Supplemental digital content for Rao G, Kanter SL. Physician numeracy as the basis for an evidence-based medicine curriculum. Acad Med. 2010;85(11).

Appendix: Sample Analytic Exercise

Instructions: Read the following article carefully:
Subramaniam RM, Snyder B, Heath R, Tawse F, Sleigh J. Diagnosis of lower limb deep venous thrombosis in emergency department patients: Performance of Hamilton and modified Wells scores. Ann Emerg Med 2006;48(6): 678-85.

Answer the following questions:

1. Among the patients enrolled in this study, which ONE of the following best describes all the diagnostic tests performed by the investigators for each and every patient?
   a. D-dimer, modified Hamilton score, bilateral above-knee ultrasonographic examination
   b. Hamilton score, modified Wells score, D-dimer, unilateral complete lower limb ultrasonography (with Doppler exam used as guide)
   c. Hamilton score, modified Wells score, unilateral complete lower limb ultrasonography (with Doppler exam used as guide)
   d. Hamilton score, modified Wells score, D-dimer, Doppler examination of veins, unilateral complete lower limb ultrasonography (with Doppler exam used as guide), telephone survey 3 months later to identify symptoms of venous thromboembolism
2. Which ONE of the following describes the "gold standard" for diagnosis of DVT used in this study?
   a. venography
   b. unilateral complete lower limb ultrasonography with 3-month telephone follow-up if ultrasound negative
   c. D-Dimer plus unilateral complete lower limb ultrasonography
   d. None of the above
3. What are the sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of only "strong clinical suspicion of deep vein thrombosis by the emergency physicians without other diagnostic possibilities."?
4. Your friend Jack establishes a cutoff for the Hamilton score of ≤ 3 as negative and ≥ 4 as positive. Based on the results of this study, what is the sensitivity and specificity of the Hamilton score using these cutoffs?
5. The majority of patients referred by E.R. physicians for the study were women, yet more men than women (34 vs. 33) were diagnosed with DVT. What are some explanations for this?
6. The ROC curve on page 682 includes "empirical operating points." What are these?
7. What are the sensitivity, specificity, positive and negative predictive values, and positive and negative likelihood ratios of the D-dimer test as evaluated in this study?
8. Assume that neither the modified Wells score nor the Hamilton score is available to you. Based on your own clinical suspicion you estimate that an elderly woman presenting to the E.R. has a pre-test probability of DVT of approximately 66.7%. You decide to obtain a D-dimer test which returns as negative. Would you treat this patient immediately or send her home with follow-up at some other time?
9. Assume that based on this study you have decided that all patients presenting with suspicions of DVT should have a Hamilton score plus D-dimer test performed. Only those with either a positive Hamilton score or positive D-dimer test or both get an ultrasound. Assume that an ultrasound costs $100. How much money could be saved on ultrasounds by adopting such a diagnostic strategy compared with using the modified Wells score plus D-dimer (with ultrasound only if Wells score or D-dimer or both is/are positive) among 100 patients?