Stool Culture with E.coli Shiga Toxin 1 & 2 Detection

Qualitative EIA detection of Shiga toxins 1 (ST-1)and 2 (ST-2) produced by some strains of *Escherichia coli* is included in all stool culture requests

Clinical Background

Shiga toxin--producing E. coli (STEC) cause about 100,000 illnesses, 3,000 hospitalizations, and 90 deaths annually in the United States. Most are caused by E. coli O157:H7 with an estimated 73,000 cases occurring annually in the USA. There are greater than 150 STEC serotypes associated with outbreaks and sporadic illness beyond the O157:H7 type. These are also important causes of diarrheal illness and have been associated with outbreaks and sporadic illness (e.g. O26, O45, O103, O111, O121, O145, and others).

All stools submitted for testing from patients with acute community-acquired diarrhea should be cultured for stool pathogens, including *E. coli* O157 STEC. CDC also recommends that "these stools should be simultaneously assayed for non-O157 STEC with a test that detects the Shiga toxins or the genes encoding these toxins."

Test Performance Verification

In house test performance was compared to known specimens containing different strains of *E. coli* shiga toxin producers (i.e. ST-1 and/or ST-2 postitive). The following summary table shows the performance characteristics for this immunochromatographic rapid test:

Test Variable	E. coli ST-1 and/or ST-2
Sensitivity	94.7
Specificity	100
NPV	93.3
PPV	100

Test Limitations

- Unacceptable specimens include: 24 hour stool collection, Rectal swab, and stool specimens contaminated with urine
- A negative test result does not rule out the presence of *E. coli* shiga toxin producers below the test sensitivity.

Methodology

This ImmunoCard STAT! EHEC assay employs an immunochromatographic rapid test (EIA) using monoclonal antibodies labeled with red-colored gold particles.

Test Ordering Information

Test Name	Test Code
Stool culture with shiga toxin EIA	**6222**

Specimen Collection and Transport

Specimen Type: Stool (in Cary Blair transport)
Optimum Specimen: 5.0 gm (minimum 1.0 gm)
Other Specimen Types: Raw stool in clean container

Specimen Stability

Ambient Stability: Stool or rectal swab in Cary-Blair (CB) media: 4 days or raw stool 2 hours
Refrigerated (2-8°C): Raw stool: 24 hours
Frozen Stability (-20°C or lower): 1 month
Local Transport: Raw stool refrigerated or CB ambient
Long Distance: Raw stool refrigerated or CB ambient

CPT Code

87045, 87046(x2)	Stool, aerobic culture and ID
87427	Shiga-like toxin

References

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3. Gould, L. H., C. Bopp, N. Strockbine, R. Atkinson, V. Baselski, B. Body, R. Carey, C. Crandall, S. Hurd, R. Kaplan, M. Neill, S. Shea, P. Somsel, M. Tobin-D'Angelo, P. M. Griffin, P. Gerner-Smidt, C. Centers for Disease, and Prevention. 2009. Recommendations for diagnosis of shiga toxin--producing Escherichia coli infections by clinical laboratories. MMWR Recomm Rep 58:1-14.
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Diagnostic Laboratory Services Inc.
99-859 Iwaiwa Street· Aiea, HI·96701 (808) 589-5100 · www.dlslab.com