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## Practical Implications of New Treatments in Clinical Practice

### Announcer:

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### Dr. Channick:

Hello. Welcome to the program today. My name is Richard Channick. I'm a professor of medicine and director of the Pulmonary Vascular Disease Program at UCLA Medical Center, and it's really my pleasure to be joined by 2 of my colleagues, Dr. Jean Elwing, professor of medicine and director of the Pulmonary Hypertension Program at University of Cincinnati, as well as Victor Moles, who's Assistant Professor of Medicine and Associate Director of the Pulmonary Hypertension Program at University of Michigan.

So our topic will be risk stratification and risk assessment. And this has become very important in the pulmonary hypertension field. So I think it's really critical that we discuss where we're at with risk stratification, where it has its importance, and how we do it in our pulmonary hypertension centers around the country.

So maybe I'll start with a question for Victor. Why is risk stratification so important?

### Dr. Moles:

Risk stratification in pulmonary hypertension is a central part of what we do every time we care for patients with pulmonary hypertension. I think what we need to understand is that in the past, we used to use a lot of different measurements or tools that gave us an idea of the severity of pulmonary hypertension; that could have been a 6-minute walk test, a BNP, a right heart catheterization, or an echocardiogram. But the truth is that no single tool is perfect to measure a patient's risk or to understand their short- or long-term prognosis.

So what has happened in the past few years is that different risk stratification methods or tools that incorporate many variables have been developed. And these tools have shown that they can predict the risk of severe things happening either at 1, 3, 5 years or long term. And these are very important because they don't take just one test, but rather they take different methodology and different information and put it together to give us a comprehensive risk assessment of the patients.

### Dr. Channick:

I know there's some recent data trying to refine these tools. I mean, let's say, what's a person to do when you look at all the different risk stratification tools?

### Dr. Elwing:

I think it can be a little bit overwhelming because you're like, do I understand which to use? When to use it? I think the most important thing is to use something consistently. And that would really help guide you, instead of using one thing one moment and another thing the next time you see someone. So you can choose from any of the risk stratification tools. And the consistency of use is important not only at that initial appointment, but also at follow-up. And it has to be done serially to know, are you reaching that low-risk status, and are

you maintaining it for the best predicted outcomes?

**Dr. Channick:**

And just to add to what Victor said, the importance is because these risk categories do turn out to be prognostically important. And the data is getting better and better in that you can predict outcome, survival, clinical functioning, and all the things we think are important, by looking at risk stratification not just as you said, Jean, in baseline, but in follow-up. And that's why we talk about that.

But, Jean, I guess I'll have you go a little bit further. You know, you've been doing this for a while. I mean, do you think this is something that's being done consistently? I mean, you probably have, you know, patients that are seen by more community-based specialists who are referred to you, and you can't see them all the time, and where are the gaps right now, would you say?

**Dr. Elwing:**

So I think what Victor talked about, that multifaceted assessment likely is not happening as much as we would like. We're looking at functionality or BNP or just that gestalt and not really the entire picture, which really gives us the best look at what's going to happen to that patient over the next several years. So I think that's where our biggest gap is; we're not getting that entire picture in all of our patients.

And actually, we did a survey in CHEST in the Pulmonary Vascular Network, and that was published recently, that only about 60% of PH providers are using risk assessment routinely, and most people are using gestalt. And gestalt has very great flaws. Even though we think we are pretty accurate, it turns out that we are wrong a significant portion of the time, either under- or overestimating the severity of illness in our patients.

**Dr. Channick:**

Yeah, I would certainly agree with that. And maybe I'll also follow up with Victor that, you know, when you ask different specialists how they do risk stratification, what they think are the important parameters that go into it, you know, you'll get different answers. I mean, I know there's some recent data published from the French group, which seemed to refine. One of the challenges, of course, being that a lot of patients are in this intermediate-risk category, and how helpful is that? They're low risk, great, but they're high risk, not so good. But what about everyone in between? And so I think there's been a lot of attempts to try to refine it to be a little more discriminating in that middle ground.

I don't know if you're familiar with the recent French paper looking at the role of hemodynamics, because that's one of the things that gets, you know, I think, commented on, is that, well, we can't recath people all the time to see how they're doing, and so noninvasive measures are better. But these data seem to suggest there may still be a role.

Maybe you can expand on that briefly, Victor?

**Dr. Moles:**

Yeah, Rich, I think that's a phenomenal point. I think that our goal is to try to achieve a low-risk status. But unfortunately, most of the patients during follow-up fall that intermediate-risk category. So how can we have a little bit more granularity on whether these are lower intermediate-risk patients or higher intermediate-risk patients.

And what has been published very recently this year is some information from the Pulmonary Hypertension French network, that has used some data from right heart catheterization. They came to the conclusion that the addition of a pulmonary artery saturation or a stroke volume index can help predict long-term events, meaning that if you're an intermediate-risk patient and you have either a pulmonary artery saturation above 65% or a stroke volume index above 37, your prognosis is much, much better.

So maybe that is a patient that you decide, after a shared decision-making, not to increase or add medical therapy, compared to the patient who doesn't meet any of those 2 criterias, who you may want to consider escalation of medical therapy.

**Dr. Channick:**

Yeah, would you say, Jean – that that's absolutely right, a good summary of that paper, but do you think that's a sort of practice changer, those data, in terms of how you would do your risk assessment? Or maybe I could ask it broader, like, how do you do risk assessment in your practice?

**Dr. Elwing:**

So I think it reinforces what all of us are doing, that anytime our patient is not meeting that low-risk status, and we believe we can get there; there are some patients that are limited by orthopedic issues or other factors that don't allow them to remain at that intermediate risk for other reasons, but if we think we can get to low risk, we oftentimes recath. And maybe that will just help us be able to talk to the patient in a little bit more detail about what we're looking for, what our goals are.

And the other thing I think we should mention is using echo in addition to our current risk stratification. And that was recently published that when we added echo parameters, looking at the RV, the TR jet, and pericardial effusion, that we could also improve the discrimination of our risk tools a bit more to help us guide towards more therapy, different therapies. And these are some things that are hard to sell to patients unless we can really show them that, yes, in populations, this has been shown to help outcomes.

**Dr. Channick:**

So let me then have you sort of finish off, and then I'll go to Victor is like, for people who are watching, like, what do you do? Like, give us, like, a menu of what test you get when, what score you use, that kind of thing?

**Dr. Elwing:**

So that first appointment, you know, when you're meeting the new PAH patient is when you really get all of the parameters you can, the walk test, BNP, your echocardiogram; you have your right heart catheterization data. And I use REVEAL 2.0. And that's how I do my initial assessment.

If we're meeting people in the hospital, we use it in the hospital. Get all of the data we can safely; some people you can't walk, of course, or get a DLCO at that point. But you get the parameters you can, put it together, and get your initial risk assessment. And then we go back in clinic and we look at REVEAL Lite and reassess patients, and keep that in a flowsheet because you can't remember it. And you don't want to recalculate it for each visit, the old one. So you need something to track. And that way you can say, "Yes, indeed, we're making progress. And I know you're not feeling as good as you'd like. We need to push further. We need to change medications. We need to look at other options."

So I think the only way this works is if you have something consistent and trackable and the patient understands why you're doing all of these things to reassess and why you're not satisfied with where you're at.

**Dr. Channick:**

Victor, well, tell us about what you do in your practice.

**Dr. Moles:**

And we do something very similar, depending on the patient and the information that we have available, we use either the European guideline risk stratification model, the one that we're – we have a right heart catheterization and extended data. Sometimes we use the REVEAL 2, the REVEAL 2.0 for that first assessment. We show them where the risk is. We make decisions based on that risk. So you know, for patients who are sick and their risk is high, that gives us a lot of, you know, information to discuss with them why we need maybe parenteral prostacyclin, why we need triple therapy, and things like that.

The other thing that I'll say is that in order to consistently do risk assessment, you need to plan ahead. And every return visit, we have patients consistently do blood work and a 6-minute walk test before they are seen by the provider. That gives us the possibility of using either the REVEAL Lite score or using the 4 strata risk score. Both scores are very simple, and they need minimal input, that if you have that data, you're able to obtain.

And as Jean was saying, integrating all this into the medical records, making sure that we can track it, and as we're making decisions with the patients, we can show them what the trend is and why we recommend what we are recommending at the time.

**Dr. Channick:**

Yeah. That's, again, both really good summaries. I mean, I can just sort of add to that that, you know, the conversation with the patient, I think you both raised, is really, really important, because, you know, patients want to know, well, first they want to know, like, "What are my odds? And what is my prognosis?" And I think, like all of us, you know, we've learned to say, "We don't know what your prognosis is at day one, this is, you know, we're just starting. And how you respond to therapy will determine how you're going to respond. And we can't make a prediction on day one." And that's actually good news for patients, because, until we start treating them, it doesn't matter what their risk score is. It doesn't mean they're going to do a certain way until we see how they respond to treatment. It just may help us guide initial therapy.

And I think that's the critical point, is that we're not getting this data just to get it; we're getting it to guide therapy. Because, of course, we have multiple therapies available now. Before we had multiple therapies, risk assessment was an academic tool, and you could prognosticate, but there wasn't much you could do about it. But now we have expanding treatment options, and so now it becomes critical to know where these patients are to make a determination about what therapies should be used next. And there's obviously guidance on that in the treatment algorithms, which are now based on risk stratification.

And I would just say that the data about the right heart cath, I think, is important. I think all of us do repeat cath in certain patients.

Any, like, last words from each of you, Jean, about this whole topic of where you think the future is, or is risk stratification here to stay?

**Dr. Elwing:**

I think the importance of risk stratification is only going to increase. I think that now with new therapies available, we have more reason to reevaluate, reassess, and keep pushing to low-risk status.

**Dr. Channick:**

Victor, final words?

**Dr. Moles:**

I think that what we need to do is to make it more known, make sure that everybody's doing it, and making sure that now with all the therapies available, that we try to get patients to a low-risk status.

Because, just emphasizing on what Rich was saying, if we can make patients get to a low-risk status, they have an excellent prognosis. And some studies have shown that this prognosis can be very similar to the general population.

**Dr. Channick:**

Terrific. Well, that was a great discussion, both of you. And thank you all for joining.

**Dr. Elwing:**

Oh, thank you for having us.

**Dr. Moles:**

Thank you so much for having me.

**Announcer:**

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