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**ON THE COVER** *Sexually transmitted diseases in word collage*. Sexually transmitted infections (STIs) are spread primarily through sexual contact and are a major cause of morbidity and mortality worldwide. Antibiotic resistance is rapidly emerging and the incidence of many common STIs is rising for the first time in a decade. Laboratory testing plays a major role in the diagnosis and treatment of STIs, and the availability of accurate and sensitive methods to diagnose STI is essential to direct appropriate antimicrobial therapy and interrupt the cycle of disease transmission. In this issue of *Clinical Chemistry*, Melanie Yarbrough and Carey-Ann Burnham provide readers with a timely review article on laboratory testing for common bacterial, viral, and parasitic causes of STIs. These authors summarize recent advancements in the recognition and management of STIs, including updates to diagnostic algorithms, advances in testing methods, and emerging challenges with antimicrobial resistance.

**Implementation of Clinical Decision Support Rules to Reduce Repeat Measurement of Serum Ionized Calcium, Serum Magnesium, and N-Terminal Pro-BType Natriuretic Peptide in Intensive Care Unit Inpatients**

By Ann M. Moyer, et al.

To reduce laboratory costs without interfering with patient care, the authors of this study launched a quality-improvement initiative to decrease the number of unnecessary repeat ionized calcium, magnesium, and N-Terminal Pro-BType Natriuretic Peptide orders by implementation of a clinical decision support pop-up alert in five intensive care units. They used a "soft" pop-up alert, which allowed ordering providers to over-ride the alert by entering a reason for repeat measurement. These efforts achieved a decrease in ionized calcium orders of 48%, magnesium of 39%, and N-Terminal Pro-BType Natriuretic Peptide of 28%. At the institution where these changes were initiated a soft-stop approach was successful in reducing repeat orders within the intensive care units.

**Impact of High-Sensitivity Troponin I Testing with Sex-Specific Cutoffs on the Diagnosis of Acute Myocardial Infarction**

By Christina Trambas, et al.

In contrast to contemporary troponin I assays, high sensitivity troponin I assays show differences in sex specific reference intervals. The authors of this study investigated the impact of a change from a contemporary assay to high sensitivity troponin I on the diagnosis of acute myocardial infarction in two healthcare settings. Changeover from the contemporary troponin I assay to the high sensitivity troponin I assay increased the number of women patients with increased troponin I concentrations at both sites but the increased percentage of women with increased troponin I was not associated with an increase in the number of women diagnosed with acute myocardial infarction or the number of women undergoing angiography.

**Mass Spectrometry–Based Escherichia coli H Antigen/Flagella Typing: Validation and Comparison with Traditional Serotyping**

By Keding Cheng, et al.

*E. coli* are common bacteria, and pathogenic *E. coli* creates potential health concerns such as hemolytic uremic syndrome. Flagellar typing is the main hurdle in conventional serotyping owing to the need to induce flagella growth. The current study validated a new platform called MS-H, a mass spectrometry-based flagellar or H antigen typing of *E. coli*. Through validation and data analyses on reference strains and 302 clinical isolates, the results showed that the MS-H typing approach was faster and more accurate than serotyping, and would be useful in *E. coli* outbreaks.

**Cell-Free DNA Analysis of Targeted Genomic Regions in Maternal Plasma for Non-Invasive Prenatal Testing of Trisomy 21, Trisomy 18, Trisomy 13 and Fetal Sex**

By George Koumbaris, et al.

There is a great need for the development of highly accurate, cost effective technologies that can facilitate the widespread adoption of non-invasive prenatal testing to reduce the number of unnecessary invasive procedures. In this study the authors developed a novel targeted assay using cell-free DNA in maternal plasma for the detection of fetal aneuploidies of chromosomes 21, 18 and 13 and fetal gender. The performance of the assay was evaluated in a blind study that consisted of 631 samples and exhibited 100% sensitivity and specificity in all trisomic samples tested.

**High-Sensitivity Sandwich ELISA for Plasma NTproUcn2: Plasma Concentrations and Relationship to Mortality in Heart Failure**

By Oi Wah Liew, et al.

Urocortin 2 has a wide range of hemodynamic, renal and neurohormonal actions, and appears likely to play a role in normal circulatory homeostasis and the compensatory response to heart failure. Endogenous circulating concentrations of urocortin 2 in healthy subjects have not been determined to date. In this paper the authors describe the first validated two-site ELISA directed against human NT-pro-urocortin 2 and report increased plasma concentrations in heart failure subjects with preserved and reduced ejection fraction compared to non-heart failure subjects. The potential utility of NT-pro-urocortin 2 as a biomarker for detection of clinical heart failure and prediction of 2-year mortality in heart failure is demonstrated.

**A Novel Peptidomic Approach to Strain Typing of Clinical *Acinetobacter baumannii* Isolates Using Mass Spectrometry**

By Honghui Wang, et al.

*Acinetobacter baumannii* is an important nosocomial pathogen. Here the authors describe a method for identifying strain-specific mass spectrometry biomarkers based on LC-MS profiling of digested peptides and peptidomic analysis. This method was able to classify a test set of *Acinetobacter baumannii* isolates collected from a hospital outbreak into groups corresponding to multi-locus sequence types with discriminatory performance substantially exceeding that of MALDI-TOF-MS. This approach may be applicable to other clinical isolates, allowing a rapid means of identifying specific bacterial strains based on unique peptide biomarkers.

**Biological Variation of Plasma and Urinary Markers of Acute Kidney Injury in Patients with Chronic Kidney Disease**

By Joanne Carter, et al.

Several novel biomarkers of acute kidney injury have recently been described but little is known of their biological variability, a prerequisite to their use in clinical practice. The authors of this study characterized the biological variability of whole blood, plasma and urinary neutrophil gelatinase-associated lipocalin, urinary kidney injury molecule-1, tissue inhibitor of metalloproteinases-2 and interleukin-18, in addition to more traditional markers of kidney damage that include plasma cystatin C and creatinine, urinary N-acetyl-beta-D-glucosaminidase, albumin and alpha-1-microglobulin. Biological variability of the novel markers is high, but compared against the scale of change described in disease situations would not preclude their use as markers of acute kidney injury.