**Small Group Worksheet — PE Cases**

**Case 1**: A 32-year-old woman currently treated for anxiety presents with a one-day history of acute shortness of breath. She reports that the shortness of breath came on suddenly while she was sitting on her couch watching TV and was associated with a “racing heart.” She says she has experienced these symptoms before when she was diagnosed with a “panic attack.” She reports no recent travel, surgery, history of cancer, or prior VTE. On exam, heart rate is 90 and lungs are clear to auscultation.

**Case 2**: A 70-year-old woman with breast cancer (currently on chemotherapy) and history of pulmonary embolism two years before admission presents with acute onset of shortness of breath. The patient reports that she was recently discharged from the hospital after undergoing hip surgery and was lying in bed recovering when she suddenly became short of breath. Her shortness of breath is associated with two episodes of hemoptysis and calf pain and redness. On exam, patient’s weight is 450 lb (FYI, your CT scan weight limit is 400 lb), heart rate is 105, lung sounds are diminished at the bases, and calf exam reveals erythema and a positive Homan sign.

**Case 3**: A 65-year-old man with prostate cancer currently on chemotherapy presents with sudden onset of shortness of breath one day after getting back from a cross-country road trip. He reports that he has had a cough productive of yellowish sputum for the past three days, as well as a subjective fever. He reports no calf pain or hemoptysis. Medical history is significant for provoked DVT three years before admission, for which he was treated with warfarin for 6 months. On exam, his heart rate is 80, and lung exam is significant for crackles at the right base.

**Questions:**

1. What is your estimate of your patient’s pretest probability for pulmonary embolism?
2. Based on your pretest probability estimate, would you perform additional testing to evaluate for PE? Why or why not? Which diagnostic test is a high value choice for each scenario?
3. Using your estimated pretest probability of disease, use likelihood ratios to assess how D-dimer testing or CTA might influence your pretest probability of disease in your patient.
4. Review the list of likelihood ratios provided for common conditions and tests (including physical findings). Do you think that the process of combining estimated pretest probability with the likelihood ratio may help you avoid unnecessary diagnostic testing as a fellow? Please share your thoughts with the larger group.

Well’s Criteria for Pulmonary Embolism

|  |  |  |  |
| --- | --- | --- | --- |
| Criteria | Points | Total Score | Category |
| Clinical signs and symptoms of DVT | 3.0 | 0-2 | **Low prob (7% risk)** |
| PE as most likely diagnosis | 3.0 | 3-6 | **Moderate prob (30% risk)** |
| HR >100 bpm | 1.5 | >6 | **High prob (75% risk)** |
| Immobilization at least 3 days, or surgery in the previous month | 1.5 |  |  |
| Prior VTE | 1.5 |  |  |
| Hemoptysis | 1.0 |  |  |
| Malignancy | 1.0 |  |  |

**Diagnostic Test Characteristics for Pulmonary Embolism**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Sensitivity | Specificity | Likelihood ratio in low prob of PE | Likelihood ratio in mod to high prob of PE |
| D-Dimer | 93% | 25% | LR(+) = 2.4LR(-) = 0.1 | LR(+) = 1.7LR(-) = 0.2 |
| CT Angiography | 87% | 95% | LR(+) = 19.6LR(-) = 0.18 | LR(+) = 24.1LR(-) = 0.07 |

