

# GEISINGER DIAGNOSTICS

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Editor



Warmest Season's Greetings to All of Our Readers from the Entire Laboratory Staff

## CHEMISTRY

### **Testing for proteinuria: What test should be used in what range?**

There are three tests commonly used for detecting protein in urine that should be interpreted with their detection ranges in mind. Nephrology (\*\*\*) and Lab Medicine recommend the proper tests be used for the range of protein detected in urine.

#### **1. Urine dipstick protein (approximately 5 mg/dL)**

The urinalysis dipstick screening test has a qualitative range of about 5 mg/dL (reported as “trace”) to >500 mg/dL (“frank proteinuria”). The first gradation of “positive” on urine dipstick urinalysis is 30 mg/dL. This is only a screening test, the color reaction on the dipstick is only qualitative, and the result is not ratioed to creatinine in the urine specimen. Hence this first-line screening test should be repeated and, if repeatedly positive, putative proteinuria may be interpreted. Quantitative urine tests may be used to confirm dipstick screening results.

**\*\*\*If a patient has more than two urinalyses with proteinuria, the provider should consider quantifying that value with either a microalbumin/creatinine ratio or a protein/ creatinine ratio.**

#### **2. Microalbumin/creatinine ratio (>30 mg/g creatinine)**

This test is performed on a random urine specimen and quantitates urine albumin (in mg/dL) at much lower levels than the dipstick. This urine “micro” albumin result, normally in the 0.3 to 2.0 mg/dL range, is then ratioed to creatinine in the same specimen to correct for the hydration state of the patient. The National Kidney Foundation (NKF) recommends that patients at risk for chronic kidney disease be tested with the microalbumin/creatinine ratio with a positive threshold of 30 mg/g creatinine. Higher levels of proteinuria are described by the NKF as:

Normal: 0-29 mg/g creatinine

High: 30-300 mg/g creatinine

Very high and Nephrotic: > 300 mg/g creatinine

**\*\*\*If a patient has more than two values where the microalbumin/creatinine ratio is over 300, we would suggest the provider stop checking microalbumin values, which are less helpful at that point, and quantify proteuria by a protein/creatinine ratio.**

#### **3. Protein/creatinine ratio (> 0.15 or >150 mg/g creatinine)**

This test is also performed on random urine and is creatinine-corrected for specimen dilution. It is useful in quantifying greater degrees of proteinuria and is frequently used for monitoring nephrotic patients. The units for the urine protein and urine creatine cancel out. For example, if the patient has 400 mg of protein and 200 mg of creatinine in the spot urine, the value would come back as 2. This estimate of 2 grams of protein (2000 mg proteinuria) is frequently as accurate or more accurate than a 24-hour urine sample for most patients.

#### **Summary:**

The most sensitive and quantitative test to use in screening patients at risk for early signs of chronic kidney disease is the microalbumin/creatinine ratio (ACR) test. Urine dipstick testing is not sensitive enough to detect these early signs of urine protein “leakage.” When the patient has overt proteinuria, the protein to creatinine ratio is the preferred method for quantifying the degree of proteinuria.

## **MICROBIOLOGY**

### **Culture for Pertussis**

The microbiology laboratory is changing the specimen transport for the causative agents of “whooping cough,” *Bordetella pertussis* and *Bordetella parapertussis*. Recent studies have demonstrated that our routine bacteriology transport medium, the ESwab, is an effective transport medium for *Bordetella spp.* Previously, we have utilized Jones-Kendrick medium for transport of specimens collected for pertussis with a green-capped Mini-tip swab. We ask that you continue to collect the NP swab using the green-capped Mini-tip swab but, rather than placing the swab into the Jones- Kendrick medium as you have done in the past, place the Mini-tip swab into the ESwab transport medium. You can discard the regular-size swab that comes with the ESwab transport medium when using a Mini-tip swab for Bordetella culture.

This change will occur as the stock of Jones-Kendrick medium is depleted. The new microbiology specimen guides that we will begin to distribute in January will indicate that the ESwab transport medium should be used for Bordetella culture transport.

If you have any questions about this change, please contact Microbiology Technical Specialist Julie Riley at 570-214-8199 or Microbiology Lab Director Dr. Paul Bourbeau at 570-271-7467.

### **Viral Testing from CSF Specimens**

The GML Microbiology Lab is discontinuing the performance of culture for CMV (CMVVC), VZV (VZVVC) and Enterovirus (EVVC) on **CSF** specimens. It has been clearly demonstrated that culture is inferior to PCR for detection of these viruses from CSF.

Any requests for Enterovirus culture from CSF will be changed by the lab to Enterovirus PCR and sent to a reference lab for testing. Within the next few months, we anticipate beginning to perform Enterovirus PCR in-house. We will communicate the start date for that testing in a future issue of *Diagnostics* as well as with an EPIC message.

CMV and/or VZV are very unusual causes of meningitis and/or encephalitis. Consequently, with the exception of patients from the transplant service, requests for PCR testing for CMV and/or VZV on a CSF specimen will require the approval of either an Infectious Disease clinician or the Microbiology Doctoral Director. We believe that this will be an effective way to control utilization of this testing while ensuring that patients who may benefit from this testing can have it performed.

A minimum of 0.5 mL of CSF is required by our reference lab for VZV PCR and/or CMV PCR testing. A minimum of 0.5 mL of CSF is also required for Enterovirus PCR. If testing for Enterovirus PCR and CMV PCR and/or VZV PCR is ordered and approved, a minimum of 1.0 mL of CSF is required.

Shipping to our reference lab occurs Monday through Friday via Fed-ex. Results are usually electronically transmitted to our laboratory late in the day of the day after the specimen was shipped to the reference lab.

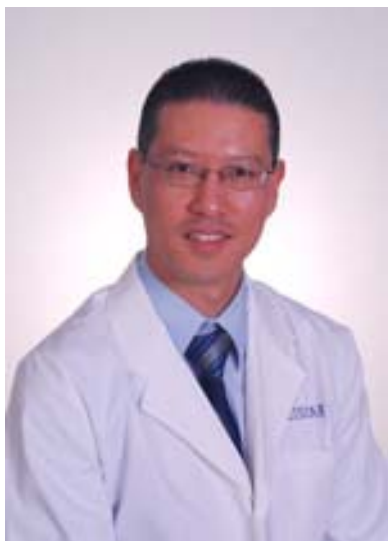
If you have any questions about these changes, please contact Microbiology Technical Specialist Fran Tomashefski at 570-271-6185 or Microbiology Lab Director Dr. Paul Bourbeau at 570-271-7467.

## **Syphilis Serology**

Effective December 6, 2011, the Clinical Immunoassay Lab introduced a new Syphilis Screen with Confirmation (test code SYPPRO). The testing includes qualitative detection of antibodies to *Treponema pallidum* by chemiluminescence, quantitative RPR and *Treponemal pallidum* particle agglutination. If the initial qualitative *T. pallidum* antibody result is negative, the testing is complete. If the qualitative detection of treponemal antibodies is positive, then a quantitative RPR will be performed. If the RPR is positive, the patient has active syphilis. If the RPR is negative, the patient does not have active syphilis and a *Treponemal pallidum* particle agglutination assay will be performed. If the *T. pallidum* particle agglutination is positive, the patient had a probable past syphilis infection. If the *T. pallidum* particle agglutination is negative, the patient does not have syphilis.

This so-called “reverse algorithm” puts the treponeme-specific antibody identification ahead of the RPR, which historically has many nontreponemal false positive results, especially in pregnancy, acute illness, and during the cold and flu season generally. The quantitative RPR can also be used to monitor treatment response once the reactivity is verified as being treponeme-specific. The “reverse algorithm” is becoming more widely used and is acknowledged by CDC. For further information, contact John Wolfe, Technical Specialist of Clinical Immunoassay, at 271-8020.

## **STAFF CHANGES**



### **New Pathologist**

We are pleased to welcome Dr. George Lin as an associate of Geisinger Medical Laboratories in Danville. Dr. Lin is a graduate of Harvard University and holds an MD and PhD in Cellular and Molecular Biology and Virology from the University of Pennsylvania School of Medicine. He completed an Anatomic Pathology Residency at Brigham and Women's Hospital and a fellowship in Dermatopathology at Harvard Medical School.

Dr. Lin is board-certified in Anatomic Pathology.

His work at GMC will predominantly be in the area of Dermatopathology.

Respectfully submitted,



Paul Bourbeau, Ph.D.  
Editor in Chief