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## Identifying Patients at Risk for VTE

### Announcer:

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### Dr. Barnes:

Hello, my name is Geoffrey Barnes. I'm a Cardiologist and Vascular Medicine Specialist at the University of Michigan. And today we're going to talk about identifying patients who are at risk for venous thromboembolism.

Let's start with a clinical case. So, let's say you have a 62-year-old woman who's coming into your primary care clinic with 3 days of right leg swelling and pain. Now, she has a past medical history of breast cancer, and she actually underwent a lumpectomy about 2 months ago. On physical exam, you notice that her right leg has pitting edema, really up to the mid-thigh. She also has some mild erythema, and you notice that that right leg is larger than the left leg down at the calf. So, the question you may ask yourself is: How best do I go about diagnosing what could be a deep vein thrombosis?

Now, it's important that we understand venous thromboembolism, or VTE, includes both a deep vein thrombosis, a DVT which is a blood clot in the leg and a pulmonary embolism, what happens when that blood clot in the leg breaks apart and embolizes, traveling up and getting lodged in the pulmonary arteries of the lung.

And so, when we think about patients who have DVT and PE, we want to look for some of the most common signs and symptoms. For a DVT in the leg, we're looking for leg swelling, it's usually unilateral, leg pain, redness, and tenderness to touch. For a patient who may have a pulmonary embolism, we want to look for things like shortness of breath, some sort of chest pain or discomfort, often with tachycardia, tachypnea, and even hypoxia.

Now, these common signs and symptoms have been built into different pretest probability risk scores called the Wells score. You can see that there's a different score for patients in whom we're looking at DVT, that's the Wells DVT score, or patients in whom we're considering a pulmonary embolism, the Wells PE score. And as you go through the different signs and symptoms that patients may have, you add up the points, and then you determine if a DVT or PE is likely or unlikely.

Once you have that score, you can then use it to determine what the next steps in workup are. For patients with a pulmonary embolism, we'll often consider something called the PERC rule, which looks at additional signs and symptoms such as hypoxia, leg swelling, prior DVT/PE, age. If none of the PERC criteria are present, then that patient really does not have a PE, and it can be ruled out without any additional testing. But if you're unsure what to do, use that Wells score, either the DVT score or the PE score, and that'll help you determine what kind of additional testing is needed.

If you add up the score, and DVT or PE is considered unlikely, this is a time where we may be able to use something like a D-dimer test. So, for the DVT score, when the DVT Wells score is unlikely, meaning less than or equal to 1, we'll often recommend you get a D-dimer test. Because if the D-dimer is negative, that patient does not have a DVT, it's been ruled out. However, if that D-dimer test is positive, or

if the Wells DVT score was a likely score, meaning a score greater than 1, skip the D-dimer, go straight to that DVT compression ultrasound test. And that's the best thing to do.

For patients with a PE, again, we use the same approach, a Wells PE score. And if the PE score is unlikely, we may check those PERC rule criteria to just rule out a PE. Or we can go ahead and get a D-dimer, because if it's negative that also rules out a PE. If the Wells PE score is positive, meaning a PE is likely, or that D-dimer was elevated, then we should go ahead and order the CT scan to look for a pulmonary embolus.

So, let's think about our case. This was our 62-year-old woman who was in clinic because of right leg swelling, pain, and remember she had a history of breast cancer with a surgery a couple months ago. So, how would we approach her DVT diagnosis? Well, we should add up her Wells score. Her Wells DVT score is actually higher risk. She has cancer, her entire leg was swollen, it was asymmetric, meaning one leg swollen more than the other, and she had tenderness, so that gave her 4 points. In this case, she's in the high-risk group. We do not want to go ahead with a D-dimer test; instead, we should go straight to that DVT compression ultrasound test to look for any evidence of the DVT.

I hope this has been helpful in your approach to diagnosing patients with DVT and PE.

**Announcer:**

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