Test Definition: HSV
HSV Types 1 and 2 Ab, S

Overview

Useful For
Supplementing culture or molecular detection of herpes simplex virus (HSV) for the diagnosis of acute infection

Determining whether a patient has been previously exposed to HSV types 1 or 2

Distinguishing between infection caused by HSV types 1 and 2, especially in patients with subclinical or unrecognized HSV infection

Profile Information

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Reporting Name</th>
<th>Available Separately</th>
<th>Always Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS1G</td>
<td>HSV Type 1 Ab, IgG, S</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>HS2G</td>
<td>HSV Type 2 Ab, IgG, S</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>MHSV</td>
<td>HSV Ab Screen, IgM, S by EIA</td>
<td>Yes</td>
<td>Yes</td>
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Reflex Tests

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<th>Reporting Name</th>
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<tbody>
<tr>
<td>HSMR</td>
<td>HSV Ab, IgM, S by IFA</td>
<td>No</td>
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</tr>
</tbody>
</table>

Testing Algorithm
If herpes simplex virus (HSV) antibody screen is reactive, then HSV antibody by immunofluorescence assay will be performed at an additional charge.

Method Name

HS1G, HS2G: Multiplex Flow Immunoassay (MFI)

MHSV: Enzyme Immunoassay (EIA)

HSMR: Immunofluorescence Assay (IFA)

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required
Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 1 mL

Collection Instructions: Centrifuge and aliquot serum

Forms

If not ordering electronically, complete, print, and send a Microbiology Test Request (T244) with the specimen.

Specimen Minimum Volume

0.8 mL

Reject Due To

<table>
<thead>
<tr>
<th>Gross hemolysis</th>
<th>Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross lipemia</td>
<td>Reject</td>
</tr>
</tbody>
</table>

Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>14 days</td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>14 days</td>
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</table>

Clinical and Interpretive

Clinical Information

Herpes simplex virus (HSV) types 1 and 2 are members of the Herpesviridae family, and produce infections that may range from mild stomatitis to disseminated and fatal disease. Clinical conditions associated with HSV infection include gingivostomatitis, keratitis, encephalitis, vesicular skin eruptions, aseptic meningitis, neonatal herpes, genital tract infections, and disseminated primary infection.

Infections with HSV types 1 and 2 can differ significantly in their clinical manifestations and severity. HSV type 2 primarily causes urogenital infections and is found almost exclusively in adults. HSV type 1 is closely associated with orolabial infection, although genital infection with this virus can be common in certain populations.

The diagnosis of HSV infections is routinely made based on clinical findings and supported by laboratory testing, primarily using PCR to detect viral DNA. However, in instances of subclinical or unrecognized HSV infection, serologic testing for IgG-class antibodies to type-specific HSV glycoprotein G (gG) may be useful. There are several circumstances in which it may be important to distinguish between infection caused by HSV types 1 and 2 (e.g. risk of reactivation). In addition, the results of HSV type-specific IgG testing is sometimes used during pregnancy to identify risks of congenital HSV disease and allow for focused counseling prior to delivery.
Reference Values
HSV TYPE 1 ANTIBODY, IgG
Negative

HSV TYPE 2 ANTIBODY, IgG
Negative

Reference values apply to all ages.

HSV ANTIBODY SCREEN, IgM, by EIA
Negative

Reference values apply to all ages.

Interpretation
The presence of IgM herpes simplex virus (HSV) antibodies indicates acute infection with either HSV type 1 or 2.

The IgG antibody assay detects IgG-class antibodies to type-specific HSV glycoprotein G (gG), and may allow for the differentiation of infection caused by HSV types 1 and 2. The presence of IgG-class antibodies to HSV types 1 or 2 indicates previous exposure, and does not necessarily indicate that HSV is the causative agent of an acute illness.

Cautions
Individuals infected with herpes simplex virus (HSV) may not exhibit detectable levels of IgM antibody in the early stages of infection.

Detection of IgG-class antibodies to HSV should not be used routinely as the primary means of diagnosing HSV infection. For patients presenting with presumed acute infection with HSV, a clinical specimen (eg, oral, dermal, or genital lesion) should be sampled and submitted for molecular detection of HSV types 1 and 2 by PCR.

Serum specimens collected too early in the course of infection may not have detectable levels of HSV IgG. In cases of suspected early disease, a repeat serum specimen should be collected 14 to 21 days later and submitted for testing.

The presence of IgG-class antibodies to either HSV type 1 or 2 does not differentiate between remote infection and acute disease.

HSV serology cannot distinguish genital from nongenital infections.

The predictive value of positive or negative results depends on the prevalence of disease and the pretest likelihood of HSV-1 and HSV-2.

False-positive results may occur. Repeat testing, or testing by a different method, may be indicated in some settings (eg, patients with low likelihood of HSV infection).

Supportive Data

Accuracy:
To evaluate the accuracy of the BioPlex HSV assay, 505 prospective serum samples were tested by EIA (HerpeSelect, Focus Diagnostics, Cypress, CA) and the BioPlex HSV-1/2 IgG assay. Samples that had discordant results after initial testing were repeated by both assays during the same freeze/thaw cycle.

Further discrepancies were evaluated by glycoprotein G (gG) type-specific Western blot (WB) at the University of Washington Virology laboratory (Seattle, WA).

The results are summarized in Tables 1 and 2 below:

Table 1. Comparison of the Bio-Rad BioPlex HSV-1 IgG assay to the HerpeSelect HSV-1 EIA using prospective serum specimens (n=505).

<table>
<thead>
<tr>
<th>HSV-1 by BioPlex</th>
<th>HSV-1 by HerpeSelect EIA</th>
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<tbody>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>Positive</td>
<td>254</td>
</tr>
<tr>
<td>Negative</td>
<td>2b</td>
</tr>
<tr>
<td>Equivocal</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>256</td>
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</tbody>
</table>

a. All 5 of these specimens were positive by WB

b. Both of these specimens were positive by WB

Sensitivity=99.2% (254/256); 95% Confidence Intervals (CI) (97.0, 99.9)

Specificity=96.8% (240/248); 95% CI (93.7, 98.5)

Overall percent agreement=97.8% (494/505); 95% CI (96.1, 98.8)

Table 2. Comparison of the Bio-Rad BioPlex HSV-2 IgG assay to the HerpeSelect HSV-2 EIA using prospective serum specimens (n=505).

<table>
<thead>
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<th>HSV-2 by BioPlex</th>
<th>HSV-2 by HerpeSelect</th>
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<tbody>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>Positive</td>
<td>115</td>
</tr>
<tr>
<td>Negative</td>
<td>1b</td>
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<tr>
<td>Equivocal</td>
<td>1</td>
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<tr>
<td>Total</td>
<td>117</td>
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</table>

a. Two of these 9 specimens were positive by WB; 2 of these 9 specimens were equivocal by WB.

b. This specimen was negative by WB.

Sensitivity=98.3% (115/117); 95% CI (93.6, 99.9)

Specificity=97.4% (376/386); 95% CI (95.2, 98.7)

Overall percent agreement=97.2% (493/505); 95% CI (95.4, 98.4)
Clinical Reference


Performance

Method Description

IgG:

BioPlex 2200 Herpes Simplex Virus (HSV)-1 and HSV-2 Kit uses multiplex flow immunoassay technology. Two different populations of dyed beads are each coated with glycoprotein G (gG)-based antigens associated with HSV types 1 or 2. Patient sample is combined with sample diluent and bead set reagent in a reaction vessel. The mixture is incubated at 37 degrees C. After a wash cycle, antihuman IgG antibody, conjugated to phycoerythrin (PE), is added to the mixture and incubated at 37 degrees C. Excess conjugate is removed in another wash cycle and the beads are resuspended in wash buffer. The bead mixture then passes through a detector where the identity of the dyed beads is determined by the fluorescence of the dyes, and the amount of antibody captured by the antigen is determined by the fluorescence of the attached PE. Raw data is calculated in relative fluorescence intensity. Three additional dyed beads, an internal standard bead, a serum verification bead, and a reagent blank bead are present in each reaction mixture to verify detector response, the addition of serum to the reaction vessel and the absence of significant nonspecific binding in serum.(Package insert: BioPlex 2200 System HSV-1 and HSV-2 IgG, Version 665-0533A_EN May 2009. Bio-Rad Laboratories Clinical Diagnostics Group, Hercules, CA)

IgM:

Diluted samples are incubated with HSV 1 and 2 antigens bound to the solid surface of a microtiter well. If IgM antibodies against HSV are present in the sample, they will bind to the antigen, forming antigen-antibody complexes. Residual sample is eliminated by aspirating and washing. Conjugate (horseradish peroxide-labeled antihuman IgM) is added and binds to these complexes. Unbound conjugate is removed by aspiration and washing. The substrate is then added and incubated. In the presence of bound enzyme, the substrate is converted to an end product. The absorbance of this end product is read spectrophotometrically at 450 nm (reference 600-630 nm) and is directly proportional to the concentration of IgM antibodies to HSV 1 and 2 antigens present in the sample. (Package insert: HSV 1 and 2 IgM Enzyme Immunoassay Test Kit, Rev. 7 – June 15. DiaMedix Corporation, Miami, FL)

PDF Report

No
Test Definition: HSV
HSV Types 1 and 2 Ab, S

Day(s) and Time(s) Test Performed
Monday through Saturday; 9 a.m.

Analytic Time
1 day

Maximum Laboratory Time
2 days

Specimen Retention Time
14 days

Performing Laboratory Location
Rochester

Fees and Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification
This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information
86694-HSV IgM EIA
86695-Herpes simplex, type 1
86696-Herpes simplex, type 2
86694-HSV IFA (if appropriate)

LOINC® Information

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<td>HSV Type 1 Ab, IgG, S</td>
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<td>HSV Type 2 Ab, IgG, S</td>
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