

## Overview

### Useful For

Evaluation of suspected iron deficiency in patients who may have inflammation, infection, or chronic disease and other conditions in which ferritin concentration does not correlate with iron status, including:

- Cystic fibrosis patients who frequently have inflammation or infections(2-3)
- Evaluating insulin-dependent diabetics who may have iron-deficiency resulting from gastric autoimmunity and atrophic gastritis(4)

### Method Name

Immunoturbidimetric Assay

### 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:** 1 mL

**Collection Instructions:**

1. Serum gel tubes should be centrifuged within 2 hours of collection.
2. Red-top tubes should be centrifuged, and the serum aliquoted into a plastic vial within 2 hours of collection.

### Specimen Minimum Volume

0.25 mL

### Reject Due To

Gross hemolysis	Reject
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### Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Frozen (preferred)	90 days	
	Refrigerated	7 days	
	Ambient	72 hours	

## Clinical & Interpretive

### Clinical Information

Iron uptake into cells is mediated through internalizing iron-transferrin complexes. The iron-transferrin complex binds to transferrin receptors present on the external face of the plasma membrane and is internalized through endosomes with ultimate release of iron into the cytoplasm. Plasma membrane-bound transferrin receptor is released by proteolytic cleavage of the extracellular domain, resulting in the formation of a truncated soluble transferrin receptor (sTfR) that circulates freely in the blood.

The concentration of sTfR is an indicator of iron status. Iron deficiency causes overexpression of transferrin receptor and sTfR levels, while iron repletion results in decreased sTfR levels. While ferritin measurement is the accepted method for assessment of iron deficiency, ferritin is an acute-phase reactant and elevates in response to processes that do not correlate with iron status, including inflammation, chronic disease, malignancy, and infection. sTfR is not an acute-phase reactant and the interpretation of iron status using sTfR measurement is not affected by these confounding pathologies.(1)

### Reference Values

1.8-4.6 mg/L

It is reported that African Americans may have slightly higher values.

### Interpretation

Soluble transferrin receptor (sTfR) concentrations are inversely related to iron status; sTfR elevates in response to iron deficiency and decreases in response to iron repletion.

### Cautions

The soluble transferrin receptor (sTfR) immunoassay should not be used for the routine clinical evaluation of patients for iron status when ferritin immunoassay (FERR1 / Ferritin, Serum) would be appropriate, such as in the absence of confounding pathologies (inflammation, infection, chronic disease, or malignancy).

Patients with hemolysis and recent blood loss may have falsely elevated sTfR levels.

sTfR is elevated in patients with thalassemia and sickle cell disease. Caution should be exercised in managing anemia in these individuals based on the sTfR test results.

### Clinical Reference

1. Vazquez-Lopez MA, Lopez-Ruzafa E, Ibanez-Alcalde M, Martín-Gonzalez M, Bonillo-Perales A, Lendínez-Molinos F. The usefulness of reticulocyte haemoglobin content, serum transferrin receptor and the sTfR-ferritin index to identify iron deficiency in healthy children aged 1-16 years. *Eur J Pediatr.* 2019;178(1):41-49
2. Cook JD, Skikne BS, Baynes RD. Serum transferrin receptor. *Ann Rev Med.* 1993;44:63-74
3. Keevil B, Rowlands D, Burton I, Webb AK. Assessment of iron status in cystic fibrosis patients. *Ann Clin Biochem.*

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2000;37:662-665

4. De Block CE, Van Capenhout CM, De Leeuw IH, et al. Soluble transferrin receptor level: a new marker of iron deficiency anemia, a common manifestation of gastric autoimmunity in type 1 diabetes. *Diabetes Care*.

2000;23(9):1384-1388

5. Mast AE, Blinder MA, Gronowski AM, et al. Clinical utility of the soluble transferrin receptor and comparison with serum ferritin in several populations. *Clin Chem*. 1998;44(1):45-51

6. Rees DC, Williams TN, Maitland K, et al. Alpha thalassaemia is associated with increased soluble transferrin receptor levels. *Br J Haematol*. 1998;103(2):365-369

7. Duits AJ, Roker RA, van Endt T, et al. Erythropoiesis and Serum sVCAM-1 levels in adults with sickle cell disease. *Ann Hematol*. 2003;82(3):171-174

## Performance

### Method Description

Latex-bound anti-sTfR antibodies react with the antigen in the sample to form an antigen/antibody complex. Following agglutination, the complex is measured turbidimetrically on a Roche P Modular. (Package insert: The Tina-quant Soluble Transferrin Receptor Immunturbidimetric assay for the in vitro quantitative determination of soluble transferrin receptor. Roche Corporation; V 2, 01/2021)

### PDF Report

No

### Day(s) Performed

Monday through Sunday

### Report Available

Same day/1 to 2 days

### Specimen Retention Time

1 week

### Performing Laboratory Location

Rochester

## 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

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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**

84238

**LOINC® Information**

Test ID	Test Order Name	Order LOINC® Value
STFR	Soluble Transferrin Receptor (sTfR)	30248-9

Result ID	Test Result Name	Result LOINC® Value
STFR	Soluble Transferrin Receptor (sTfR)	30248-9