MAYO CLINIC LABORATORIES

Test Definition: URBRP

Ureaplasma species, Molecular Detection, PCR, Blood

Overview

Useful For

Rapid, sensitive, and specific identification of *Ureaplasma urealyticum* and *Ureaplasma parvum* from whole blood

This test is **not intended for** medicolegal use.

Method Name

Real-Time Polymerase Chain Reaction (PCR)

NY State Available

Yes

Specimen

Specimen Type

Whole Blood EDTA

Specimen Required

The high sensitivity of amplification by polymerase chain reaction requires the specimen to be processed in an environment in which contamination of the specimen by *Ureaplasma* DNA is not likely.

Container/Tube:
Preferred Lavender top (EDTA)
Acceptable: Royal blue top (EDTA), pink top (EDTA), or sterile vial containing EDTA-derived aliquot
Specimen Volume: 1 mL
Collection Instructions: Send whole blood specimen in original tube (preferred)

Specimen Minimum Volume

0.5 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole Blood EDTA	Refrigerated (preferred)	7 days	
	Frozen	7 days	

Clinical & Interpretive

Clinical Information

Ureaplasma urealyticum and *Ureaplasma parvum* have been associated with a number of clinically significant infections, although their clinical significance may not always be clear as they are part of the normal genital microbiota. *U urealyticum* and *U parvum* have been associated with urethritis and epididymitis. They may cause upper urinary tract infection and have been associated with infected kidney stones. *U urealyticum* and *U parvum* may be isolated from amniotic fluid of women with preterm labor, premature rupture of membranes, spontaneous term labor, or chorioamnionitis. They may also cause neonatal infections, including meningoencephalitis and pneumonia. In addition, *U urealyticum* and *U parvum* have been reported to cause unusual infections, such as periprosthetic joint infection and infections in transplant recipients.

Ureaplasma urealyticum and *U parvum* cause hyperammonemia in lung transplant recipients.(1) In lung transplant recipients with hyperammonemia, the ideal diagnostic specimen is a lower respiratory specimen (eg, bronchoalveolar lavage fluid), although *U urealyticum* and *U parvum* may be detected in blood. Treatment directed against these organisms has resulted in resolution of hyperammonemia.

Culture of *Ureaplasma* species is laborious, requiring a high degree of technical skill and taking several days. Polymerase chain reaction (PCR) analysis is sensitive, specific, and provides same-day results. In addition, PCR allows differentiation of *U urealyticum* and *U parvum*, which is not easily accomplished with culture. PCR has replaced conventional culture for *U urealyticum* and *U parvum* at Mayo Clinic Laboratories due to its speed and equivalent performance to culture.

Reference Values

Not applicable

Interpretation

A positive polymerase chain reaction (PCR) result for the presence of a specific sequence found within the *Ureaplasma urealyticum* and *Ureaplasma parvum ureC* gene indicates the presence of *U urealyticum* or *U parvum* DNA in the specimen.

A negative PCR result indicates the absence of detectable *U urealyticum* and *U parvum* DNA in the specimen but does not rule out infection, as false-negative results may occur due to inhibition of PCR, sequence variability underlying the primers and probes, or the presence of *U urealyticum* or *U parvum* in quantities below the limit of detection of the assay.

Cautions

Interfering substances may affect the accuracy of this assay; results should always be interpreted in conjunction with clinical and epidemiological findings.

Since *Ureaplasma* species may be part of the normal microbiota, results should be interpreted accordingly.

This test does not detect other species of *Ureaplasma* or *Mycoplasma* species (including *Mycoplasma pneumoniae*, a common cause of community acquired pneumonia).

Supportive Data

Validation included spiking studies for each *Ureaplasma* species. Spiking studies were carried out using 30 EDTA whole blood and plasma samples spiked with genomic DNA for *Ureaplasma urealyticum* and *U parvum* (as well as 10 naive specimens). Sensitivity and specificity were 100% for both targets.

Clinical Reference

1. Bharat A, Cunningham SA, Scott Budinger GR, et al. Disseminated Ureaplasma infection as a cause of fatal hyperammonemia in humans. Sci Transl Med 2015;7(284):284re3
2. Wang X, Greenwood-Quaintance KE, Karau MJ, et al. Ureaplasma parvum causes hyperammonemia in a pharmacologically immunocompromised murine model. Eur J Clin Microbiol Infect Dis. 2017;36(3):517-522. doi:10.1007/s10096-016-2827-1
3. Fernandez J, Karau MJ, Cunningham SA, Greenwood-Quaintance KE, Patel R. Antimicrobial susceptibility and clonality of clinical *Ureaplasma* isolates in the United States. Antimicrob Agents Chemother. 2016;60(8):4793-8
4. Al-Jabri MY, Patel R, Fleming D. Prior immunity to Ureaplasma urealyticum protects against respiratory infection in immunosuppressed mice. Microbiol Spectr. 2025;13 (1):e0176324

Performance

Method Description

This polymerase chain reaction (PCR) method employs a target-specific detection system, including primers and fluorescent resonance energy transfer (FRET) hybridization probes designed for the *ureC* gene of *Ureaplasma urealyticum* and *Ureaplasma parvum*. The LightCycler instrument amplifies and monitors target nucleic acid sequences by fluorescence during PCR cycling. This is an automated PCR system that can rapidly detect amplified product development. The detection of amplified products is based on the FRET principle. For FRET product detection, a hybridization probe with a donor fluorophore, fluorescein, on the 3' end is excited by an external light source, which emits light that is absorbed by a second hybridization probe with an acceptor fluorophore, LC-Red 640, on the 5' end. The acceptor fluorophore then emits light of a different wavelength that is measured with a signal that is proportional to the amount of specific PCR product. The process is completed in a closed tube system and the melting temperature of the probes allows differentiation of *U urealyticum* from *U parvum*.(Cunningham SA, Mandrekar JN, Rosenblatt JE, Patel R: Rapid PCR Detection of *Mycoplasma hominis*, *Ureaplasma urealyticum*, and *Ureaplasma parvum*. Int J Bacteriol. 2013;2013:168742doi: 10.1155/2013/168742

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

3 to 4 days

Specimen Retention Time

7 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

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

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

CPT Code Information

87798 x 2
87999 (if appropriate for government payers)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
URBRP	Ureaplasma PCR, B	69934-8

Result ID	Test Result Name	Result LOINC® Value
44132	Ureaplasma urealyticum PCR, B	51988-4
44133	Ureaplasma parvum PCR, B	69933-0
UBSRC	Specimen Source	31208-2