Letters to the Editor

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Ultrasensitive Culture in Urinary Tract Infection Diagnosis

Original Article: Recurrent Urinary Tract Infections in Women: Diagnosis and Management

Issue Date: September 15, 2010

Available at: http://www.aafp.org/afp/2010/0915/p638.html

TO THE EDITOR: The authors of the article on the diagnosis and management of urinary tract infections in women advocate using a threshold of 100 colony-forming units (CFU) per mL to diagnose urinary tract infection in symptomatic women. Presumably, they would reserve the widely used threshold of 100,000 CFU per mL for asymptomatic women. The problem is that most laboratories do not report the growth of bacteria with fewer than 10,000 CFU per mL in a specimen, under the assumption that such light growth represents contamination, not infection. I would be interested to learn how the authors obtain culture results sensitive down to 100 CFU per mL, whether any special culturing techniques are required, and what the cost of this ultrasensitive culture is compared with the typical urine culture used by most physicians.

DAVID L. KELLER, MD
Torrance, Calif.
E-mail: David.Keller@Providence.Org

Author disclosure: No relevant financial affiliations to disclose.

IN REPLY: We thank Dr. Keller for his interest in our article. His letter brings up important technical aspects regarding the performance and reporting of urine cultures in microbiology laboratories. The final reported CFU per mL essentially represents the number of bacterial colonies observed on culture plates, multiplied by the level of dilution from the original sample to obtain a standard reporting of CFU per mL.

Typically, the lowest level of bacterial detection in standard urine culture processing would be obtained by a standard wire loop to get a urine sample volume of 0.01 mL. If a single bacterial colony was observed from this sample, which may well represent an actual pathogen in symptomatic patients and not simply a contaminant, this would translate to 100 CFU per mL simply by multiplying 1 CFU per 0.01 mL by 100.

Dr. Keller is correct that most laboratories will report their results as simply less than or greater than 10,000 CFU per mL. The guideline for diagnosing urinary tract infection in a symptomatic patient based on an actual count of 100 CFU per mL simply indicates the lowest possible level of detection of bacteria in a sample. This may be diagnostic in symptomatic patients in whom pathogenic bacteria are identified due to low CFU counts, a dilute urine sample, or a truly low organism burden. These methods were described previously,[1] but are typically defined for each inpatient or outpatient laboratory according to their own protocols; a useful description is found at http://www.enotes.com/nursing-encyclopedia/urine-culture.

Dr. Keller raises the extremely important point that the information reported to physicians often conceals a more complex and detailed process of sample handling, testing, and result reporting; it is always important for physicians to understand the actual processes involved in laboratory medicine so they can fully appreciate the meaning of the information they assess every day.

CHARLES M. KODNER, MD
Louisville, Ky.
E-mail: charles.kodner@louisville.edu

Author disclosure: No relevant financial affiliations to disclose.

REFERENCE

1. Carroll KC, Hale DC, Von Boerum DH, Reich GC, Hamilton LT, Matsen JM. Laboratory evaluation of urinary tract infections in an ambulatory clinic. *Am J Clin Pathol.* 1994;101(1):100-103. ■