LifeLabs Medical Laboratory Services

Vancouver Island Physicians' Newsletter

October 2010

Improving Urine Culture Results

Urine cultures are the most frequently ordered microbiology tests, reflecting the fact that urinary tract infections (UTIs) are very common. Urine cultures are essential for accurate identification of UTI pathogens because:

1) Although more than 90% of uncomplicated UTIs are caused by *E. coli*, a wide variety of other pathogens can also cause UTIs, including Klebsiella, Proteus, Staphylococcus, Enterococcus, etc.
2) The various pathogens associated with UTIs respond to different antibiotics and have different clinical implications.
3) In addition, urinary pathogens are rapidly developing resistance to antibiotics previously effective for UTI, and antimicrobial susceptibility testing is essential for most urinary pathogens to guide selection of effective therapy.

An old adage in clinical microbiology is that a culture is only as good as the specimen it is performed on, and this is especially true for urine cultures. Because most urine specimens pass through the urethra with its resident normal flora, specimens can become contaminated and produce useless culture results. If specimens are not collected and transported to the laboratory properly, initially small numbers of normal flora bacteria introduced into the specimen during collection may grow to large numbers. These normal flora organisms may overwhelm the pathogen and mask its presence, or they may grow along with the pathogen making interpretation of the culture result difficult (Figures 1 and 2).

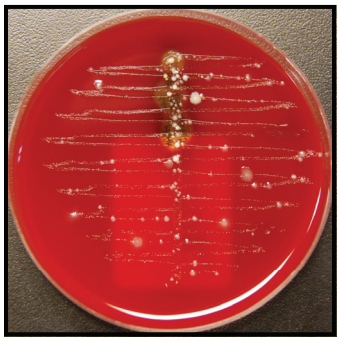

Fig. 1. Poorly collected mixed urine culture showing multiple colony types, each representing a different organism.

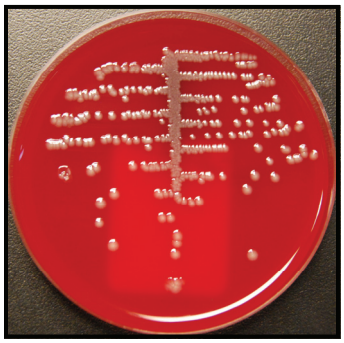

Fig. 2. Properly collected pure urine culture of *E. coli*, showing single colony type.

Two steps are critical to reduce this normal flora problem. <u>Step 1</u>: Proper urine specimen collection & <u>Step 2</u>: Proper urine specimen transport to the laboratory. The clean catch, mid-stream collection procedure is essential for limiting the number of normal flora bacteria introduced into the specimen during collection, and the urine preservative, boric acid, is essential for optimal urine specimen transport.

<u>The boric acid urine preservative has two benefits</u>:

1) It limits or prevents the growth of normal flora bacteria thus controlling contamination of urine samples.
2) Boric acid protects and preserves pathogens in urine samples so that they are more readily detected in cultures.

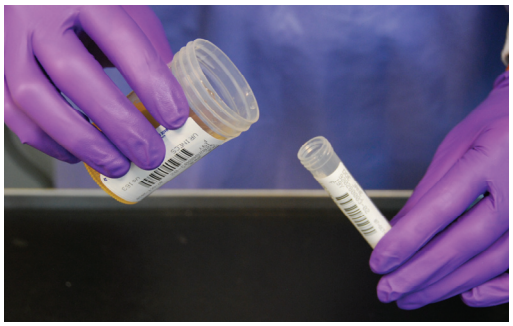

Fig. 3. Pouring off urine into boric acid tube.

<u>Procedure</u>:

- After collection, the urine should be poured into a boric acid tube to about half an inch (1 cm) from the top (Figure 3).
- A minimum of 5 ml urine is required.
- Replace and tighten cap securely to prevent leakage.
- Urine specimens are stable in boric acid for up to 24 hrs, but should still be transported to the laboratory as quickly as possible. The sooner the urine specimen can be cultured, the better the results.

The use of boric acid urine preservative tubes optimizes urine culture results by preventing contamination leading to recollection and delayed diagnosis of UTIs.

Dr. Michael T. Kelly, Head of Medical Microbiology

Revised Gestational Glucose Tolerance Test

As of October 1, 2010, LifeLabs is performing only the 2 hour, 75 g gestational glucose tolerance test (GGTT) for confirmation of gestational diabetes in pregnant patients. *The 3 hour, 100 g GGTT will no longer be available*. In addition, the reference intervals for the 2 hour test, which includes a fasting, 1 hour, and 2 hour glucose, have been revised slightly downwards (see Table 1). The criteria for diagnosis of gestational diabetes will change to **one or more** out-of-range results.

Table 1. Glucose reference intervals for previously performed GGTTs and revised GGTT.

Time of draw	Glucose reference intervals (mmol / L)		
	Prior to October 1, 2010		As of October 1, 2010
	3 hour 100 g	2 hour 75 g	2 hour 75 g
Fasting	3.3 – 5.2	3.3 – 5.2	3.3 – **5.0**
1 hour	3.3 – 9.9	3.3 – 9.9	3.3 – 9.9
2 hour	3.3 – 8.5	3.3 – 8.5	3.3 – **8.4**
3 hour	3.3 – 7.7	N/A	N/A

These changes are in accordance to a province-wide agreement to comply with the new recommendations of the International Association of Diabetes and Pregnancy Study Groups (IADPSG) that are based on the "Hyperglycemia and Adverse Pregnancy Outcome" (HAPO) study.

The IADPSG recommends that all women, unless already identified previously as a diabetic or having gestational diabetes, should be tested at 24-28 weeks gestation for gestational diabetes. It is expected that more pregnant women will be diagnosed with gestational diabetes with the new guidelines. The IADPSG did not comment on the use of the 1 hour 50 g screening test, which will still be available at LifeLabs. The jury is still out on whether to discontinue the screening test and go directly to the 2 hr 75 g diagnostic test.

Please direct any questions to the Biochemistry Medical Scientific Group at 1-800-431-7206.

References:

1. IADPSG Study Panel. Diabetes Care 2010; 33:676.
2. The HAPO Study Cooperative Research Group, Hyperglycemia and Adverse Pregnancy Outcomes. NEJM 2008; 358:1991.

Dr. Cheryl Tomalty, Clinical Biochemist

Timing of Retesting Patients Previously Positive for CT and / or GC

If your patient previously tested positive for Chlamydia (CT) and / or Gonorrhea (GC) by Nucleic Acid Amplification Test (NAAT), **please wait 4 – 6 weeks after completion of treatment before resubmitting a sample (if indicated), as false-positive results may occur due to residual non-viable organisms.**

Dr. Romina Reyes, Medical Microbiologist

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Happy Halloween !!!!!!