When Diagnostic Technology Is Ahead of the Hospital Budget: What Is Antimicrobial Stewardship to Do?

To the Editor—We read with great interest the study by Mylonakis et al that describes a new rapid diagnostic test that detects Candida species directly from blood in 3 hours [1]. The T2 magnetic resonance (T2MR) assay is the first fully automated technology to analyze whole blood specimens in order to identify Candida species without the need for growth from a blood culture. The authors state that the T2MR assay represents a breakthrough shift into a new era of molecular diagnostics. While we agree with their statement, we observe that with new technology comes new challenges, specifically economic challenges, for antimicrobial stewardship programs (ASPs).

Rapid diagnostic tests represent one of the few advances to address some of the most severe and costly infectious diseases, including candidemia. Recently, the White House released the executive summary for their report, National Action Plan for Combating Antibiotic-Resistance Bacteria. In that report, it is estimated that each case of Candida infection results in 3–13 days of additional hospitalization and $6000–$29,000 in direct healthcare costs per patient [2]. Numerous studies have demonstrated that a delay in the initiation of antifungal therapy is associated with significant increases in both in-hospital mortality and the cost of care for patients with candidemia [3, 4]. The Infectious Diseases Society of America states that improvements in diagnostic tests that reduce delays in getting test results have the potential to save lives and curb healthcare costs [5]. The economic value of the T2MR assay could be great if the patients at greatest risk for candidemia can be identified.

Currently, infectious diseases clinicians watch as oncologists prescribe expensive chemotherapy regimens to extend a patient’s life by months. If that same oncology patient develops candidemia and treatment is delayed, the mortality rate is upwards of 40%. Does it make sense to confirm a diagnosis of candidemia in 3 hours instead of 3 days? Absolutely, but what price is hospital administration willing to accept for a rapid diagnostic test? ASPs are tasked with the implementation and subsequent cost justification of new rapid diagnostic tests. ASPs must evaluate patients in their respective institutions in order to determine if the population considered at risk for candidemia is high enough to offset the expense of the instrument. In this era of escalating healthcare costs, ASPs will have a paramount task convincing hospital administration to move away from the “silo” cost mentality and recognize the broader picture in the implementation and justification of a new rapid diagnostic test. It is evident that the clinical microbiology laboratory will experience a budget increase with implementation of the T2MR assay. The pharmacy budget could also potentially increase as antifungal therapy is started sooner and is used on more patients as a result of the T2MR assay.

We welcome the potential impact of this new rapid diagnostic test on patients with candidemia. We concur with Dr John Bartlett, retired infectious diseases physician, who stated in 2010 that rapid diagnostic tests are “game changing” in the management of infectious diseases [6]. However, in 2015, we suggest a modification to his statement that rapid diagnostic tests and antimicrobial stewardship economics will “change the game” of managing patients with infectious diseases.

Note
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