New eMail Service

Saint Luke’s Regional Laboratories (SLRL) has partnered with a company called Exact Target to offer an exciting email service that will provide more timely laboratory news than is possible with the monthly Clinical Laboratory Letter. SLRL will be able to send you information about new test introductions or changes in existing testing that specifically pertain to your specialty. If you are interested in signing up for this service, please send your email address to bstrope@saint-lukes.org.

Supplemental Newborn Screening

Inborn errors of metabolism include a vast array of disorders that are caused by deficiencies of specific enzymes or transport proteins. The goal of newborn screening is the presymptomatic diagnosis of disorders for which early treatment can reduce morbidity and mortality. State mandated newborn screening was initiated in the early 1960s to identify infants affected with phenylketonuria (PKU). Screening programs have gradually expanded to include additional inborn errors, but state mandated programs are not uniform across the United States. Only PKU and congenital hypothyroidism are included in all screening programs. The State of Missouri currently screens for five disorders including PKU, congenital hypothyroidism, congenital adrenal hyperplasia, galactosemia and hemoglobinopathies. The incidence of these inborn errors of metabolism during the last 5 years is summarized below.

<table>
<thead>
<tr>
<th>Inborn Error</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKU</td>
<td>1 in 15,000</td>
</tr>
<tr>
<td>Galactosemia</td>
<td>1 in 40,000</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>1 in 2600</td>
</tr>
<tr>
<td>CAH</td>
<td>1 in 13,000</td>
</tr>
<tr>
<td>Sickle Cell disease</td>
<td>1 in 400</td>
</tr>
</tbody>
</table>

Beginning on December 13, 2003, the Missouri state lab changed their method for measurement of T4 and TSH from a manual to an automated immunoassay. This improvement has significantly decreased the number of borderline TSH results and the amount of time spent arranging follow-up testing.

During the last decade, tandem mass spectrometry has been adapted for supplemental newborn screening because it is amenable to population-wide testing for more than 30 disorders of fatty acid, organic acid and amino acid metabolism. Some large commercial reference laboratories and university laboratories have begun to offer supplemental testing. However, because of the expense and complexity of this technology most state laboratories have not.

In April 18, 2001, Missouri Bill #279 recommended that the newborn screening program be expanded to test for at least 16 more disorders by January 1, 2002. However, supplemental screening is still not available from the Missouri Public Health Laboratory. The state laboratory is planning to begin a pilot program later this year and hopes to offer supplemental testing for all Missouri babies in 2005. In the interim, the Missouri Department of Health and Senior Services website recommends that residents obtain supplemental screening for those inborn errors not included in the state mandated program. It is important to note that supplemental screening is not intended to be a replacement for state mandated screening.

The pros and cons of supplemental newborn screening by tandem mass spectrometry are being hotly debated. Compassionate and caring laboratorians in state laboratories strongly promote newborn-screening programs. Pro-active groups, such as Savebabies.org, and parents of infants born with treatable diseases have spearheaded the development of supplemental newborn screening programs. Recent studies have associated 5% of SIDS to metabolic disorders that can be detected by supplemental screening. Dr. C. Charlton Mabry, a pediatric specialist at The University Of Kentucky has publicly stated, “Don’t wait for the state —do it on your own.”

However, many experts believe that tandem mass spectrometry should not be used in newborn
screening until more is known about its sensitivity and specificity. Given the low prevalence of these metabolic disorders in the general population, the number of false positive results will greatly exceed the number of true positives. Sufficient resources need to be available to handle the increased number of abnormal results that will need to be further investigated. In most newborn screening programs, 75% or more of staff time is devoted to follow-up of false positive results. Once an abnormal result is obtained, additional confirmatory testing needs to be performed. Another concern is that there may not be enough pediatric specialists in the United States to evaluate all of the newborns with abnormal results in a timely manner. The issue of informed consent for supplemental screening is complicated, in part because uniformly effective therapies have not been developed for all the conditions that can be detected and because expanded screening may detect previously unrecognized disorders. Reimbursement is also problematic. Supplemental screening costs vary from $25 to $60, but consultation and confirmatory testing are much more expensive. Presently, it is unclear whether private insurance or state and federal programs will cover any of these costs.

Parents are becoming increasingly aware of supplemental screening programs through the media and the internet. Whenever Saint Luke’s Regional Laboratories (SLRL) receives a request for supplemental screening, the blood spots are collected at the hospital and forwarded to Mayo Medical Laboratories for testing. Mayo collection cards are available in each hospital laboratory. Occasionally, parents may directly contact Baylor University Medical Center prior to delivery and bring their collection kit to the hospital. In this situation, hospital personnel will collect the sample and return the collection card to the parents for mailing to Baylor along with their personal check. Baylor reports are not reported to the hospital, but are mailed directly to the ordering physician’s office. For questions regarding supplemental screening please contact the Reference Lab at 816-932-2424.

Blood Culture Contamination Plummets

Contamination of blood cultures with skin flora at the time of collection can result in several negative consequences for patients. Length of hospital stay may be increased due to unnecessary administration of antibiotics. Additional cultures and lab work are often performed. Several published studies have demonstrated that a single contaminated blood culture increases hospital costs by as much as $5000.

Blood culture contamination rates for Saint Luke’s Hospital (SLH) are monitored monthly by Microbiology. The goal suggested by the American Society for Microbiology is a contamination rate less than 3%. Emergency Departments nationwide characteristically have the highest contamination rates, and the SLH ED monthly rate has been as high as 7.7%. In August 2002, evaluation of a new blood culture prep agent containing chlorhexidine began in the SLH ED. The advantage of the chlorhexidine prep is one-step application, as well as decreased drying time compared to tincture of iodine. The SLH ED contamination dropped to 2.3% during the evaluation period and averaged only 2.01% in 2003.

The new chlorhexidine blood culture prep was implemented throughout SLH in May 2003, with impressive results. While the number of blood cultures drawn at SLH in 2003 increased from 9434 to 9740, the number of contaminants decreased from a total of 238 (2.52%) to a total of 135 (1.39%). Using the estimated cost per contaminant of $5000, this amounts to a potential hospital cost savings of $515,000 per year.

Oxycodone Detection

Most immunoassays are designed to detect opioids such as heroin, codeine and morphine, but typically do not detect hydrocodone and oxycodone. The Triage Drug Screen, which is used by Saint Luke’s Regional Laboratories for stat drugs of abuse testing, is not very sensitive in detecting oxycodone. Recently, the laboratory implemented another rapid test specifically for oxycodone that can detect as little as 100 ng/mL. Results are reported as positive or negative. Testing is available 24 hours per day. Oxycodone can be ordered alone or in conjunction with the Triage Drug Screen. CPT code is 80101. Specimen requirement is 2 mL of urine.

LipoPrint Discontinued

The Lipid and Diabetes Research Laboratory has discontinued the LipoPrint™ LDL subfraction test, because of low demand. LDL subclass cholesterol is still available.