Overview

Useful For
Investigating infection outbreaks by a single bacterial species

Special Instructions
- Infectious Specimen Shipping Guidelines

Method Name
Pulsed-Field Gel Electrophoresis

NY State Available
Yes

Specimen

Specimen Type
Varies

Advisory Information
This test compares bacterial strains of non-*aureus Staphylococcus* species; non-*pneumophila Legionella* species; *Enterobacteriaceae* other than *Enterobacter cloacae, Escherichia coli, Klebsiella pneumoniae, and Serratia marcescens*; nonfermenting Gram-negative bacilli other than *Acinetobacter baumannii* and *Pseudomonas aeruginosa; Listeria species, Bacillus species, Enterococcus species other than E faecalis and E faecium, Streptococcus species other than S pyogenes, Lactobacillus species, and Clostridium perfringens*.

For *Acinetobacter baumannii, Campylobacter jejuni/coli, Clostridioides (Clostridium) difficile, Enterobacter cloacae, Enterococcus faecalis, Enterococcus faecium, Escherichia coli, Klebsiella pneumoniae, Legionella pneumophila, Pseudomonas aeruginosa, Serratia marcescens, Staphylococcus aureus, or Streptococcus pyogenes* isolates, order BTWGS / Bacterial Typing by Whole Genome Sequencing, Varies.

Shipping Instructions
1. See Infectious Specimen Shipping Guidelines in Special Instructions for shipping information.

2. Place isolates in a large infectious container (T146) and label as an etiologic agent/infectious substance.

3. Place all pulsed-field gel electrophoresis (PFGE) isolates (all patients and/or sites to be compared) together in 1 large bag, and send in the same shipping container. This is necessary for comparison of isolates by this method.

Necessary Information
Organism identification and specimen source are required.

Results will be faxed to the client.

Specimen Required

Supplies: Infectious Container, Large (T146)

Container/Tube: Agar slant
Specimen Volume: Isolates on separate agar slants in pure culture

Collection Instructions: Organism must be in pure culture, actively growing. Do not submit mixed cultures.

Additional Information:

1. Each slant must be submitted under a separate order.

2. Original isolates should be saved at the client site if additional pulsed-field gel electrophoresis testing may be needed (e.g., to compare to future outbreak isolates that may occur).

Forms
If not ordering electronically, complete, print, and send a Microbiology Test Request (T244) with the specimen.

Reject Due To
All specimens will be evaluated by Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

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<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tr>
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Clinical and Interpretive

Clinical Information
Bacterial-typing techniques are useful for determining strain relatedness in the setting of nosocomial outbreaks or apparent outbreaks. Serial isolates obtained from the same patient can be typed to determine whether they are the same or different. Typing allows discrimination between isolates of the same species, informing recognition of a potential outbreak.

In the past, strain typing was accomplished by testing for different biochemical, phage, or antibiotic resistance patterns. Antibiograms are often unreliable because they are easy to over-interpret or under-interpret. Other strain-typing methods are often organism-specific and each requires a unique set of reagents and procedures. The availability of classical strain-typing techniques has been limited.

Reference Values
Reported as isolates are “indistinguishable” or “different” by pulsed-field gel electrophoresis.

Interpretation
Isolates that show identical DNA restriction fragment length polymorphism patterns are considered to be closely related.

Cautions
The fact that 2 strains share the same pattern does not prove that they are epidemiologically related. Establishment of an epidemiologic relationship depends on the frequency with which the “indistinguishable” pattern is seen among epidemiologically unrelated isolates and correlation with clinical and epidemiological information.
Obviously, if common contact between 2 patients with strains with the same pulsed-field gel electrophoresis (PFGE) type can be established, the chances are greater that an epidemiologic link can be ascribed. Thus, the greatest power of PFGE typing is in showing strain dissimilarity, not in proving similarity or relatedness.

Clinical Reference


Performance

Method Description

Typing of bacterial isolates is accomplished by comparing the DNA restriction fragment length polymorphism (RFLP) patterns of large DNA fragments separated by pulsed-field gel electrophoresis (PFGE) of 2 or more bacterial isolates. Identical RFLP patterns indicate similarity of the isolates. The test is performed by isolating the DNA from the organism, cutting the DNA with a restriction enzyme which recognize 10 to 20 sites on the genome, and separating the fragments using PFGE. The size pattern of DNA fragments in the electrophoresis gel of different isolates is then compared. (Tenover FC, Arbeit RD, Goering RV, et al: Interpreting chromosomal DNA restriction patterns produced by pulsed-field gel electrophoresis: criteria for bacterial strain typing. J Clin Microbiol 1995;33:2233-2239)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday

Analytic Time

10 days

Maximum Laboratory Time

17 days (Testing may take longer if a large number of isolates are submitted)

Specimen Retention Time

1 month

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 uses a standard method. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

**CPT Code Information**

87152

**LOINC® Information**

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<td>Bacterial Typing</td>
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