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***Streptococcus pneumoniae* DNA Testing at Micropathology Ltd**

Streptococcus pneumoniae is a Gram-positive coccoid pathogen that grows in pairs (diplococci), often with visible capsule and is typically distinguished by identification of 'draughtsmen' colonies formed due to autolysis; alpha haemolysis of blood agar caused by the breakdown of haemoglobin and by its sensitivity to optochin.

Although *S. pneumoniae* seasonally colonises the nasopharynx of 5-10% of adults and 20-40% of healthy children, it is an important bacterial pathogen of humans. Pathology includes meningitis, sepsis, pneumonia, sinusitis, otitis media, endocarditis, septic arthritis, peritonitis, and eye infections amongst others. Invasive pneumococcal disease is much more prevalent in certain populations such as extremes in age (particularly >65 years) and may be up to ten times higher in African Americans, Alaskans, and Australian aboriginals than in some other populations and may have a mortality rate up to 35%. Additional risk factors include antibody deficiencies, complement deficiencies, neutropenia, asplenia, corticosteroids, malnutrition, chronic disease and alcoholism.

In the UK, those considered most vulnerable to invasive disease are offered a vaccine against pneumococcus. A 13-valent pneumococcal conjugate vaccine (PCV13) is scheduled for children at 16 weeks, at one year (booster dose) and for at-risk adults. Adults aged 65 years and over are offered the 23-valent pneumococcal polysaccharide vaccine (PPV23) or, where available, the 20-valent pneumococcal conjugate vaccine (PCV20). Additionally, PCV13 up to 10 years of age and PPV23 or PCV20 (where available) from 2 years of age is given to those found to be asplenic or have splenic dysfunction; those with cochlear implants; chronic respiratory, neurological or heart conditions; chronic kidney disease; chronic liver conditions; complement disorders; diabetes or other immunosuppression due to disease or treatment. PCV20 is expected to replace PPV23 in adults over 65 years and the at-risk programme in late 2025 or early 2026.

Although *S. pneumoniae* may be straightforward to identify in the laboratory, its somewhat fastidious nature and its ability to autolyse may mean that cultures may fail to grow (e.g. blood culture bottles flag positive but growth of an organism is not achieved). Certain atypical strains may also be tricky to identify if they do not fit the strict biochemical profile used for identification criteria.

At Micropathology Ltd, we use a nested real-time PCR assay to detect *S. pneumoniae* DNA, which provides a sensitive and specific method of detection that does not rely on the presence of viable organisms. Clients may wish to send us specimens where *S. pneumoniae* is suspected but has failed to grow, where antibiotics have been administered prior to sample collection, or where a *S. pneumoniae* identification is sought. Accredited specimen types for this assay are CSF, whole blood and respiratory specimens (pleural fluid). Other samples may be tested and reported along with an appropriate caveat stating that the assay is not UKAS accredited for testing of alternative sample types.

Bibliography

Harris, A.M., Beekmann, S.E., Polgreen, P.M., et al. (2014) Rapid urine antigen testing for *Streptococcus pneumoniae* in adults with community-acquired pneumonia: clinical use and barriers. **Diagnostic Microbiology and Infectious Disease** [online], 79 (4): 454–457. http://dx.doi.org/10.1016/j.diagmicrobio.2014.05.008

Department of Health (2023) Pneumococcal (Green Book- Chapter 25). London: Department of Health- June 2025 https://assets.publishing.service.gov.uk/media/684b1fbc1c8d5c94e201abae/Green_Book__Chapter_25_pneumococcal_12_6_25.pdf

Public Health England. (2021). Identification of Streptococcus species, Enterococcus species and Morphologically Similar Organisms. UK Standards for Microbiology Investigations. ID 4 Issue 4. https://www.rcpath.org/static/ce35b1b6-9d79-4125-a0f64ba28e9a3584/UK-SMI-ID-4i4-Identification-of-Streptococcus-species-Enterococcus-species-and-morphologically-similar-organisms-September-2021.pdf

Public Health England. (2025). Investigation of Cerebrospinal Fluid. UK Standards for Microbiology Investigations. B 27 Issue 6.2. https://www.rcpath.org/static/004f2dc9-81cb-4aa9-b26f2dfce68a9921/UK-SMI-B-27i62-Investigation-of-cerebrospinal-fluid-October-2025.pdf