

March 2016

Blood Culture Data 2015

Saint Luke's Microbiology processed 29,116 blood cultures in 2015. There were 2,624 positive cultures which is slightly increased compared to previous years. The majority of positive blood cultures yielded Gram positive bacteria (69%), followed by Gram negative bacteria (25%), anaerobic bacteria (3%) and yeast (3%). A breakdown of the most common isolates is as follows:

Organism	# Isolates (%)
Coagulase-negative staphylococci	794 (30%)
S. aureus, methicillin-sensitive	193 (7%)
S. aureus, methicillin-resistant	158 (6%)
E. coli	289 (11%)
Viridans streptococci	147 (6%)
Enterococcus species, non-VRE	79
Enterococcus, vancomycin resistant (VRE)	23
Klebsiella species	119
Beta-hemolytic streptococci	91
Streptococcus pneumoniae	62
Pseudomonas aeruginosa	69
Candida species	69

Uncommon or unusual isolates for the year included Campylobacter, Granulicatella, Globicatella, Finegoldia, Leifsonia, Gardnerella, and Porphyromonas. Additionally, 15 extended-spectrum beta lactamase (ESBL)-producing E. coli, and 2 ESBL-producing Klebsiella species were identified. No carbapenem-resistant enterobacteriaceae (CRE) were isolated from blood.

Of note, the number of coagulase-negative staphylococcal isolates has increased significantly from previous years, both in number & percentage of isolates. This likely reflects increased blood culture contamination rates.

SLHS Hospital	Contamination rate 2012	Contamination rate 2015
SLH	0.77%	1.91%
SLEH	1.67%	2.75%
SLNH	1.67%	3.58%
SLS	1.53%	2.87%

Quality initiatives are in progress to reverse this trend. Improvement of blood culture contamination rates is a worthy goal due to their significant impact on patient care and health care costs. The most recently published data revealed both increased length of stay and increased charges of \$8720 per contamination event (JCM, 47(4), 1021-1024). These false-positive cultures result in unnecessary antibiotics, additional cultures and diagnostic tests, and increased workload for technical staff.

Thyrotropin Receptor Antibodies (TSHR) Or Thyroid Stimulating Immunoglobulins (TSI)

Grave's disease (GD), an autoantibody-mediated autoimmune disease characterized by thyrotoxicosis occurs due to a direct stimulation of the thyroid epithelial cells by TSHR-stimulating antibodies. TSHR test is an automated competitive electrochemiluminescence detection assay with shorter turn-around time, less analytical variability, less expense, and can detect stimulating, inhibitory, or neutral antibodies. On the other hand, TSI is a labor intensive, expensive biological assay with a long turn-around time and can only detect stimulating antibodies. Although, assays for

detection of TSHR antibodies are highly sensitive and specific and have been available for almost a decade, thyroid scan is still the recommended primary differential diagnostic test, per the American Thyroid Association and the American Association of Clinical Endocrinologists joint guidelines.

Saint Luke's Hospital clinical laboratory offers both TSHR and TSI testing, through a referral laboratory. TSHR is the first-line test recommended in the following situations:

1. Differential diagnosis of thyrotoxicosis in patients with ambiguous clinical findings and/or contraindicated (pregnancy or breast-feeding) or non-diagnostic thyroid radioisotope scans
2. Confirmation of clinically suspected Graves disease (eg, exophthalmus, pretibial myxedema, thyroid acropachy) in patients with normal thyroid function tests
3. Determination of risk of neonatal thyrotoxicosis in a fetus of a pregnant women with active or past active Graves disease
4. Differential diagnosis of gestational thyrotoxicosis versus first trimester manifestation or recurrence of Graves disease
5. Assessing the risk of Graves disease relapse after antithyroid drug treatment

TSI is a second-line test, usually requested in the following conditions in addition to #1 and #2 above:

1. Determination of risk of neonatal thyrotoxicosis in a fetus of pregnant women with active or past Graves disease
2. Differentiation between gestational thyrotoxicosis and first trimester manifestation or recurrence of Graves disease
3. Assessment of the risk of Graves disease relapse after anti-thyroid drug treatment

Serum CRP Level

Recently Saint Luke's Hospital clinical laboratories received a notification from our vendor (Ortho Clinical Diagnostics) regarding re-formulation of CRP assay, which will result in a negative bias of 4-5 mg/L in the reported results. Reference range (0-10 mg/L) will not change. This is expected to go live in the month of April, when the new assay will be available.

Test Menu Going to LabCorp in April

The following testing currently performed at Physicians Reference Laboratory is scheduled to move to LabCorp with a go-live date of 4/6/16.

- Total IgE
- Haptoglobin (STAT no longer available)
- Anti-Thyroglobulin
- TG Panel with reflex testing- all specimens with anti-thyroglobulin antibodies below detection limit will be reflexed for thyroglobulin assay using a sensitive second generation immunoassay. Positive anti-thyroglobulin samples will be tested for serum thyroglobulin levels using sensitive LC/MS method (not available as an individual test).
- Allergy panels - note changes with each panel:
 - AREA 8 – similar to current KC Allergen panel, excluding some grass variety including Bahia, Johnson, June, Rye, Meadow fescue, Orchard, and perennial rye
 - INHALANT, NORTH CENTRAL RAST PANEL and SEASONAL-deleted, but overlap with AREA 8
 - PERENNIAL PF – horse allergen is deleted
 - CHILDHOOD PF – similar to current CHILDHOOD and PEDIATRIC panels
 - MOLD – new
 - FOOD PF – similar to current FOOD PF excluding chocolate, oat, lobster, and Food mix (20) cereal
 - FOOD BASIC – similar to MINOR FOOD, excluding walnut, corn, shrimp, and scallop
 - HYMENOPTERA PF – new
 - PEANUT COMPONENT – new
 - PENICILLIN – no change
 - LATEX – no change
 - 7 NUT FOOD – no change
 - BIRD FANCY – no change