



Test Name	Legionella pneumophila (and non-pneumophila) PCR
Specimen Type	<p>Preferred specimens: Broncho-alveolar lavage fluid ETT aspirate</p> <p>Other specimens: Sputum</p>
Special Instructions For Laboratory	-
Specimen Storage And Transport	Collect in sterile container.
Specimen Minimum Volume	-
Test Method	In-house real time PCR
Expected Result	<p>Test reporting format <i>Legionella</i> DNA : DETECTED / Not detected This test component detects genes directed at ALL <i>Legionella</i> species, including <i>L. pneumophila</i></p> <p><i>Legionella pneumophila</i> DNA : DETECTED / Not detected This test component detects genes specific only to <i>L. pneumophila</i></p> <p>Test interpretation <i>Legionella</i> DNA : DETECTED <i>Legionella pneumophila</i> DNA : DETECTED This result is consistent with the presence of <i>Legionella pneumophila</i> in the tested sample.</p> <p><i>Legionella</i> DNA : DETECTED <i>Legionella pneumophila</i> DNA : Not detected This result is consistent with the presence of <i>Legionella</i> species (non-<i>pneumophila</i>) in the tested sample.</p>
Reference Ranges	Refer to Lab report
Turn Around Time	1-3 days
Days Of Testing	Monday – Saturday
Hospital	CGH
Laboratory	Microbiology Lab
Discipline	Microbiology
Contact Details	68504935
CPOE Order Name Synonyms	Legionella pneumophila PCR



Clinical Information

Legionella pneumophila has been increasingly recognized as a significant cause of sporadic community-acquired pneumonia (CAP) and nosocomial-acquired pneumonia in both healthy and immunosuppressed hosts. The majority of cases of Legionnaires' disease are caused by *L. pneumophila* serogroup 1, but other serogroups and other species are also pathogenic. *Legionella* spp. pneumonia accounts for 2%–7% of community-acquired pneumonia among hospitalized patients in Singapore, with a preponderance in patients > 75 years of age. The urine legionella antigen method is the most widely used diagnostic test, and this is available at CGH. This test only detects infections with *L. pneumophila* serogroup 1, and pooled data from several studies suggest the sensitivity is 74% [95% confidence interval (CI) 68–81%] and specificity is 99.1%.

Other diagnostic test modalities include:

- a) serology (usually a retrospective diagnosis);
 - b) *Legionella pneumophila* immunofluorescence antigen detection. Performed from respiratory tract specimens. Detects *Legionella pneumophila* serotypes 1-6;
 - c) *Legionella* culture (up to 10 days for a negative result).
- These other tests are performed in Singapore General Hospital.

The PCR test is based on a published protocol from the Centres of Disease Control, USA. The assay targets the 23S-5S rRNA intergenic spacer region (23S-5S PCR) and allows for detection of all *Legionella* species and discrimination of *L. pneumophila* from other *Legionella* species. The assay was reported to show 100% correlation with culture-positive clinical samples, and detected an additional 27 cases out of 110 culture-negative cases. Clinical sensitivity was not analysed in CGH, but analytical* sensitivity and analytical & clinical specificity was confirmed to be 100%. The exact diagnostic role of PCR remains to be clearly defined, but several studies have demonstrated an increased diagnostic yield, when compared to conventional methods.

The optimum samples for PCR testing are well-collected samples from the lower respiratory tract, which include BAL and ETNA. Other samples (e.g. throat swabs and oro-pharyngeal swabs) suffer significant issues with test sensitivity and specificity, and should be avoided as far as possible.

Link Out For Additional Information

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Remarks

This test detects all *Legionella species* and also identifies *L. pneumophila*.

ASSAY PERFORMANCE

This assay was validated in both clinical and simulated samples spiked with clinical strains of *Legionella species*.

	Sensitivity	Specificity
<i>Legionella species</i>	100% (16/16)	100% (36/36)
<i>L. pneumophila</i>	100% (13/13)	100% (36/36)

The 95% limit of detection of the assay was 11 copies (equivalent to 3-4 *Legionella* genomes) per PCR reaction for both targets.