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### Setting the Stage: Case Considerations for Bleeding Management in Anticoagulated Patients

#### Announcer:

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#### Dr. Beyer-Westendorf:

Hello dear colleagues, welcome to this episode. It is related to Case Considerations for Bleeding Management in Anticoagulated Patients. My name is Jan Beyer-Westendorf. I'm a Professor of Medicine in Germany, and I'm running the Thrombosis Hemostasis Division here at Dresden University Hospital.

As you know, with the uptake of novel or directly acting oral anticoagulants, today called the NOACs or the DOACs, many more patients receive anticoagulation or even long-term anticoagulation. But these patients, they are cardiovascular risk patients, by definition, they are elderly patients, they are comorbid patients. And these patients have a high risk for bleeding complications from their underlying diseases, or from trauma. This is a problem that is not going away with direct oral anticoagulants. And within the major bleeding, to create a hemorrhage is the most feared bleeding manifestation. And this often has devastating outcomes. So a high degree of mortality or long-term sequelae, that might bring the patient to a nursing home permanently.

On the other hand, gastrointestinal bleeding is the most frequent, non-traumatic major bleeding manifestation. So we have - we are talking about very severe bleeding manifestations, and quite common bleeding manifestations that don't actually need a trauma or an external factor to come up. So it's a patient underlying risk profile that is related to these bleedings. Since we cannot prevent all of these bleedings, an effective, rapid, and safe management of this bleeding, and this may include a reversal of the anticoagulant activity, is crucial to improve patient's outcomes.

So here depicted are the three major problems when it comes to major bleeding in elderly anticoagulant patients. We have on the left-hand side, the intracranial hemorrhage, which is the most severe manifestation of bleeding, then we have in the middle, the gastrointestinal bleeding, which is the most common, and then we have the traumatic bleeding that is often caused from falls of our patients.

The key point is, however this patient presents in your emergency department, it may be a GI bleed or intracranial hemorrhage or trauma-related bleeding, fast and effective decision-making is crucial to improve patient's outcomes, because every time delay contributes to bleeding and to late sequelae.

When it comes to these time-critical considerations, it is important to understand that we are talking about different phases that we can more or less influence. The patient undergoes an asymptomatic phase when the patient - when the bleeding just starts, but it doesn't patient doesn't feel it yet. And then the bleeding is ongoing, the patient develops symptoms, but there is time until presentation. So this is the preclinical phase of the bleeding. And then the patient arrives in hospital, arrives at your care. And then you have to make up a decision how to handle the bleeding, how to handle the anticoagulation the patient was taking, and to make up your mind whether you want to reverse this anticoagulant effect. So the time until administration of an reversal agent is adding to the ongoing bleeding. And

then there is time until effective reversal. So you give the reversal agent, you make up your decision, you ordered for the drug, you apply the drug to the patient, but then it might take time until it works. And finally, we also need to consider the duration of action of reversal because if you have a very long-acting anticoagulant such as a vitamin K antagonists, or you have a very short acting reversal agent, there might be rebound issues to also to be considered. And it's always important to understand that this preclinical phase is already introducing harm to the patient, it's already damaging tissue, blood loss is going on, but this phase cannot be influenced. So it's on the right-hand side, it's the green boxes that are in our hands and that can be influenced by us. Because the more time we lose, the more time we waste, this decision-making and introducing the right reversal strategy, the more damage this time loss will cause to the patient.

Now, time to decision is critical, and the time points are critical as discussed. But what are the challenges in this setting? Well, when a patient arrives in our emergency department, do we actually know that the patient took an anti-thrombotic drug? And when do we learn about this? Which drug did the patient take? At what dosage? When was the last intake of the drug? Was it last night? What is this morning? Whether it was 2 days ago or last week, it's a huge difference for our decision-making. This patient overdosed accidentally, or by intoxication or by a chronic accumulation because you know that some DOACs depend on renal excretion. So in an acute situation, renal function may decrease in our patient, so there might be accumulation of the drug that is no longer sufficiently or readily excreted. So can I measure the anti-thrombotic effect in my patient? And should I measure it? Should I invest time, lose time with the benefit of getting a lab value that might guide my decision-making, but with the downside of adding delays to the timetable? What is the recommended reversal strategy for this specific patient for this specific anticoagulant drug? And is this recommended a reversal agent actually available in my hospital? Is it indicated? Or are there contraindications? And last but not least, is the reversal agent reimbursed because you know that many of those reversal agents are quite costly. So getting the money back for my hospital is an important consideration.

And then this is all related to the patient in the emergency situation. But please keep in mind, this is a cardiovascular risk patient. So the big question is, what is the indication that the patient was taking the DOAC in the first place? Is it atrial fibrillation? Is it a deep vein thrombosis? Is it a recent pulmonary embolism? Or a stroke just a couple of weeks ago. This is also important because then we need to make up our mind if we reverse now the anti-thrombotic effect of the DOAC, for instance, should I replace it by low molecular weight heparin, and at which dosage and when should I start with this bridging therapy? And can I go back to the DOAC later once the bleeding has been stabilized?

So you see, the decision-making around the emergency patients with bleeding on all anticoagulants is quite complex. It is time consuming. Many patients do not know the answers to many of these questions. Patients might be unconscious. So it is very, very important that every physician involved with the care of these patients learns how to handle these situations and how to handle this defect that we don't have all the necessary information available to us by the time the patient arrives in our emergency department. And then we still need to act fast and effectively.

So I do hope that you will find the episodes around this topic very educational and informative for you.

Thank you very much for your attention.

**Announcer:**

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