Live Course Title

Integrative and Functional Medicine Approach to Blood Chemistry Interpretation: What Integrative Medicine Clinicians Need to Know About Basic and Advanced Laboratory Diagnostic Testing

Instructor(s): Wayne L. Sodano, DC, DABCI, DACBN, CFMP, CIHP, BCTN
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Date(s): February 18-19, 2017
Location: Houston National Golf Club
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Duration: 12 hours (11 hours classroom; 1 hour workshop)

Seminar Goal:

The goal of the seminar is to increase the integrative medicine clinician’s laboratory diagnostic skills, which will assist in prescribing the most effective therapeutic interventions.

Seminar Objectives:

- Review the rationale for ordering diagnostics test
- Discuss the method of ordering the most appropriate diagnostic basic and advanced blood tests
- Discuss the method of determining reference range and optimal range
- Discuss the most common sources of pre-analytical variability
- Discuss the factors that affect laboratory testing (FALT)
- Attendees will learn to analysis the anemia and thyroid profiles.
Attendee Learning Outcomes

At the completion of this seminar students will be able to:

- Order the most appropriate laboratory diagnostic tests for their patient’s presenting signs and symptoms, and positive examination findings
- Interpret laboratory tests in a clinically relevant and streamlined manner
- Demonstrate skills of interpreting advanced cardiovascular testing, anemia profile, and thyroid profile
- Determine the integrative and functional medicine interpretation of body system disease and dysfunction blood chemistry result patterns

Curriculum

Saturday 2/18/2016 (8 hours) 9:00 am to 6:00 pm (1 hr lunch)

Part I: Introduction to Clinical Laboratory Medicine

- Rationale for obtaining laboratory blood studies
- The reference range problem and biologic variations
- Optimal reference range
- The most common sources of pre-analytical variability
- Biological rhythms (circadian, ultradian and infradian rhythms)
- Laboratory terminology
- Laboratory assay, instrumentation and technology

Part II: Hematology

- Blood composition and life span of blood cells
- Hemoglobin synthesis (nutrients required – review of vitamins B5, B6, B12 and C, folic acid iron and amino acids)
- The Complete Blood Count (RBC, hemoglobin, hematocrit, RBC indices, reticulocyte count and RPI, peripheral blood smear (cell morphology), WBC count and differential, platelet count and MPV, coagulation tests

Part III: Clinical Laboratory Medicine: Liver, Gallbladder and Pancreas

- Serum Proteins
- Globulin subfractions
- Serum Protein Electrophoresis
- Patterns of acute-reactant proteins on SPE
- Total Protein, Albumin, Globulin and A/G ratio
- Interpretation of liver enzymes (ALP, GGT, 5’-nucleotidase, Bilirubin, AST and ALT)
• Interpreting isolated abnormalities of liver enzymes
• Pancreatic enzymes assessment: serum amylase and serum lipase
• Assessment of Lactic Dehydrogenase and LDH isoenzymes

Part IV: Renal Function Testing
• Cystatin, Serum Creatine, Blood Urea Nitrogen, Creatinine Clearance, eGFR
• Urinalysis: specimen, macroscopic analysis, microscopic analysis, biochemical analysis (semiquantitative)
• Proteinuria
• Hematuria
• Urinary pH testing

Part V: Clinical Laboratory Medicine: Electrolytes, Minerals and Acid-Base
• Serum Electrolytes and Anion Gap
• Serum calcium, phosphorous, and magnesium (RBC magnesium)
• Adjusting serum calcium in patients with hypoalbuminemia
• Acid-Base and Acid-Base Disorders

Part VI: Clinical Laboratory Medicine: Infectious Disease, Rheumatic Diseases and Serum Uric Acid
• Review of infectious diseases (bacterial, mycobacteria, viruses, parasites, fungi)
• Body sites with normal colonization of bacterial flora
• Common pathogens by site of infection
• Overview of parasitic infections (signs and symptoms, common parasites and treatment strategies)
• Systemic Rheumatic Diseases and related disorders
• Laboratory Assessment testing for rheumatic diseases
• Serum Uric Acid interpretation

Part VII: Clinical Laboratory Medicine: Tumor Markers
• Three main categories of tumor markers
• Tumor markers and elevation in enzymes that may indicate an active tumor process
• Serum tumor markers in clinical practice

Part VII: Clinical Laboratory Medicine: Integrative and Functional Medicine
Assessment of Laboratory Patterns of Associated with Certain Conditions
• The clinical work of one of the pioneers of functional blood chemistry interpretation will be discussed as to relates to specific laboratory results patterns associated with disease and dysfunction
Sunday 2/19/2017 (4 hours) 9:00 am to 1:00 pm

Part IX: Clinical Laboratory Medicine Approach to Anemia

- Laboratory tested used to diagnosis anemia
- Conditions associated with reduced erythropoietin response
- Adjusting hemoglobin value to altitude and smokers
- State of Anemia: hypoproliferative, maturation disorders, and hemorrhage/hemolysis
- Causes of bone marrow-damage anemias
- Drugs associated with marrow damage
- Thalassemias and hemoglobinopathies
- Erythropoietic profile of thalassemia and hemoglobinopathy
- Small volume-chronic blood loss anemia and hemolytic anemia
- Overview of hemolytic anemias
- Hemolytic anemia algorithm
- Chronic hemolytic anemia erythropoietic profile
- Microcytic anemia
- Iron deficiency anemia
- Iron Panel Interpretation
- Iron deficiency and inflammation
- Anemia Profile Algorithms

Part X: Clinical Laboratory Medicine: Cardiovascular Assessment

- Pathophysiology of Cardiovascular Disease: Atherosclerosis
- Endothelium Function in Sickness and in Health
- Arginine-Nitric Oxide Metabolism
- Lipoproteins
- Lipoproteins and Cardiovascular Risk
- Lipid panel, lipoprotein sub-fractions, Lp(a), and apolipoproteins,
- High-sensitivity CRP
- Lp-phospholipase A2 (Lp-PLA2)
- Fibrinogen
- Homocysteine
- Vitamin D
- Insulin resistance markers
- Insulin
- Heart failure/stress markers (NT-proBNP and soluble ST2)
- Omega-3 and omega-6 ratio
- Genetic testing

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Part XI: Clinical Laboratory Medicine: Interpretation of the Thyroid Panel

- Agents Inhibiting Thyroid Hormone Synthesis and Secretion
- Compounds that Affect Thyroid Hormone Transport Proteins in Serum
- Agents that Alter the Extra-thyroid Metabolism of Thyroid Hormone
- Agents that May Affect TSH Secretion
- The Thyroid Gland and Oxidative Stress
- Iron and Thyroid Metabolism
- The Thyroid and Selenium, Iodine and Zinc: A Brief Review
- Urinary Iodine Results
- Laboratory Diagnosis of Thyroid Disorders
- General Interpretation of Thyroid Function Tests
- General Interpretation of Thyroid Function Test: A Second Look
- Conditions in Which There May be an Altered FT$\text{4}$-to-FT$\text{3}$ Ratio
- Integrative Medicine Thyroid Scale for Interpreting Thyroid Function Tests
- Thyroid Scale Interpretation Matrix

Part XII: Clinical Laboratory Medicine Workshop

- Clinicians will be presented with a series of laboratory tests for their review and interpretation.
- Clinicians can submit blood test results for class review prior to February 6, 2017

Materials: PowerPoint presentation and individual manuals of corresponding notes/slides/handouts/blood tracking form for interpretation.

References:


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