



State of California—Health and Human Services Agency
California Department of Public Health



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**PCR-based Identification of *Neisseria meningitidis* and Other Bacterial Causes of Meningitis and Sepsis to Increase Accurate Diagnosis and Reporting of Meningococcal Disease
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Dear California Physician:

Identification of the causative organism in patients with bacterial meningitis or sepsis is important for rapid and appropriate patient treatment as well as public health action, if indicated. Depending on the causative organism, chemoprophylaxis may be recommended for contacts, including healthcare workers. In the case of meningococcal disease, caused by *Neisseria meningitidis*, even broader public health action may be warranted.

Typically meningococcal disease cases are laboratory-confirmed by Gram stain and culture at the treating health care facility. However, the California Department of Public Health (CDPH) has received reports of patients with bacterial meningitis and sepsis who weren't initially reported as such based upon negative laboratory findings. However, findings of 'no organisms seen' on Gram stain or 'no growth' in culture do not rule out bacterial meningitis or sepsis in patients who may have received antibiotics prior to specimen collection. Moreover, reported history of prior antibiotic use by patients may be incorrect.

Additionally, a review of historic meningococcal disease cases in California found that 13% of confirmed cases had initial Gram stain misidentifications that were later corrected, which is potentially problematic for rapid identification of such cases: <https://idsa.confex.com/idsa/2016/webprogram/Paper58520.html>

In addition to laboratory results, clinicians are urged to evaluate patient risk for bacterial meningitis or sepsis, specifically that caused by *N. meningitidis*, considering both the clinical picture and epidemiologic risk factors. For example, both college students and men who have sex with men have an increased risk of meningococcal disease. It should also be noted that meningococcal disease can present as meningitis and/or meningococcemia and patients do not always develop the characteristic nonblanching petechial or purpuric rash. Vaccination status of the patient should be obtained, but should not be the basis for ruling out consideration of vaccine-preventable causes of bacterial meningitis or sepsis.

If bacterial meningitis or sepsis is suspected and cultures are negative, the CDPH Microbial Diseases Laboratory can perform polymerase chain reaction (PCR) testing to identify *Neisseria meningitidis*, *Streptococcus pneumoniae*, and *Haemophilus influenzae* in culture negative clinical specimens (blood and CSF) as well as selected post-mortem samples. PCR is a rapid and reliable way to identify bacterial pathogens that cause meningitis and sepsis and this testing can be rapidly arranged by your local health department.

Please contact your local health department immediately if meningococcal disease is suspected, regardless of laboratory results.

For more information on laboratory testing for meningococcal disease, see:

<https://www.cdph.ca.gov/programs/immunize/Documents/CDPHMeningococcalLabTesting.pdf>