Medical Microbiology

Five Things Physicians and Patients Should Question

by
Association of Medical Microbiology and Infectious Diseases Canada

Last updated: July 2019

Choosing Wisely Canada™
In collaboration with the Canadian Medical Association

1 Don't collect urine specimens for culture from adults who lack symptoms localizing to the urinary tract or fever unless they are pregnant or undergoing genitourinary instrumentation where mucosal bleeding is expected.

Urine cultures are the most frequently ordered microbiologic test, with the majority of specimens submitted from asymptomatic patients. Urine cultures should only be ordered if patients have symptoms localizing to the urinary tract such as acute dysuria, urgency, frequency, suprapubic or flank pain or fever without an obvious alternate source. Outside of these specific symptoms, positive cultures indicate asymptomatic bacteriuria and frequently result in antimicrobial therapy that is of no benefit and is potentially harmful. Cloudy or malodorous urine are not specific findings of urinary tract infection and should not prompt culture unless acute urinary tract symptoms are present. Delirium is not considered a symptom of cystitis in non-catheterized patients. In catheterized patients with fever or delirium, a positive urine culture may still represent asymptomatic bacteriuria unless alternate sources have been excluded. Laboratories should consider supplementing educational efforts to reduce collection of urine cultures from asymptomatic patients with analytical interventions that reduce processing of low-value specimens.

2 Don't routinely collect or process specimens for Clostridium difficile testing when stool is non-liquid (i.e., does not take the shape of the specimen container) or when the patient has had a prior nucleic acid amplification test result within the past 7 days.

Only liquid stool specimens should be collected or processed for C. difficile detection, as a positive test in the absence of diarrhea likely represents C. difficile colonization. Diagnostic gains are minimal with repeat C. difficile nucleic acid amplification testing within 7 days of a negative test. Repeat C. difficile toxin testing by enzyme immunoassay within 7 days of a prior negative test is also of little incremental diagnostic yield but may be warranted in select cases. Test of cure in patients with recent C. difficile infection is also not recommended. Prior investigations have shown that the use of hospital information systems to restrict ordering of repeat tests for these reasons resulted in a 91% reduction in repeat testing.

3 Don't obtain swabs from superficial ulcers for culture as they are prone to both false positive and false negative results with respect to the cause of the infection.

All wounds are colonized with microorganisms. Cultures should not be obtained from wounds that are not clinically infected (i.e., absence of classical signs of inflammation or purulence or increasing pain). For wounds that are clinically infected, the ideal specimens for culture are deep specimens that are obtained through biopsy or deep curettage following cleansing/debridement of the wound. Laboratories should consider use of screening criteria to reject such swabs without proceeding to culture. For superficial swab specimens that are processed/cultured, interpretation of the results should be correlated with the Gram stain.

4 Don't routinely order nucleic acid amplification testing on cerebrospinal fluid (e.g., herpes simplex virus, varicella zoster virus, enteroviruses) in patients without a compatible clinical syndrome.

Although nucleic acid amplification testing is the modality of choice for determining the viral etiology of meningitis/encephalitis, it should not be requested routinely on all cerebrospinal fluid specimens. The routine use of these tests in patients without compatible clinical syndromes can result in unnecessary empiric antiviral treatment, additional care, and prolonged length of hospitalization for patients awaiting testing results. Additionally, routine testing may result in depletion of cerebrospinal fluid needed for other diagnostic purposes. In cases where nucleic acid testing is requested for adults, laboratories should have policies for when testing will be performed if the cerebrospinal fluid cell count and protein are normal.

5 Don't routinely obtain swabs during surgical procedures when fluid and/or tissue samples can be collected.

Fluids and tissue specimens can usually be obtained in the controlled setting of the operating room and represent higher quality specimens than swabs. Culture of swab specimens is associated with increased false negative results, as they are inferior in recovering anaerobic bacteria, mycobacteria and fungi, and provide inadequate volumes to perform all necessary diagnostic tests. To encourage collection of fluid and/or tissue samples, consideration should be given to making swabs unavailable in the operating room without specific request.

How the list was created

A Choosing Wisely Canada top five list in medical microbiology was developed by the Association of Medical Microbiology and Infectious Diseases Canada (AMMI Canada) through broad consultation of its members. Following an electronic survey requesting members to identify low-value practices within microbiology, AMMI Canada convened a Working Group which developed a list of draft recommendations that were discussed and ranked during a national open forum using the modified Delphi method. The top five list was revised based on feedback received from AMMI Canada members through an online forum. The AMMI Canada Executive Council and Guidelines Committee endorsed the final list, which was disseminated online.

Sources

1. Hartley S, et al. Inappropriate testing for urinary tract infection in hospitalized patients: an opportunity for improvement. Infect Control Hosp Epidemiol. 2013 Nov;34(11):1204-7. PMID: 24113606.
Leis JA, et al. Reducing antimicrobial therapy for asymptomatic bacteriuria among noncatheterized inpatients: a proof-of-concept study. Clin Infect Dis. 2014 Apr;58(7):980-3. PMID: 24577290.
McKenzie R, et al. Bacteriuria in individuals who become delirious. Am J Med. 2014 Apr;127(4):255-7. PMID: 24439075.
Nicolle LE, et al. Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America. Clin Infect Dis. 2019 May 2; pii: ciy1121. doi: 10.1093/cid/ciy1121. [Epub ahead of print] PMID: 30895288.

2. Aichinger E, et al. Nonutility of repeat laboratory testing for detection of Clostridium difficile by use of PCR or enzyme immunoassay. J Clin Microbiol. 2008 Nov;46(11):3795-7. PMID: 18784320.
Luo RF, et al. Is repeat PCR needed for diagnosis of Clostridium difficile infection? J Clin Microbiol. 2010 Oct;48(10):3738-41. PMID: 20686078.
Luo RF, et al. Alerting physicians during electronic order entry effectively reduces unnecessary repeat PCR testing for Clostridium difficile. J Clin Microbiol. 2013 Nov;51(11):3872-4. PMID: 23985918.

3. Chakraborti C, et al. Sensitivity of superficial cultures in lower extremity wounds. J Hosp Med. 2010 Sep;5(7):415-20. PMID: 20845440.
Gardner SE, et al. Cultures of diabetic foot ulcers without clinical signs of infection do not predict outcomes. Diabetes Care. 2014 Oct;37(10):2693-701. PMID: 25011945.
Lipsky BA, et al. 2012 Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections. Clin Infect Dis. 2012 Jun;54(12):e132-73. PMID: 22619242.
Matkoski C, et al. Evaluation of the Q score and Q234 systems for cost-effective and clinically relevant interpretation of wound cultures. J Clin Microbiol. 2006 May;44(5):1869-72. PMID: 16672426.

4. Hanson KE, et al. Validation of laboratory screening criteria for herpes simplex virus testing of cerebrospinal fluid. J Clin Microbiol. 2007 Mar;45(3):721-4. PMID: 17202281.
López Roa P, et al. PCR for detection of herpes simplex virus in cerebrospinal fluid: alternative acceptance criteria for diagnostic workup. J Clin Microbiol. 2013 Sep;51(9):2880-3. PMID: 23804382.
Saraya AW, et al. Normocellular CSF in herpes simplex encephalitis. BMC Res Notes. 2016 Feb 15;9:95. PMID: 26879928.

5. Baron EJ, et al. A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2013 recommendations by the Infectious Diseases Society of America (IDSA) and the American Society for Microbiology (ASM). Clin Infect Dis. 2013 Aug;57(4):e22-e121. PMID: 23845951.
Koneman EW. Koneman's Color Atlas and Textbook of Diagnostic Microbiology. Lippincott Williams & Wilkins, 2006.

About the Association of Medical Microbiology and Infectious Disease

AMMI Canada is the national association that represents physicians, clinical microbiologists and researchers specializing in the fields of medical microbiology and infectious diseases. Through promotion of the diagnosis, prevention and treatment of human infectious diseases and by our involvement in education, research, clinical practice and advocacy, AMMI Canada aims to serve and educate the public and also to enhance the career opportunities of its members through professional development and advocacy initiatives.

AMMI™ Canada

About Choosing Wisely Canada

Choosing Wisely Canada is a campaign to help physicians and patients engage in conversations about unnecessary tests, treatments and procedures, and to help physicians and patients make smart and effective choices to ensure high-quality care.

ChoosingWiselyCanada.org | info@ChoosingWiselyCanada.org | @ChooseWiselyCA | /ChoosingWiselyCanada