



# Test Definition: KKBRP

Kingella kingae, Molecular Detection, PCR,  
Blood

## Overview

### Useful For

Aiding in the diagnosis of *Kingella kingae* infection using whole blood specimens

### 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 *Kingella kingae* DNA is unlikely.

### 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 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

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**Clinical Information**

*Kingella kingae* is a fastidious short gram-negative bacillus that may colonize the oropharynx of young children. Colonization may occasionally lead to invasive disease via hematogenous dissemination, primarily in children younger than 4 years of age. This most commonly results in bone and joint infection; *K kingae* is the most frequent cause of osteomyelitis and septic arthritis in children aged 6 to 36 months. *K kingae* may also cause endocarditis, involving both native and prosthetic valves, in patients of any age and is considered part of the HACEK (*Haemophilus* species, *Aggregatibacter* species, *Cardiobacterium hominis*, *Eikenella corrodens*, and *Kingella* species) group of organisms, known for causing culture-negative endocarditis. *K kingae* produces a repeat-in-toxin (RTX) toxin.

Diagnosis of *K kingae* infection may be challenging due to the fastidious nature of the organism in culture. Evaluation of blood by polymerase chain reaction is a useful tool for the diagnosis of some cases of *K kingae* infection.

**Reference Values**

Not applicable

**Interpretation**

A positive result indicates the presence of *Kingella kingae* DNA.

A negative result indicates the absence of detectable *K kingae* DNA, but it does not negate the presence of the organism and may occur due to inhibition of polymerase chain reaction, sequence variability underlying primers or probes, or the presence of *K kingae* DNA in quantities less than the limit of detection of the assay.

**Cautions**

Test results should be used as an aid in diagnosis. A single assay should not be used as the only criteria to form a clinical conclusion, but results should be correlated with patient symptoms and clinical presentation. A negative result does not negate the presence of the organism or active disease.

This assay does not detect species of *Kingella* other than *kingae* or *negevensis* (see Supportive Data).

This assay cross-reacts with *Kingella negevensis*.(1)

**Supportive Data**

This assay was validated by testing 30-spiked positive EDTA whole blood samples and 10-negative samples. No PCR inhibitors were encountered. The assay was 100% sensitive and specific. The assay showed no cross-reactivity when tested with a panel of 67 bacterial isolates, including *Kingella* species other than *kingae*. The limit of detection in EDTA-whole blood was 1.3 CFU/mL.

**Clinical Reference**

1. El Houmami N, Bzdreng J, Durand GA, et al: Molecular tests that target the RTX locus do not distinguish between *Kingella kingae* and the recently described *Kingella negevensis* species. *J Clin Microbiol*. 2017 Oct;55(10):3113-3122
2. Murphy TF: *Moraxella catarrhalis*, *Kingella*, and other gram-negative cocci. In: Bennett JE, Dolin R, Blaser MJ, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 9th ed. Elsevier; 2020:chap 213
3. Zbinden R: *Aggregatibacter*, *Capnocytophaga*, *Eikenella*, *Kingella*, *Pasteurella*, and other fastidious or rarely encountered gram-negative rods. In: Jorgensen JH, Carroll KC, Funke G, Pfaller MA, eds. *Manual of Clinical Microbiology*. 11th ed. ASM Press; 2015:652-666

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4. Yagupsky P: Kingella kingae: carriage, transmission, and disease. Clin Microbiol Rev. 2015 Jan;28(1):54-79
5. Madigan T, Cunningham SA, Ramanan P, et al: Real-time PCR assay for detection of Kingella kingae in children. J Pediatr Infect Dis. 2018;13(3):216-233. doi: 10.1055/s-0038-1641603

## Performance

### Method Description

Nucleic acid is extracted from the specimen using the automated MagNA Pure instrument. Target specific primers are used to amplify the *rxkB* gene region of *Kingella kingae*; amplification is monitored by detecting fluorescence produced by target specific fluorescence resonance energy transfer hybridization probes. This real-time polymerase chain reaction (PCR) takes place on a LightCycler instrument. Detection of the *K kingae* target is performed through melting curve analysis using the LightCycler software. (Cockerill FR, Uhl JR: Applications and challenges of real-time PCR for the clinical microbiology laboratory. In: Reischl U, Wittwer C, Cockerill F, eds. Rapid Cycle Real-Time PCR Methods and Applications. Springer-Verlag, 2002:3-27; Zbinden R: Aggregatibacter, Capnocytophaga, Eikenella, Kingella, Pasteurella, and other fastidious or rarely encountered gram-negative rods. In: Carroll KC, Pfaller M, eds. Manual of Clinical Microbiology. 12th ed. ASM Press; 2019:656-669)

### PDF Report

No

### Day(s) Performed

Monday through Friday

### Report Available

2 to 7 days

### Specimen Retention Time

1 week

### 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

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requirements. It has not been cleared or approved by the US Food and Drug Administration.

**CPT Code Information**

87798

**LOINC® Information**

Test ID	Test Order Name	Order LOINC® Value
KKBRP	Kingella kingae PCR, B	65809-6

Result ID	Test Result Name	Result LOINC® Value
48451	Specimen Source	31208-2
48338	Kingella kingae PCR, B	65809-6