

**Overview****Useful For**

Evaluation of patients with suspected systemic infection

Evaluation of patients with suspected localized infection, specifically prosthetic joint infection (PJI)

Evaluation of patients with suspected chronic inflammatory disorders, such as rheumatoid arthritis, systemic lupus erythematosus, ankylosing spondylitis, or inflammatory bowel disease

**Method Name**

Electrochemiluminescence

**NY State Available**

Yes

**Specimen****Specimen Type**

Plasma EDTA

**Specimen Required**

**Collection Container/Tube:** Lavender-top (EDTA)

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 0.5 mL

**Collection Instructions:**

1. Immediately after specimen collection, place the tube on wet ice.
2. Centrifuge at 1500 x g for 10 minutes and aliquot plasma into plastic vial.
3. Freeze specimen within 30 minutes.

**Specimen Minimum Volume**

0.3 mL

**Reject Due To**

Gross hemolysis	OK
Gross lipemia	Reject
Gross icterus	OK

**Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Plasma EDTA	Frozen (preferred)	21 days	
	Refrigerated	24 hours	

## Clinical and Interpretive

### Clinical Information

Interleukin-6 (IL-6) has important roles in both innate and adaptive immunity.(1) IL-6 can be produced by a variety of different cell types, including macrophages, endothelial cells, and T cells. This production can be initiated in response to microbial invasion or other cytokines, such as tumor necrosis factor (TNF). As part of the innate immune system, IL-6 acts on hepatocytes to induce expression of C-reactive protein (CRP), fibrinogen, and serum amyloid A, also known as the acute phase response. Within the adaptive immune response, IL-6 plays a key role in activating antibody-producing B cells to proliferate, leading to an enhanced antibody response.

Concentrations of IL-6 are elevated in patients with infection, sepsis, and septicemia. In addition, IL-6 concentrations appear to correlate with severity of sepsis, as defined by clinical and laboratory parameters.(2) Elevations in IL-6 also appear to be associated with more localized infections, such as prosthetic joint infections (PJI).(3) A recent meta-analysis demonstrated that IL-6 had improved diagnostic accuracy for PJI compared to CRP, erythrocyte sedimentation rate (ESR), and white blood cell counts. IL-6 is also elevated in numerous chronic inflammatory disorders, including rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), ankylosing spondylitis (AS), and inflammatory bowel disease (IBD).(4) There is evidence that IL-6 is involved in the pathogenesis of certain chronic inflammatory disorders. Tocilizumab, an antibody that blocks IL-6 function by binding to the IL-6 receptor, has been approved for the treatment of RA. In a randomized trial, 50% to 60% of patients receiving tocilizumab and methotrexate showed improvement in clinical signs and symptoms of RA, compared to only 25% in patients receiving methotrexate alone.(5)

### Reference Values

< or =1.8 pg/mL

### Interpretation

Elevated concentrations of interleukin-6 (IL-6) may indicate an ongoing inflammatory response and could be consistent with a systemic infection, localized infection, or chronic inflammatory disease.

### Cautions

Interleukin-6 (IL-6) is a nonspecific marker associated with an inflammatory response and is not diagnostic for any specific disease or disease process. Elevated concentrations of IL-6 must be interpreted within the clinical context of the patient.

Normal concentrations of IL-6 do not exclude the possibility of an ongoing inflammatory process.

IL-6 has limited stability. Following centrifugation, plasma must be either immediately frozen or refrigerated. Specimens can be stored at refrigerated temperatures for only 24 hours, after which time they must be frozen. Storage of plasma for any length of time at ambient temperature is not acceptable.

### Clinical Reference

1. Scheller J, Chalaris A, Schmidt-Arras D, Rose-John S: The pro- and anti-inflammatory properties of the cytokine interleukin-6. *Biochim Biophys Acta*. 2011;1813:878-888. doi: 10.1016/j.bbamcr.2011.01.034.

2. Tsalik E, Jagers B, Glickman SW, et al: Discriminative value of inflammatory biomarkers for suspected sepsis. *J Emerg Med.* 2012;43:97-106. doi: 10.1016/j.jemermed.2011.05.072.
3. Berbari E, Mabry T, Tsaras G, et al: Inflammatory blood laboratory levels as markers of prosthetic joint infection: a systematic review and meta-analysis. *J Bone Joint Surg Am.* 2010;92:2102-2109. doi: 10.2106/JBJS.I.01199.
4. Gabay C: Interleukin-6 and chronic inflammation. *Arthritis Res Ther.* 2006;8 Suppl 2:S3. doi: 10.1186/ar1917.
5. Smolen JS, Beaulieu A, Rubbert-Roth A, et al: Effect of interleukin-6 receptor inhibition with tocilizumab in patients with rheumatoid arthritis (OPTION study): a double-blind, placebo-controlled, randomized trial. *Lancet.* 2008;371:987-997. doi: 10.1016/S0140-6736(08)60453-5.

## Performance

### Method Description

The interleukin-6 (IL-6) cytokine assay measures human cytokines in a 96-well spotted plate. The assay employs a sandwich immunoassay format where capture antibodies are coated on a single spot on the bottom of each well. Diluted samples, calibrators, and controls are added and to the plate. If present, IL-6 will bind to the capture antibodies. After incubation, a solution containing detection antibodies conjugated with electrochemiluminescent labels is added. After a final incubation, a buffer is added that creates the appropriate chemical environment for electrochemiluminescence. The plate is then read on the Sector Imager 2400. The machine applies a voltage that causes bound labels to emit measurable light. The Sector Imager 2400 measures the intensity of emitted light and correlates it to a set of standards of known quantity via a 4-point logistics curve fitting method. (Package insert: Human IL-6 V-plex. Mesoscale Discovery; 2014)

### PDF Report

No

### Day(s) Performed

Monday, Wednesday, Friday

### Report Available

1 to 8 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 was developed, and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

**CPT Code Information**

83520

**LOINC® Information**

Test ID	Test Order Name	Order LOINC Value
IL6	Interleukin 6, P	26881-3

Result ID	Test Result Name	Result LOINC Value
63020	Interleukin 6, P	26881-3