C-138 Comparison of Real-Time PCR (Cepheid SmartCycler®) with Standard LIM Broth Culture and StrepB Carrot Broth™ for the Detection of Group B Streptococcus in Pre-Natal Vaginal/Rectal Specimens

Kelli A. Hutchens, M.D. and Paul G. Schneckenberger, Ph.D.
Department of Pathology, Loyola University Medical Center, Maywood, IL

Background: Group B Streptococci (GBS) continues to be a leading cause of neonatal sepsis and meningitis despite the implementation of steroid guidelines in 2002 that recommend maternal antibiotic prophylaxis for GBS. This approach does not address women who do not receive prenatal care, have preterm labor or whose carrier status may fluctuate. In an attempt to better treat maternal and neonatal GBS infections, rapid and accurate GBS screening is now considered the gold standard and has a sensitivity of 97% and specificity of 86% in 24-hour cultures. The rapid method of choice is an in-house multiplex PCR with the use of a color change media (Strep B Carrot Broth/DNA MicroCard) or real-time PCR (Cepheid SmartCycler®), which has been shown to be highly sensitive and specific in detecting GBS strains. The purpose of this study was to compare the results of real-time PCR with those from standard LIM broth and LIM broth with Carrot Broth, and to compare the new broth media vs. the SmartCycler assay

Methods: 123 vaginal swabs from pre-natal patients were analyzed for GBS using the: 1) SmartCycler® assay (Cepheid SmartCycler®), 2) LIM broth culture, and 3) detection of color change in Carrot Broth (Strep B Carrot Broth/DNA MicroCard). All swabs were inoculated onto the SmartCycler and LIM broth cultures after 24-hour incubation. Results: Thirty-one of 123 specimens were confirmed positive (25%) by one or more assays. Sensitivity and specificity were calculated for the test and broths compared to the SmartCycler assay (Table 1). Specificity was calculated for the test and broth culture compared to the SmartCycler assay (Table 2). Conclusions: Carrot Broth is the current gold standard for the detection of GBS. The SmartCycler® assay is the most sensitive and specific for the detection of GBS. Each assay is helpful in the clinical laboratory setting, but it is essential to have both available in order to provide the best care for our patients.

References: