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www.reachmd.com
info@reachmd.com
(866) 423-7849

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Selecting Anticoagulants for Acute VTE

**Announcer:**

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**Dr. Barnes:**

Hello, my name is Geoffrey Barnes. I'm at the University of Michigan, and today we're going to talk about how we approach the selection of anticoagulant therapy in patients who have an acute venous thromboembolic event.

So, why don't we start with a clinical case? Imagine if you will, a 74-year-old man, he has a history of hypertension, and he comes into the emergency department with acute onset dyspnea and some mild chest discomfort. He actually tore his Achilles tendon about 3 weeks ago. Now, his vital signs show a normal heart rate, a mildly elevated respiratory rate, but normal blood pressure and he's satting very well on room air. His troponin lab value is considered normal. But his PE CT scan shows a right lower lobe segmental PE. There's no sign of RV strain or enlargement on the imaging. So, the key question you may ask yourself at this point is: Which anticoagulant is best to treat this patient?

You know, it's really important to remember that anticoagulation is the bedrock of therapy for any patient with acute VTE. The purpose is really to prevent VTE extension and to prevent the development of new clot, so that's why it needs to be initiated right away, as soon as possible. Our goal is to have rapid onset anticoagulant activity in our patients.

So, many people ask when should I use heparin versus when should I use something else? Well, if the patient has a DVT, a blood clot in the leg, the most important time to use heparin is probably somebody who has a threatened limb, what's called phlegmasia cerulea dolens. This is where the venous occlusion leads to increased pressure in the limb, causing arterial ischemia. This is a situation that requires rapid intervention with either thrombectomy or thrombolysis. So, unfractionated heparin is usually the way to go in this very rare but serious situation.

For patients who have an acute pulmonary embolism, we'll usually approach their anticoagulant decision based on their risk of complications. And most commonly, we're going to use the European Society of Cardiology Risk Scheme. In this case, patients are broken into low, intermediate, and high-risk groups. Patients who are in the low-risk group are ones who are hemodynamically stable, and they don't have any elevated risk scores, such as the PESI or simplified PESI score. Additionally, they're normally going to have a normal troponin and no sign of RV enlargement on imaging. In this case, these are patients who are so stable we could consider them for home discharge, and they may be a great candidate for an oral-only strategy of anticoagulation.

Next up is going to be the group at intermediate risk of pulmonary embolism complications. These patients are also hemodynamically stable; however, their risk scores, the PESI or simplified PESI score, are likely elevated, and they may have either a positive troponin and/or evidence of RV enlargement on imaging. These patients are almost always going to be hospitalized for monitoring. But we want to get rapid anticoagulation on board, so use of enoxaparin or another form of a low-molecular-weight heparin is usually the best choice here.

Now, there are a few patients who are at very high risk of complications. These are patients who are usually hemodynamically unstable, usually with cardiogenic shock. Now, they'll also have evidence of right ventricular dysfunction on lab and imaging. And these are our patients in whom we'll consider an advanced therapy like thrombolysis or thrombectomy. So, for these patients, unfractionated heparin may be a good choice.

When we think about who may be good to be treated at home, you may want to use a criteria such as the HESTIA criteria. This will help you go through a checklist of items to say, is this person safe for home discharge? For instance, is this somebody who's hemodynamically unstable or needs an acute intervention? Obviously, they have to be hospitalized. Is this somebody who requires pain meds for their chest discomfort? Or maybe somebody who has other medical or social needs to be hospitalized? If so, then we're going to hospitalize them. But if there's none of these HESTIA criteria, this may be a patient who would do very well with home discharge, in which case then we can think about using an oral-only anticoagulant strategy.

And our two options there are either to use apixaban 10 mg twice a day for 7 days, or rivaroxaban 15 mg twice a day for 21 days. Now, after that initial period, they'll switch over to the standard doses, that's apixaban 5 mg twice a day or rivaroxaban 20 mg once a day and continue that for up to 3 to 6 months.

So, if we return to our case of our 74-year-old man, he had that acute PE, which anticoagulant is best? Well, he has a low-risk PE and none of those HESTIA criteria. So, we really want to think about home discharge for him. In this case, an oral anticoagulant may be best, something like apixaban 10 mg twice a day for 1 week or rivaroxaban 15 mg twice a day for 3 weeks.

Thanks so much, and I look forward to seeing you in another session.

**Announcer:**
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