# Test Definition: EEEP

Eastern Equine Encephalitis Antibody, IgG and IgM, Serum

## Overview

### Useful For
Aiding in the diagnosis of Eastern equine encephalitis using serum specimens

### Testing Algorithm
For more information see Mosquito-borne Disease Laboratory Testing.

### Special Instructions
- Mosquito-borne Disease Laboratory Testing

### Method Name
Immunofluorescence Assay (IFA)

### NY State Available
Yes

## Specimen

### Specimen Type
Serum

### Specimen Required
**Supplies:** Sarstedt Aliquot Tube, 5 mL (T914)
**Collection Container/Tube:**
**Preferred:** Serum gel
**Acceptable:** Red top
**Submission Container/Tube:** Plastic vial
**Specimen Volume:** 0.5 mL
**Collection Instructions:** Centrifuge and aliquot serum into plastic vial.

### Forms
If not ordering electronically, complete, print, and send Infectious Disease Serology Test Request (T916) with the specimen.

### Specimen Minimum Volume
0.15 mL

### Reject Due To

| | |
|---|---|
| Gross hemolysis | Reject |
| Gross lipemia | Reject |

### Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---|---|---|---|
| Serum | Refrigerated (preferred) | 14 days | |
| | Frozen | 14 days | |

## Clinical & Interpretive

### Clinical Information

Eastern equine encephalitis (EEE) is within the alphavirus group. It is a low prevalence cause of human disease in the Eastern and Gulf Coast states. EEE is maintained by a cycle of mosquito/wild bird transmission, peaking in the summer and early fall, when humans may become an adventitious host. The most common clinically apparent manifestation is a mild undifferentiated febrile illness, usually with headache.

Central nervous system involvement is demonstrated in only a minority of infected individuals; it is more abrupt and more severe with EEE than other arboviruses, with children being more susceptible to severe disease. Fatality rates are approximately 70% for EEE.

### Reference Values

IgG: <1:10
IgM: <1:10
Reference values apply to all ages.

### Interpretation

In patients infected with this virus, IgG antibody is generally detectable within 1 to 3 weeks of onset, peaking within 1 to 2 months, and declining slowly thereafter.

IgM class antibody is also reliably detected within 1 to 3 weeks of onset, peaking and rapidly declining within 3 months.

Single serum specimen IgG greater than or equal to 1:10 indicates exposure to the virus.

Results from a single serum specimen can differentiate early (acute) infection from past infection with immunity if IgM is positive (suggests acute infection).

A 4-fold or greater rise in IgG antibody titer in acute and convalescent sera indicate recent infection.

In the United States it is unusual for any patient to show positive reactions to more than 1 of the arboviral antigens, although Western equine encephalitis and Eastern equine encephalitis antigens will show a noticeable cross-reactivity.

Infections can occur at any age. The age distribution depends on the degree of exposure to the particular transmitting arthropod relating to age and sex, as well as the occupational, vocational, and recreational habits of the individuals. Once humans have been infected, the severity of the host response may be influenced by age.

### Cautions

All results must be correlated with clinical history and other data available to the attending physician.

Specimens collected within the first 2 weeks after onset are variably negative for IgG antibody and should not be used to exclude the diagnosis of arboviral disease. If arboviral infection is suspected, a second specimen should be collected and tested 10 to 21 days later.

Eastern equine encephalitis and Western equine encephalitis viruses show some cross-reactivity; however, antibody response to the infecting virus is typically at least 8-fold higher.

Usually, when an infection with an arbovirus is suspected, it is too late to isolate the virus or draw serum specimens to detect a rise of antibody titer.

### Clinical Reference

1. Gonzalez-Scarano F, Nathanson N. Bunyaviruses. In: Fields BN, Knipe DM, eds. Fields Virology. Vol 1. 2nd ed. Raven Press; 1990:1195-1228
2. Donat JF, Rhodes KH, Groover RV, Smith TF. Etiology and outcome in 42 children with acute nonbacterial meningoencephalitis. Mayo Clin Proc. 1980;55(3):156-160
3. Tsai TF. Arboviruses. In: Murray PR, Baron EJ, Pfaller MA, et al, eds. Manual of Clinical Microbiology. 7th ed. American Society for Microbiology; 1999:1107-1124
4. Calisher CH. Medically important arboviruses of the United States and Canada. Clin Microbiol Rev. 1994;7(1):89-116
5. Markoff L. Alphaviruses (Chikungunya, Eastern equine encephalitis). In: Bennett JE, Dolin R, Blaser MJ, eds. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 9th ed. Elsevier; 2020:1997-2006

## Performance

### Method Description

The indirect immunofluorescent antibody (IFA) assay is a 2-stage “sandwich" procedure. In the first stage, the patient serum is diluted in Pretreatment Diluent for IgM and phosphate buffered saline (PBS) for IgG, added to appropriate slide wells in contact with the substrate, and incubated. Following incubation, the slide is washed in PBS, which removes unbound serum antibodies. In the second stage, each antigen well is overlaid with fluorescein-labeled antibody to IgM and IgG. The slide is incubated allowing antigen-antibody complexes to react with the fluorescein-labeled anti-IgM and anti-IgG. After the slide is washed, dried, and mounted, it is examined using fluorescence microscopy. Positive reactions appear as cells exhibiting bright apple-green cytoplasmic fluorescence against a background of red negative control cells. Semi-quantitative endpoint titers are obtained by testing serial dilutions of positive specimens.(Package inserts: Arbovirus IFA IgM and Arbovirus IFA IgG Instructions for Use. Focus Diagnostics; Rev. 03, 02/17/2023)

### PDF Report

No

### Day(s) Performed
May through October: Monday through Friday
November through April: Monday, Wednesday, Friday

### Report Available
Same day/1 to 4 days

### Specimen Retention Time
2 weeks

### Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

## Fees & 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 account representative. For assistance, contact Customer Service.

### Test Classification
This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

### CPT Code Information
86652 x 2

### LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---|---|---|
| EEEP | East Equine Enceph Ab, IgG and IgM, S | 69034-7 |

| Result ID | Test Result Name | Result LOINC® Value |
|---|---|---|
| 83354 | East Equine Enceph Ab, IgG, S | In Process |
| 83355 | East Equine Enceph Ab, IgM, S | In Process |