section of this package insert) and load onto the ABBOTT PRISM System.
15. Sample racks may be removed after the samples have been pipetted.
16. Verify that an adequate number of ABBOTT PRISM Pipette Tips are in the Pipette Tip Racks.
17. Perform the prime procedure (Refer to the ABBOTT PRISM Operations Manual, Section 5).
18. Initiate sample processing. Gently invert calibrators in the calibrator pack several times. Open the bottles in the calibrator pack and place in the calibrator rack. Load the calibrator rack and sample racks, including the run controls. (Refer to the QUALITY CONTROL PROCEDURES, Controls, Control Handling Procedure, in this package insert.)
19. After the calibrators have been automatically pipetted, remove the calibrator rack. Close the calibrator bottles and return them to 2 - 8°C storage.
20. Each specimen is initially tested once, unless the operator overrides this automatic function of the ABBOTT PRISM System.
21. Sample racks may be removed after the samples have been pipetted.
22. Prepare activator solution (Refer to the Preparation of Activator Solution section of this package insert) and load onto the ABBOTT PRISM System.
23. Load the calibrator rack and sample racks, including the calibrator rack. Load the calibrator rack and sample racks, including the run controls. (Refer to the QUALITY CONTROL PROCEDURES, Controls, Control Handling Procedure, in this package insert.)
24. After the calibrators have been automatically pipetted, remove the calibrator rack. Close the calibrator bottles and return them to 2 - 8°C storage.
25. Each specimen is initially tested once, unless the operator overrides this automatic function of the ABBOTT PRISM System.
26. Sample racks may be removed after the samples have been pipetted.

Quality control procedures

The ABBOTT PRISM HBsAg assay is a two-step CHLIA procedure. The ABBOTT PRISM HBsAg assay is a two-step CHLIA procedure. The ABBOTT PRISM HBsAg assay is a two-step CHLIA procedure.
### ASSAY REPRODUCIBILITY

Assay reproducibility was determined by testing a seven-member panel consisting of three diluted specimens reactive for HBsAg as subtype (panel members 1, 2, and 3), three diluted specimens reactive for HBsAg as subtype (panel members 4, 5, and 6) and one specimen nonreactive for HBsAg (panel member 7).

Panel members were prepared in recalcified human plasma. Each panel member was tested in replicates of four in five runs over five days with each of the three reactive lots at six sites. In addition, each panel member was tested in replicates of four in five runs over five days with one of the three reactive lots at four of the six sites. The Negative and Positive Controls were tested once at the beginning and end of each run on each subchannel. The Negative and Positive Calibrators were automatically tested in triplicate at the beginning of each run on each subchannel. The intra-assay and inter-assay standard deviation (SD) and percent coefficient of variation (%CV) were determined with a variance on each subchannel. The intra-assay and inter-assay standard deviation (SD) and percent coefficient of variation (%CV) were determined with a variance on each subchannel.

### SPECIFIC PERFORMANCE CHARACTERISTICS

**ASSAY REPRODUCIBILITY**

<table>
<thead>
<tr>
<th>Panel Control</th>
<th>Number of Replicates</th>
<th>Mean S/CO</th>
<th>Intra-assay %CV</th>
<th>Inter-assay %CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Control</td>
<td>439</td>
<td>0.26</td>
<td>0.038</td>
<td>14.6</td>
</tr>
<tr>
<td>Positive Control</td>
<td>440</td>
<td>2.63</td>
<td>0.138</td>
<td>5.2</td>
</tr>
</tbody>
</table>

**a** Cutoff Value = Mean Negative Calibrator Net Counts + (0.19 x Mean Positive Calibrator Net Counts)

**ASSAY SPECIFICITY**

A total of 25,238 fresh serum and plasma specimens from volunteer whole blood donors and plasmapheresis donors were collected and tested at six geographically distinct blood centers (Table IV). Two sites tested a total of 8,246 serum specimens with initial and repeat reactive rates of 0.06% (5/8,246) and 0.04% (3/8,246), respectively. Three sites tested a total of 13,911 plasma specimens with initial and repeat reactive rates of 0.06% (8/13,911) and 0.04% (5/13,911), respectively. One site tested a total of 3,081 plasmapheresis donor specimens with initial and repeat reactive rates of 0.03% (1/3,081) and 0.00% (0/3,081), respectively. A total of eight specimens were repeatedly reactive. In six of the eight specimens (75.00%), the presence of HBsAg was confirmed by specific neutralization with anti-HBs. Two of the eight specimens were not confirmed as positive.

Specificity based on assumed zero prevalence of HBsAg in whole blood and plasmapheresis donors was estimated in these studies to be 99.99% (25,230/25,232) with a 95% confidence interval (CI) of 99.97% to 100.00%. The six repeatedly reactive specimens that confirmed positive for HBsAg were excluded from these calculations.

Three sites evaluated 870 serum and plasma specimens either collected from individuals with medical conditions unrelated to HBV infection or containing potentially interfering substances (Table IV). Fifty-nine of the 870 specimens (6.78%) were initially reactive, and 50 of the 870 specimens (5.75%) were repeatedly reactive. Forty of the 50 specimens (80.00%) confirmed positive for HBsAg, and ten specimens did not confirm by specific antibody neutralization. The ten specimens included one anti-EBV positive (12 tested), one anti-HSV positive (12 tested), one rubella antibody positive (12 tested), one anti-nuclear antibody positive (12 tested), one elevated IgG (12 tested), and five pregnant females (555 tested). The estimated specificity in this population was 98.80% (850/850).

### TABLE III

<table>
<thead>
<tr>
<th>Category</th>
<th>Number Tested</th>
<th>IR (% of Total)</th>
<th>RR (% of Total)</th>
<th>Number Confirmed Positive (% of RR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>8,246</td>
<td>5 (0.06)</td>
<td>3 (0.04)</td>
<td>2 (96.67)</td>
</tr>
<tr>
<td>Plasma</td>
<td>13,911</td>
<td>8 (0.06)</td>
<td>5 (0.04)</td>
<td>4 (80.00)</td>
</tr>
<tr>
<td>Total Donors</td>
<td>25,238</td>
<td>14 (0.06)</td>
<td>8 (0.03)</td>
<td>6 (75.00)</td>
</tr>
<tr>
<td>Medical Conditions Unrelated to HBV Infection and Potentially Interfering Substances</td>
<td>870</td>
<td>59 (6.78)</td>
<td>50* (5.75)</td>
<td>40* (80.00)</td>
</tr>
</tbody>
</table>

IR = Initial Reactive; RR = Repeat Reactive; CI = Confidence Interval

**a** A specimen was confirmed positive for HBsAg in the non-neutralized specimen (with ABBOTT PRISM HBsAg Confirmatory assay Reagent B added) exhibited a net count greater than or equal to the ABBOTT PRISM HBsAg Confirmatory assay cutoff value and if the neutralization with anti-HBs (Reagent A) was not positive.

**b** Specimens from individuals with medical conditions unrelated to HBV infection and specimens containing potentially interfering substances included the following categories: anti-CMV positive (11), anti-HIV-1 positive (12), anti-HIV-2 positive (5), anti-HTLV-I positive (12), anti-HTLV-II positive (12), non-viral liver diseases (42), rubella antibody positive (12), toxoplasma antibody positive (11), E.coli infections (5), syphilis serology positive (12), anti-nuclear antibody positive (12), rheumatoid factor positive (12), influenza vaccine recipients (52), elevated IgG (12), elevated IgM (12), elevated triglycerides (10), elevated bilirubin (12), elevated hemoglobin (11), and pregnant females (555).

### TABLE IV

Reactivity of the ABBOTT PRISM HBsAg Assay in Whole Blood and Plasmapheresis Donors, in Specimens from Individuals with Medical Conditions Unrelated to HBV Infection, and in Specimens Containing Potentially Interfering Substances

<table>
<thead>
<tr>
<th>Category</th>
<th>Number Tested</th>
<th>IR (% of Total)</th>
<th>RR (% of Total)</th>
<th>Number Confirmed Positive (% of RR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>8,246</td>
<td>5 (0.06)</td>
<td>3 (0.04)</td>
<td>2 (96.67)</td>
</tr>
<tr>
<td>Plasma</td>
<td>13,911</td>
<td>8 (0.06)</td>
<td>5 (0.04)</td>
<td>4 (80.00)</td>
</tr>
<tr>
<td>Total Donors</td>
<td>25,238</td>
<td>14 (0.06)</td>
<td>8 (0.03)</td>
<td>6 (75.00)</td>
</tr>
<tr>
<td>Medical Conditions Unrelated to HBV Infection and Potentially Interfering Substances</td>
<td>870</td>
<td>59 (6.78)</td>
<td>50* (5.75)</td>
<td>40* (80.00)</td>
</tr>
</tbody>
</table>

IR = Initial Reactive; RR = Repeat Reactive; CI = Confidence Interval

**a** A specimen was confirmed positive for HBsAg in the non-neutralized specimen (with ABBOTT PRISM HBsAg Confirmatory assay Reagent B added) exhibited a net count greater than or equal to the ABBOTT PRISM HBsAg Confirmatory assay cutoff value and if the neutralization with anti-HBs (Reagent A) was not positive.

**b** Specimens from individuals with medical conditions unrelated to HBV infection and specimens containing potentially interfering substances included the following categories: anti-CMV positive (11), anti-HIV-1 positive (12), anti-HIV-2 positive (5), anti-HTLV-I positive (12), anti-HTLV-II positive (12), non-viral liver diseases (42), rubella antibody positive (12), toxoplasma antibody positive (11), E.coli infections (5), syphilis serology positive (12), anti-nuclear antibody positive (12), rheumatoid factor positive (12), influenza vaccine recipients (52), elevated IgG (12), elevated IgM (12), elevated triglycerides (10), elevated bilirubin (12), elevated hemoglobin (11), and pregnant females (555).
c The 50 repeatedly reactive specimens included the following: anti-EBV positive (1), anti-HSV positive (1), anti-HCV positive (1), anti-HIV-1 positive (5), anti-HIV-2 positive (1), non-viral liver diseases (5), rubella antibody positive (1), antinuclear antibody positive (1), influenza vaccine recipients (1), elevated triglycerides (1), and pregnant females (27).

d The following 40 specimens confirmed positive for HBsAg: anti-HCV positive (1), anti-HIV-1 positive (5), anti-HIV-2 positive (1), non-viral liver diseases (5), influenza vaccine recipients (1), and pregnant females (27).

ASSAY SENSITIVITY

A total of 1,212 serum and plasma specimens from 514 individuals known to be positive for HBsAg, 98 individuals with acute HBV infection, 101 individuals with chronic HBV infection, 47 individuals who have recovered from HBV infection, and 452 individuals at increased risk for HBV infection were tested with the ABBOTT PRISM HBsAg assay. A total of 767 specimens (63.28%) were repeatedly reactive, of which 754 (98.31%) were confirmed positive by specific antibody neutralization (Table V). The overall sensitivity was estimated in these studies to be 100.00% (754/754) with a 95% CI of 99.51% to 100.00%.

**TABLE V**

Reactivity of the ABBOTT PRISM HBsAg Assay in Selected Populations with HBV Infection and at Increased Risk for HBV Infection

<table>
<thead>
<tr>
<th>Category Tested (a)</th>
<th>Number Confirmed Positive (b)</th>
<th>Number Repeatedly Reactive (c)</th>
<th>(% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preselected HBsAg</td>
<td>514</td>
<td>514* (100.00)</td>
<td>514* (100.00)</td>
</tr>
<tr>
<td>Acute HBV Infection</td>
<td>98</td>
<td>98 (100.00)</td>
<td>98 (100.00)</td>
</tr>
<tr>
<td>Chronic HBV Infection</td>
<td>101</td>
<td>101 (100.00)</td>
<td>101 (100.00)</td>
</tr>
<tr>
<td>Recovered HBV Infection</td>
<td>47</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Increased Risk for HBV Infection</td>
<td>452</td>
<td>54* (11.95)</td>
<td>41* (75.90)</td>
</tr>
</tbody>
</table>

Total | 1,212 | 767 (63.28) | 754 (63.31)

Increased Risk for HBV Infection includes the following: intravenous drug users (204), hemodialysis patients (50), hemophilia patients (50), and STD clinic patients (148).

d The 54 repeatedly reactive specimens included the following: intravenous drug users (25), hemodialysis patients (6), hemophilia patients (4), and STD clinic patients (19).

e The 41 specimens that confirmed positive for HBsAg included the following: intravenous drug users (15), hemodialysis patients (5), hemophilia patients (3), and STD clinic patients (18). Of these 41 specimens, 32 were confirmed positive by a licensed reference HBsAg test. The PRISM assay confirmed an additional 9 specimens. In addition, there were no specimens in this category (452 specimens) that were confirmed positive by the licensed reference HBsAg test that were not confirmed positive by the PRISM assay.

**TABLE VI**

Detection of Purified HBsAg ad by the ABBOTT PRISM HBsAg Assay

<table>
<thead>
<tr>
<th>HBsAg Concentration (ng/mL)</th>
<th>Mean S/CO Value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.917</td>
<td>6.98</td>
<td>+</td>
</tr>
<tr>
<td>0.525</td>
<td>4.06</td>
<td>+</td>
</tr>
<tr>
<td>0.124</td>
<td>1.59</td>
<td>+</td>
</tr>
<tr>
<td>0.000</td>
<td>0.34</td>
<td>-</td>
</tr>
</tbody>
</table>

The ability of the ABBOTT PRISM HBsAg assay to detect HBsAg was evaluated by testing 12 HBV seroconversion panels from blood and plasmapheresis donors who seroconverted over the course of their donation history. All specimens were also tested by a FDA licensed assay. The ABBOTT PRISM HBsAg assay detected HBsAg three to 13 days (one to three bleeds) earlier in ten of the 12 panels and five to 48 days (one to three bleeds) longer in four of the 12 panels when compared to the licensed assay. Both assays detected HBsAg in the first available bleed for two of the 12 panels.

**PERFORMANCE CHARACTERISTICS OF CADAVERIC SERUM TESTING**

**Reproducibility**

Inter-assay reproducibility of PRISM HBsAg was assessed using 10 postmortem donor sera. These sera specimens were spiked with human plasma positive for HBsAg to create low-level reactive specimens. Each of the specimens was tested in triplicate on three different days on each of three lots of PRISM HBsAg at one site for a total of 270 replicates. Three replicates generated dispense errors and 16 replicates generated drain time errors and were excluded from the analysis. For intra-assay reproducibility, the %CV ranged from 2.9 to 5.5 for the low level reactive specimens. For inter-assay reproducibility over all lots, the percent coefficient of variation (%CV) ranged from 4.4 to 8.7 for the low-level reactive specimens. The total reproducibility ranged from 5.3 to 9.7 for the low level reactive specimens. Note: Inter-assay reproducibility includes intra-assay and inter-assay variation. Total reproducibility includes intra-assay, inter-assay and inter-lot variations.

**Specificity**

Specificity was evaluated using 51 postmortem donor specimens and 54 normal donor specimens. Each of the specimens was tested once on each of three lots of PRISM HBsAg. The mean sample to cutoff (S/CO) ratio for the 136 nonreactive postmortem replicates (51 specimens with three reagent lots; see Table VIII, footnotes a and b) was 0.37, and the mean S/CO for 162 normal donor replicates (54 specimens with three reagent lots) was 0.24. Results are presented in Table VIII.

**TABLE VIII**

Reactivity with PRISM HBsAg

<table>
<thead>
<tr>
<th>Population</th>
<th>No. of Specimens</th>
<th>No. of Replicates</th>
<th>Mean S/CO</th>
<th>Nonreactive</th>
<th>Initial Reactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postmortem</td>
<td>51</td>
<td>137*</td>
<td>0.37</td>
<td>136</td>
<td>1*</td>
</tr>
<tr>
<td>Normal Donor</td>
<td>54</td>
<td>162</td>
<td>0.24</td>
<td>162</td>
<td>0 (100.0%)</td>
</tr>
</tbody>
</table>

**TABLE IX**

Detection of Purified HBsAg by the ABBOTT PRISM HBsAg Assay

<table>
<thead>
<tr>
<th>HBsAg Concentration (ng/mL)</th>
<th>Mean S/CO Value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.002</td>
<td>8.86</td>
<td>+</td>
</tr>
<tr>
<td>0.485</td>
<td>4.62</td>
<td>+</td>
</tr>
<tr>
<td>0.131</td>
<td>1.37</td>
<td>+</td>
</tr>
<tr>
<td>0.000</td>
<td>0.34</td>
<td>-</td>
</tr>
</tbody>
</table>

a No results were obtained for 15 specimens on one lot due to drain time errors and one specimen on one lot due to an invalid result.

b Specimen was not retested due to insufficient specimen volume.

Assuming the specimen with the initial reactive result would have a reactive result upon retest, the PRISM HBsAg assay has an estimated specificity of 99.27% (136/137)(binomial confidence interval = [96.00%, 99.98%]) in these studies of postmortem serum specimens collected up to 16.1 hours after death.

**Sensitivity**

Sensitivity was evaluated using 51 postmortem specimens and 54 normal donor specimens that were pre-screened for anti-HBs and HBsAg and found to be negative. The 105 specimens were spiked with human plasma positive for HBsAg to create low-level reactive specimens. Each of the specimens was tested once on each of three lots of PRISM HBsAg. The mean sample to cutoff (S/CO) for the 142 postmortem replicates (51 specimens, with three reagent lots; see Table IX, footnote a) was 2.05, and the mean S/CO ratio for the 162 normal donor replicates (54 specimens, with three reagent lots) was 2.07. Results are presented in Table IX.
### Table IX  
Reactivity with PRISM HBsAg

<table>
<thead>
<tr>
<th>Population</th>
<th>No. of Specimens</th>
<th>No. of Replicates</th>
<th>Mean S/CO</th>
<th>Nonreactive</th>
<th>Initial Reactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postmortem</td>
<td>51</td>
<td>162</td>
<td>2.05</td>
<td>0</td>
<td>162</td>
</tr>
<tr>
<td>Normal Donor</td>
<td>54</td>
<td>162</td>
<td>2.07</td>
<td>0</td>
<td>162</td>
</tr>
</tbody>
</table>

* No results were obtained for 7 unique specimens, and 2 specimens using 2 different lots due to drain time errors.

The PRISM HBsAg assay has an estimated sensitivity of 100.00% (142/142) (binomial confidence interval = [97.44%, 100.00%]) in these studies of postmortem serum specimens collected up to 16.1 hours after death.

### BIBLIOGRAPHY


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