UNIVERSITY OF Cincinnati

Academic Half Day Guide for Preceptors

ITE High-Yield Topics and Associations

Part 1 - Identify the disease

Daycare worker Symmetric arthritis involving feet and hands including MCPs	**Parvo B19 – looks like RA, but RA diagnosis requires symptoms for > 6 weeks. Can cause aplastic crisis in sickle cell anemia.**
African immigrant Iron deficiency anemia and hematuria	**Schistosomiasis: eggs stay in intestine, liver, or bladder. Starts as swimmers itch, hematuria, hematochezia, increased risk of cirrhosis and bladder cancer. Tx praziquantel.**
Young man with fever, sore throat, diffuse lymphadenopathy, myalgias, rash, oral ulcers Monospot and rapid strep negative	**Acute HIV**
Puerto Rican Erythema nodosum, lower extremity arthritis, hilar adenopathy	**Acute sarcoidosis: triad hilar adenopathy, acute arthritis, and erythema nodosum = Lofgren's syndrome** **Noncaseating granulomas, high ACE level, hyperCa due to hypervitamin D.**
Man 2 years post kidney transplant for DMT2 Fever, multiple skin abscesses, cavitary lung lesion and brain abscess	**Nocardia: lung, CNS, and skin. AFB+ filamentous branching rods. gram variable. Tx with Bactrim.**
Broad based budding **Bonus: acute angle branching WITH septations** **Bonus bonus: right angle branching WITHOUT septations**	**Blastomycosis: lungs (most common organ involved), skin, bones, and GI tract. Dirt exposure, endemic to upper Midwest.** **Bonus: Aspergillus** **Bonus bonus: Rhizopus**
Liver and kidney failure; conjunctival suffusion Animal urine exposure	**Leptospirosis: mostly self limited, fever, rigors, myalgias, headache, conjunctival suffusion, cough. Jaundice + renal failure = Weil's disease. Less common: aseptic meningitis. Typically tropical climates.**
Confusion, meningoencephalitis Flaccid paralysis & dead birds	**West Nile virus. Mosquito borne. Most are asymptomatic, but most common symptoms fever + neuroinvasive disease, which can be encephalitis, meningitis, acute asymmetric flaccid paralysis.**

Part 2 - Evidence Based Medicine

Remember your calculations!

You are reviewing a clinical trial regarding a new diagnostic tool for rapid detection of pulmonary embolus. Using the gold standard for diagnosis of pulmonary embolus 175 of 275 enrolled subjects were diagnosed with pulmonary embolus. Using the new diagnostic tool, 167 of those with proven pulmonary embolus were diagnosed with pulmonary embolus. The new tool was also positive in 12 of the subjects that did not have pulmonary embolus.

HELP THEM MAKE THE 2x2 SQUARE

	Pulmonary emobolism present	PE absent
Positive test	True positive = 167	False positive = 12
Negative test	False negative = 175-167 = 8	True negative = (275-175) – 12 = 100 – 12 = 88

1. **What is the sensitivity?**

   Sensitivity = TP / (TP + FN) = 167 / (167+8) = 95%
   Sensitivity is the ability of the test to detect those who truly have a disease or condition. Or the probability that the test result will be positive in a patient with the disease.

   Sensitive tests have minimal FN.

   SNOUT: SeNsitive tests help rule OUT disease.

2. **What is the specificity of the new tool?**

   Specificity = TN / (TN + FP) = 88 / (88+12) = 88%.

   Specificity is the ability of the test to correctly identify those without the disease, or the probability that the test result will be negative in a patient without the disease. Specific tests have minimal FP.

   SPIN: SPecific tests help rule IN disease.

3. **What is the positive predictive value?**

PPV = TP / (TP + FP) = 167 / (167+12) = 93%.
PPV is percentage of people with a positive test that truly has the disease.
Memory trick: PPV is all the Ps (TP, TP, FP).

BONUS: How does prevalence affect PPV?
High prevalence = high PPV (opposite for NPV)
Low prevalence = low PPV (oppositive for NPV)

A new influenza vaccine has been developed. In the study group, the risk of contracting influenza was 32% with a mortality rate of 3%. In the control group, the risk of contracting the disease was 35% with a mortality rate of 5%.

What is the absolute risk reduction for contracting influenza?

A) 1%
B) 3% ARR = control event rate – study event rate
C) 5%
D) 2%
E) 4%

What is the number needed to vaccinate with the new product to prevent one case of influenza?

A) 100
B) 50
C) 34 NNT = 1/ARR
D) 25
E) 20

Part 3 – Fill in the tables!

PPD for TB

Given the induration measurements below, match the patient to the positive cut point.

<5mm	>5mm	>10mm	>15mm
	Chronic high dose prednisone use	IV Drug User	Farmer
	HIV positive patient	Hospitalist	Teacher
	Patient with new TB exposure	Diabetic patient	
	Post transplant on immunosuppression	Recent arrival from high prevalence country	

Autoantibodies

Given the induration measurements below, match the patient to the positive cut point.

Autoantibody	Disease
Anti-Sm	SLE
Anti-histone	Drug-induced Lupus
Anti-dsDNA	SLE
Anti-Ro/La (anti-SSA/SSB)	Sjogren syndrome
Anti-topoisomerase 1 (scl-70)	Diffuse systemic scleroderma
Anti-mitochondrial	Primary biliary cirrhosis
Anti-smooth muscle	Autoimmune hepatitis
Anti-centromere	CREST syndrome
Anti-Jo1/PM1	Dermatomyositis
Anti-CCP	Rheumatoid arthritis
Anti-HU	Paraneoplastic neurological syndrome
Anti-RNP	Mixed connective tissue disorder
c-ANCA (anti-PR3)	Granulomatosis with polyangiitis
p-ANCA (anti-MPO)	Eosinophilic granulomatosis with polyangiitis Microscopic Polyangiitis

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Pulmonary Function Testing

For the following chart, please list the associated patient presentation, A-E, and diagnosis beneath the corresponding PFT values.

Parameter	Value				
FVC	Normal	Normal	Normal	Reduced	Reduced
FEV1	Reduced	Normal	Reduced	Reduced	Reduced
FVC%	Reduced	Normal	Reduced	Normal	Normal
TLC	Elevated	Normal	Elevated	Reduced	Reduced
DLCO	Normal	Reduced	Reduced	Reduced	Normal
PATIENT PRESENTATION AND DIAGNOSIS	A	E	D	B	C

A) A 28-year-old patient with chronic cough and seasonal allergies -- **Asthma**
B) A 72-year-old man with dry crackles at his lung bases and exertional oxygen desaturation -- **ILD**
C) A 48-year-old woman with severe kyphoscoliosis. -- **Restrictive lung disease**
D) A 62-year-old man with a 50-pack year history of smoking and wheezing -- **COPD**
E) A 36-year-old woman with dyspnea and severe iron deficiency anemia -- **Normal lung function, but poor diffusion capacity due to anemia**

Thyroid Table

Condition	Clinical Presentation	TSH	T4
Primary hypothyroidism	**Constipation, fatigue, cold intolerance, dry skin, HLD**	**High**	**Low**
Thyrotoxicosis	**Anxiety, tremor, palpitations, heat intolerance**	**Low**	**High**
Subclinical hypothyroidism	**Biochemical diagnosis. Some have vague symptoms, but most asym. Tx if suggestive hypothyroid symptoms, TSH>10, 65 yo + TSH>7, or infertility/attempting pregnancy**	**High**	**Normal**
Subclinical hyperthyroidism	**Biochemical diagnosis. Most common cause patient taking levothyroxine, thyroid adenoma, multinodular goiter. Tx a little more nuanced.**	**Low**	**Normal**
Graves disease	**Hyperthyroid, goiter, eye disease, pretibial myxedema. Caused by TSH activating antibodies.**	**Low**	**High**
Sick euthyroid	**Acutely critically ill. Do not check thyroid function in these patients unless high suspicion**	**Low**	**Low**
Subacute thyroiditis	**Neck pain, tender diffuse goiter. Hyperthyroid -> euthyroid -> hypothyroid -> euthyroid. Caused by viral infection.**	**Variable**	**Variable**
Jod-Basedow phenomenon	**Iodine induced thyroid dysfunction. Patient with hx of thyroid nodule/goiter gets contrast load and becomes hyperthyroid from autonomously functioning thyroid tissue**	**Low**	**High**

IBD Table

Compare and contrast UC and Crohn's. Include presentation, endoscopy findings, and pathology

	UC	Crohn Disease
Location	**Starts at rectum and moves proximally**	**Entire GI tract -- Mouth to rectum**
Symptoms	**Diarrhea (prominent), tenesmus, urgnecy, eight loss, fever**	**Abdominal pain (prominent), diarrhea, weight loss, fever**
Endoscopic findings	**Mucosal edema, erythema, loss of vascular pattern, friability, bleeding, ulceration; symmetric, continuous**	**Linear, stellate, or serpiginous ulcerations with "skip" areas of inflammation; asymmetric; Intestinal fistulas and strictures**
Smoking correlation	**Improves symptoms**	**Risk factor for disease**