

## Overview

### Useful For

Determining whether *Salmonella* species may be the cause of diarrhea

Reflexive testing for *Salmonella* species from nucleic acid amplification test-positive feces

This test is generally **not useful for** patients hospitalized more than 3 days because the yield from specimens from these patients is very low, as is the likelihood of identifying a pathogen that has not been detected previously.

### Highlights

This test provides evidence of the presence of the bacterium, *Salmonella* species, in feces, in a viable state, and provides an isolate for antibacterial susceptibility testing and, if needed, submission to a health department. Minnesota healthcare providers are required to report all confirmed or suspected cases of salmonellosis to the Minnesota Department of Health. Mayo Clinic Laboratories clients should refer to their local health departments regarding public health submission of *Salmonella* isolates.

### Reflex Tests

Test ID	Reporting Name	Available Separately	Always Performed
GID	Bacteria Identification	No, (Bill Only)	No
ISAE	Aerobe Ident by Sequencing	No, (Bill Only)	No
REFID	Additional Identification Procedure	No, (Bill Only)	No
SALS	Serologic Agglut Method 1 Ident	No, (Bill Only)	No
RMALD	Ident by MALDI-TOF mass spec	No, (Bill Only)	No

### Testing Algorithm

When this test is ordered, the reflex tests may be performed and charged separately.

See [Laboratory Testing for Infectious Causes of Diarrhea](#) in Special Instructions.

### Special Instructions

- [Laboratory Testing for Infectious Causes of Diarrhea](#)

### Method Name

Conventional Culture

### NY State Available

Yes

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## Specimen

### Specimen Type

Fecal

### Advisory Information

The recommended test for diagnosis of typhoid or paratyphoid fever is blood culture.

### Additional Testing Requirements

If susceptibility testing is needed, also order ZMMLS / Antimicrobial Susceptibility, Aerobic Bacteria, MIC, Varies. If susceptibility testing is not needed (eg, due to lack of recovery of *Salmonella* species from feces), it will not be performed and the ZMMLS order will be canceled at time of report.

In some cases, local public health requirements may impact Mayo Clinic Laboratories clients, requiring, for example, submission of isolates to public health laboratories. Clients should familiarize themselves with local requirements and are responsible for submitting isolates to appropriate public health laboratories. Clients can obtain isolates of *Salmonella* species recovered from specimens submitted to Mayo Clinic Laboratories by calling 800-533-1710 as soon as possible after reporting (to ensure viability of the bacterium).

### Shipping Instructions

**Specimen must arrive within 96 hours of collection.**

### Necessary Information

**Specimen source is required.**

### Specimen Required

**Patient Preparation:** Medications: Do not use barium or bismuth before collection of specimen.

**Supplies:** C and S Vial (T058)

**Specimen Type:** Preserved Feces

**Container/Tube:** Commercially available transport system specific for recovery of enteric pathogens from fecal specimens (15 mL of non-nutritive transport medium containing phenol red as a pH indicator, either Cary-Blair or Para-Pak C and S)

**Specimen Volume:** Representative portion of fecal specimen

### Collection Instructions:

1. Collect fresh feces and submit 1 gram or 5 mL in container with transport medium.
2. Place feces in preservative within 2 hours of collection.
3. Place vial in a sealed plastic bag.

### Specimen Minimum Volume

1 mL

### Reject Due To

Unpreserved feces ECOFIX preservative Formalin or PVA fixative	Reject
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### Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Fecal	Ambient (preferred)	4 days	
	Refrigerated	4 days	

## Clinical and Interpretive

### Clinical Information

Diarrhea may be caused by a number of agents, including bacteria, viruses, parasites, and chemicals; these agents may result in similar symptoms. A thorough patient history covering symptoms, severity and duration of illness, age, travel history, food consumption, history of recent antibiotic use, and illnesses in the family or other contacts will help the healthcare provider determine the appropriate testing to be performed.

*Salmonella* species cause disease in 2 broad categories-gastroenteritis, and typhoid (or paratyphoid) fever (eg, *Salmonella enterica* subspecies *enterica* serovar Typhi, *Salmonella enterica* subspecies *enterica* serovar Paratyphi A, *Salmonella enterica* subspecies *enterica* serovar Paratyphi B [tartrate negative], and *Salmonella enterica* subspecies *enterica* serovar Paratyphi C). In the United States, gastroenteritis is most common clinical presentation.

### Reference Values

No growth of pathogen

### Interpretation

The growth of *Salmonella* species identifies a potential cause of diarrhea.Â

### Cautions

The yield of *Salmonella* species is reduced when specimens are delayed in transit to the laboratory (>2 hours from collection for unpreserved specimens).

Check local public health requirements, which may require submission of isolates to a public health laboratory.

*Salmonella enterica* subspecies *enterica* serovars Paratyphi B and Paratyphi C, which may cause paratyphoid fever, are not specifically tested for at Mayo Clinic Laboratories; they will be reported as *Salmonella* species not serovars Typhi/Paratyphi A.

### Clinical Reference

- Pillai DR: Fecal culture for *Campylobacter* and related organisms. In Clinical Microbiology Procedures Handbook, Fourth edition. Washington, DC, ASM Press, 2016, Section 3.8.2
- DuPont HL: Persistent diarrhea: A clinical review. JAMA 2016;315(24):2712-2723 doi:10.1001/jama.2016.7833
- American Public Health Association. Salmonellosis. In Control of Communicable Diseases Manual. Nineteenth edition. Edited by DL Heymann. Washington, DC. American Public Health Association, 2008

4. Johnson LR, Gould LH, Dunn JR, et al: *Salmonella* infections associated with international travel: A Foodborne Diseases Active Surveillance Network (FoodNet) study. Foodborne Pathog Dis 2011;8(9):1031-1037

## Performance

### Method Description

The fecal specimen is inoculated onto hektoen enteric agar, a selective and differential agar designed to recover *Salmonella* species, and the enrichment broth, selenite F. After incubation, suspect *Salmonella* colonies are identified using one or a combination of the following techniques: matrix-assisted laser desorption/ionization time of flight (MALDI-TOF) mass spectrometry, conventional biochemical tests, carbon source utilization, serologic methods, and/or nucleic acid sequencing of the 16S ribosomal RNA (rRNA) gene. Isolates are reported as *Salmonella* species, not serovars Paratyphi A/Typhi, *Salmonella enterica* subspecies *enterica* serovar Typhi, or *Salmonella enterica* subspecies *enterica* serovar Paratyphi A. (Pillai DR: Fecal culture for aerobic pathogens of gastroenteritis. In Clinical Microbiology Procedures Handbook, Fourth edition. Washington, DC, ASM Press, 2016, Section 3.8.1)

### PDF Report

No

### Day(s) and Time(s) Test Performed

Monday through Sunday

### Analytic Time

3 days

### Maximum Laboratory Time

5 days

### Specimen Retention Time

7 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 cleared, approved or is exempt by the U.S. 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

87046-Salmonella Culture, Stool-with isolation and preliminary examination

87077-Bacteria Identification (if appropriate)

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87153-Aerobe Ident by Sequencing (if appropriate)

87077-Additional Identification Procedure (if appropriate)

87147 x 1-3-Serologic Agglut Method 1 Ident (if appropriate)

87077-Ident by MALDI-TOF mass spec (if appropriate)

**LOINC® Information**

Test ID	Test Order Name	Order LOINC Value
SALMC	Salmonella Culture, F	20955-1

Result ID	Test Result Name	Result LOINC Value
SALMC	Salmonella Culture, F	20955-1