LabUpdate is a periodic publication of the Clinical Laboratory of UC Health. By way of this publication, lab users are provided: 1) updated operational information relevant to the practice of laboratory medicine within UC Health facilities, and 2) didactic material generally applicable to laboratory medicine.

Chemistry
New Troponin Critical Value for UCMC
Effective January 26, 2016

Troponin I values greater than 0.20 ng/ml will be categorized as critical values. A phone call alerting the caregiver will be made for the first instance this result is obtained per calendar day. All other subsequent instances of values greater than 0.20 ng/ml will not be called, but will flag as critical in EPIC.

This practice represents a change for UCMC and applies to testing performed in the Core Lab and the Emergency Department Satellite Lab. This change standardizes the reporting of troponin critical values between UCMC and West Chester. At this time, no changes are being made at Drake due to differences in instrumentation.

Critical Value >0.20 ng/mL

- First Time result per calendar day will trigger a phone call to the ordering location
- All subsequent values will NOT be called

Microbiology
New Specimen Sites In-sourced for Chlamydia and Gonorrhoeae

Beginning in February, 2016, acceptable specimens for in-house molecular testing for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* (CTNG) will be expanded to include pharyngeal (throat) swabs and rectal swabs. These specimens should be collected with the Cobas PCR kit that is available for testing vaginal/endocervical/urethral swabs.

The ordering codes in EPIC are Chlamydia/N. gonorrhoeae DNA, NAAT, Pharyngeal, LAB880 (CTNGTHT) and Chlamydia/N. gonorrhoeae DNA, NAAT, Rectal, LAB823 (CTNGRECT).

The performance characteristics for testing these specimens were determined by the Microbiology and Molecular Diagnostics division of UC Health Laboratories. In our hands, the Limit of Detection (LoD) for each organism was in the same range as reported by the manufacturer for swab specimens collected with Cobas PCR kit. By bringing these tests in-house, the turnaround time for obtaining the results for these tests should be decreased compared with the send-out tests. It will also streamline the collection kits required for all swabs for CTNG testing to the Cobas PCR kit.

The laboratory would like to thank those clinical areas that worked with us to collect specimens for validation. Going forward, only specimens in the Cobas PCR kit will be acceptable for testing. If there are any questions, please call Microbiology/Molecular at 584-3913 or Dr. Rhodes at 584-3923.

N. gonorrhoeae
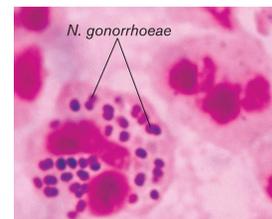
Transfusion Medicine
Changes coming March 1, 2016 to EPIC transfusion rate orders.

Beginning March 1, 2016, a change with will occur in EPIC with the ordered rate of the infusion. This applies to all blood products.

The provider now can choose:
- ➢ Per department routine
- ➢ Wide open
- ➢ Provider specified rate

Per department routine: the rate is dependent on the location of the patient.
- ➢ If your patient is on any of the ICUs, ED or Step Down: infuse at a rate of 300cc/ hour
- ➢ If your patient is on a Medical/Surgical or Telemetry unit: infuse at a rate of 100cc/ hour

Wide open: this rate can be infused in any location if the provider has chosen this as the transfusion rate.

Provider specified rate: the physician enters the specified rate of infusion.

Patient Safety
New Equation for Estimating GFR

Glomerular filtration rate (GFR) is currently estimated from serum creatinine, age, gender, and ethnicity using the IDMS traceable MDRD (Modification of Diet in Renal Disease) equation. The MDRD equation was derived in the late 1990s using data generated in a chronic renal insufficiency study. It had significant improvements to the Cockcroft-Gault equation published in 1976, particularly with its addition of ethnicity as a parameter.

The primary limitation of the MDRD equation is the range of GFR values used for its derivation were generally low. The Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation was published in 2009. This equation uses the same parameters as the MDRD equation but also incorporates more sophisticated mathematical operations (splines) as well as a broader range of GFR [1].

Since its publication, evidence has been generated suggesting improved accuracy with CKD classification using the CKD-EPI equation over the MDRD equation [2]. Generally, CKD-EPI classifies fewer individuals as having CKD.

The new equation will be put in place on March 1st and will append with the comment:

> *"Estimated GFR is calculated from serum creatinine using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation in patients 18 years and older. The reference range is >60 mL/min/1.73m2. eGFR values greater than 90 will be reported as >90 mL/min/1.73m^2."*

The equation does not circumvent the standard limitations of estimating GFR using serum creatinine such as individuals that do not have a normal relationship of muscle mass and body size. Please direct any questions or concerns to Dr. Chris Crutchfield, PhD at 584-4071.

Reference:

1. Levey AS, Stevens LA, Schmid CH, Zhang YL, Castro AF, 3rd, Feldman HI, et al. A new equation to estimate glomerular filtration rate. Ann Intern Med. 2009;150(9):604-12
2. Matsushita K, Mahmoodi BK, Woodward M et al. Comparison of risk prediction using the CKD-EPI equation and the MDRD study equation for estimated glomerular filtration rate. JAMA 2012; 307: 1941–1951.

Appendix:

The MDRD Equation:
eGFR (mL/min/1.73 m^2) = $175 \times (S_{cr})^{-1.154} \times (Age)^{-0.203} \times (0.742$ if female$) \times (1.212$ if African American$)$

S_{cr} is serum creatinine in mg/dL

The CKD-EPI Equation:
eGFR = $141 \times \min (S_{cr}/\kappa, 1)^{\alpha} \times \max(S_{cr}/\kappa, 1)^{-1.209} \times 0.993^{Age} \times 1.018$ [if female] $\times 1.159$ [if African American]

κ is 0.7 for females and 0.9 for males
α is -0.329 for females and -0.411 for males