



The Best Care Comes from the Heart

# Microbiology Brief

November 30, 2007

## SHIGA TOXIN TESTING

Due to recent outbreaks of gastroenteritis caused by Shiga toxin-producing *E. coli*, the Centers for Disease Control and Prevention (CDC) along with the Nebraska Public Health Department has recently made a recommendation to test all stool samples for the presence of Shiga toxin. These recommendations have been made because the Shiga toxin assay provides better sensitivity than culture for the O157:H7 serotype. In addition the antigen test provides a more complete picture of Enterohemorrhagic *E. coli* (EHEC) infection by detecting Shiga toxin production which may result from *E. coli* serotypes other than the O157:H7.

**Due to these recommendations the Microbiology Department at Methodist Hospital will be testing all stool specimens sent for culture for Shiga toxin beginning January 7, 2008.** The change in methodology from the SMAC culture to the EIA test will result in a CPT and price change for the stool culture. Please call Client Services at 354-4541 for information on CPT codes and charges.

EHEC is recognized as an important cause of endemic diarrhea, hemorrhagic colitis, and hemolytic-uremic syndrome (HUS). The most commonly reported serotype associated with outbreaks in the US to date has been O157:H7, but more than 50 other non-O157:H7 EHEC serotypes have been reported to be associated with human disease, including HUS.

Traditional laboratory diagnosis of EHEC infection has been dependent on the recovery of *E. coli* O157:H7 in culture on sorbitol-MacConkey agar (SMAC) followed by immunologic confirmation. SMAC culture will miss the non-O157:H7 EHEC serotypes. One virulence trait of all EHEC strains is the ability to produce one or two potent cytotoxins called Shiga like toxins (SLT). Studies have shown that an EIA for EHEC Shiga toxin detects approximately 40% more EHEC O157:H7 than the conventional SMAC culture, and is also able to detect an additional 20% more Shiga toxin-producing *E. coli* that are non-O157:H7. All stools which are positive for Shiga toxin will be sent to the Nebraska Public Health Lab immediately for further analysis including Pulse Field Gel Electrophoresis (PFGE). This information will be shared via computer link with the Centers for Disease Control (CDC). This will allow rapid detection and investigation of food borne outbreaks of EHEC disease by the State Health Department. All information available from our laboratory and the NPHL, on your patients will be placed on the culture report as it is available. Please note that the State Health Department may contact your patients for further information as part of their investigation process. If you have any questions about this test please contact: Dr. Nancy Cornish, Director of Microbiology @ 354-4554 or Jennifer Buck, Team Leader Microbiology and Serology @ 354-3147