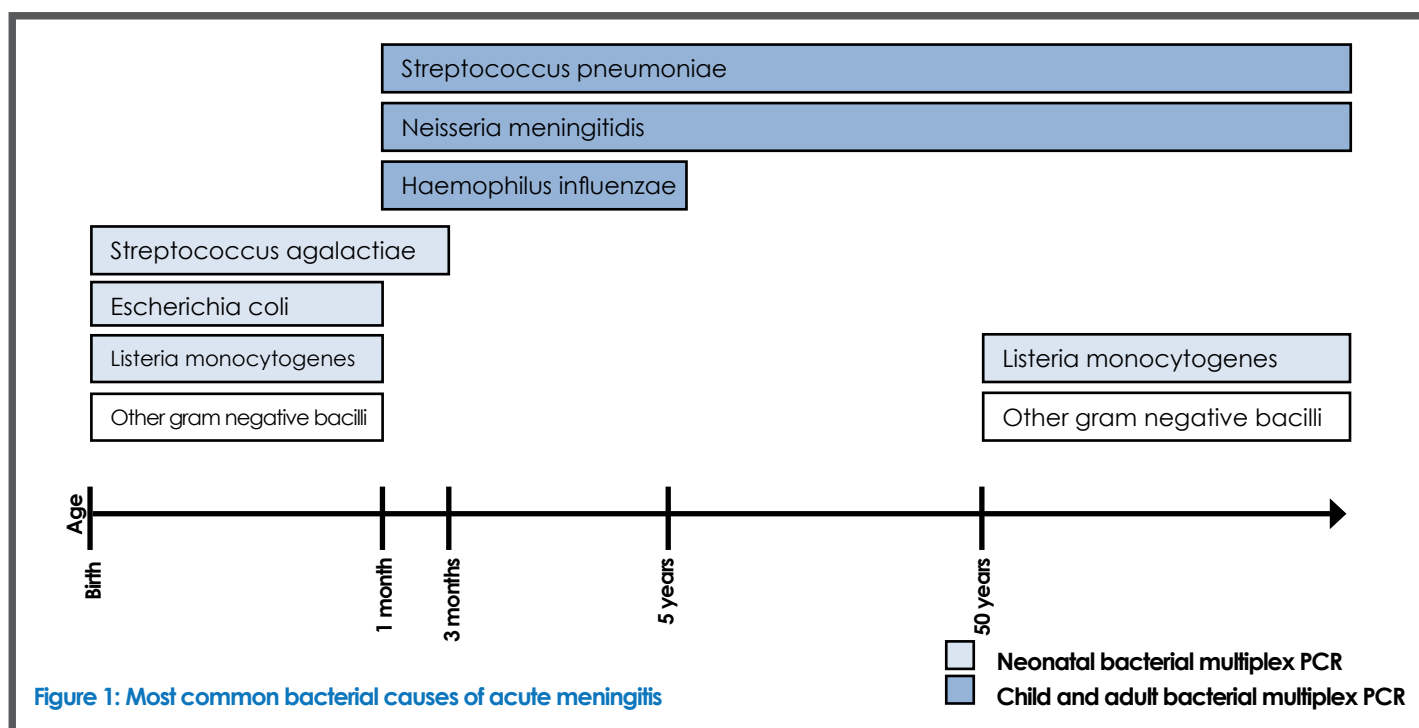


PATHCHAT

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Diagnosing acute bacterial meningitis: the value of multiplex PCR

Acute meningitis is generally defined as having compatible symptoms for less than seven days' duration and can be caused by a variety of bacterial, viral and fungal pathogens. Acute bacterial meningitis is a medical emergency that requires early administration of antibiotics and hospital referral for investigation and further therapy. The most common bacterial causes of acute meningitis, according to the patient's age, are shown in Figure 1.



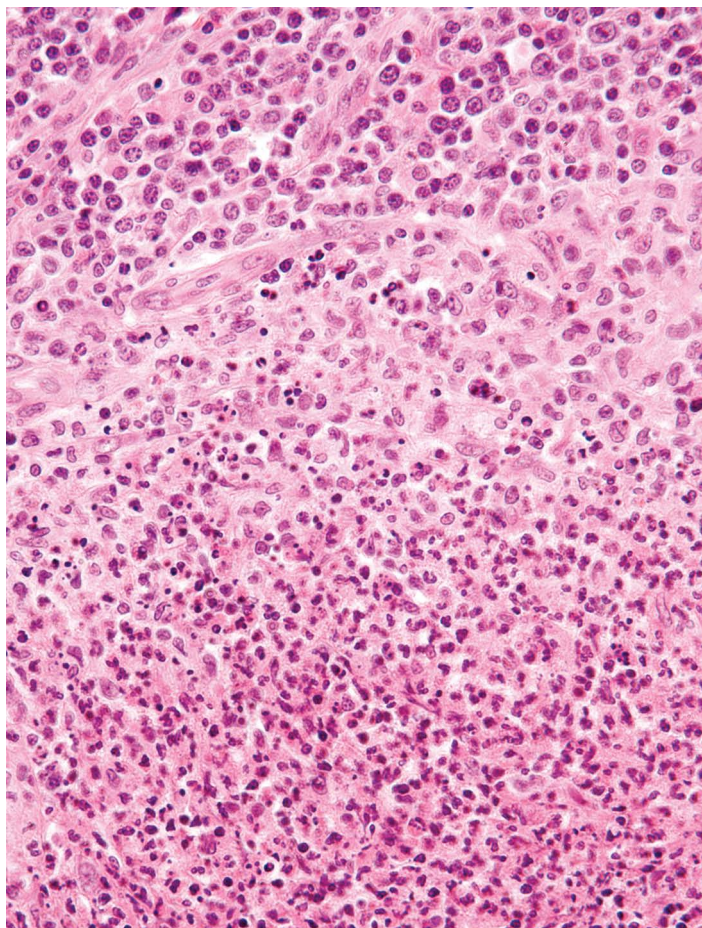
Ampath has introduced two multiplex polymerase chain reactions (PCRs) for the detection of the most common causes of acute bacterial meningitis:

- **Neonatal bacterial multiplex PCR**

This detects: *Streptococcus agalactiae* (Group B streptococcus), *Escherichia coli* and *Listeria monocytogenes*.

- **Child and adult bacterial multiplex PCR**

This detects: *Streptococcus pneumoniae*, *Neisseria meningitidis* and *Haemophilus influenzae*.



Advantages of the bacterial multiplex PCR

1. When antibiotics were given prior to collecting cerebrospinal fluid (CSF):

Antibiotics are frequently given before performing a lumbar puncture, which may result in negative CSF culture results. The bacterial meningitis PCR is particularly useful when more than two hours have lapsed between starting antibiotics and collecting CSF for investigation. A bacterial meningitis PCR can also be requested on CSF after a negative culture result.

2. Improved sensitivity and specificity:

Bacterial meningitis PCR tests are both sensitive and specific, which makes them valuable tools that can be used in conjunction with other routine tests in patients with suspected acute bacterial meningitis.

Test requirements and interpretation of results

- A minimum of 0.5 mL CSF is required for the multiplex PCR test, excluding the volume of CSF needed for other laboratory investigations. Smaller volumes of CSF can result in false negative results.
- A negative PCR result does not exclude the diagnosis, and results should be interpreted in conjunction with clinical and other laboratory findings. Always consider other causes, e.g. *Mycobacterium tuberculosis*, viruses (including HIV) and *Cryptococcus neoformans* in the differential diagnosis of acute meningitis, and investigate accordingly.
- If *Listeria* meningitis is suspected in an adult patient, the neonatal multiplex PCR should be requested.
- The turnaround time is within 24 hours of receipt in the laboratory.
- Each multiplex PCR will bill for a single PCR only, making these tests more cost effective and accessible.

