CHET RIHAL: Hi, I'm Dr. Chet Rihal, Chair of the Division of Cardiovascular Diseases at Mayo Clinic Rochester. Today I'm here with Dr. Randal Thomas, who is a director of our Cardiovascular Health Clinic, a cardiac rehabilitation specialist, and, interestingly enough, a specialist in PCI patients.

I'm an interventional cardiologist by professional training, but today, we're going to talk about an aspect of PCI that I believe many of us don't appreciate as much as we ought to-- and sometimes, frankly, overlook. Randy, you and your colleagues in the CV Health Clinic just published a fascinating paper examining outcomes of patients who underwent cardiac rehabilitation after their PCI procedure. Can you tell us about this paper and why it's important, and why the interventional cardiologist ought to pay attention to it?

RANDAL THOMAS: Yeah, sure. There's this concept with PCI that many patients have, and perhaps many physicians have, that, once you have PCI, you're cured. And so we had the idea that maybe we should look in to see if, after PCI, cardiac rehabilitation gives additional benefit and outcome improvement in our patients. So we looked at our patients in a PCI database from 1994 to 2008, over 2,300 patients, a lot of patients that have been treated, and were able to follow their outcomes over time based on whether or not they made it into cardiac rehabilitation or not. And by the way, these are all patients who are local patients, who we have records for and we can follow long-term.

So what we found was that, among the 2,300 or so patients, about 40% participated in cardiac rehabilitation, 60% did not. And among those that did participate, there was a 45% lower mortality rate than those who did not participate in cardiac rehabilitation, quite a large impact on mortality. So what we wanted to know also was, well, that's great, but isn't there a difference in people who go to rehab compared to those who don't? They're younger--

CHET RIHAL: I was just going to ask you that.

RANDAL THOMAS: They're younger, they're healthier, and so forth, so doesn't that explain the benefit? So there are some statistical techniques that can be applied to help adjust for some of those biases. Not all of them, but the majority. Now, we did apply three different techniques with the best available statistical techniques we could find, and we still found that, after adjusting for those potential biases, there was still a 45% reduction in mortality.

CHET RIHAL: Randy, that's a huge mortality reduction. Do you believe the cardiology community appreciates that, in general, or have we somehow been so focused on putting in stents and using medications that we've overlooked the rehabilitation aspects?

RANDAL THOMAS: I think it has been overlooked. It may be more a fault of the cardiac rehab profession than the interventional profession, because we're all focused on our own areas, but certainly it's been under appreciated, for whatever reason.

CHET RIHAL: So what would be the mechanism? Is there the training effect, or is it the closer follow-up and compliance with medications? What's the mechanism of this incredible benefit?

RANDAL THOMAS: So it's a great question, and we have some inklings of the answer. And I would say, if we could come up with a medication that did the same thing, a 45% lower mortality rate, we would be probably getting a Nobel Prize. But this treatment of cardiac rehabilitation really gives a benefit for a number of reasons.

First of all, medication adherence. This is an important aspect, especially for PCI patients, to make sure they're staying on anti-platelet therapy and so forth. And that has been shown in our database to improve by about 30%. Adherence improves by about 30% if they go to a cardiac rehabilitation. Exercise alone gives many benefits, and people going rehab are more likely to exercise than those who don't.

Now, also, I think an interesting aspect is, besides controlling risk factors better, with appropriate medications and so forth, there's better follow-up. So let's say that you're a PCI patient, you go into cardiac rehabilitation and you have some chest pain, or you have some recurrent symptoms. In the rehab program, that's going to be picked up. If you're not in the rehab program, it may be totally missed. And so I think the follow-up is another potential reason why patients do better in rehab.

CHET RIHAL: That's a great point, Randy. Let me ask you-- like any other medical therapy, are there any downsides, and is it reimbursed?

RANDAL THOMAS: It is reimbursed by nearly all insurance companies that I'm aware of, including Medicare and private insurance carriers. By the way, PCI was only covered by a CMS, by Medicare, as of 2006.

CHET RIHAL: Rehab after PCI?

RANDAL THOMAS: Rehab after PCI, yeah. Exactly. And then the question was about any potential downsides. Well, the safety issue in rehab is quite good. It's a good issue to consider, but safety, in the correct rehab setting, is quite good. The event rate of cardiac events, and particularly sudden death during exercise in rehab, quite low. Less than 1 per 100,000 hours of exercise, so quite safe.

CHET RIHAL: Randy, one of the things I noticed about your paper is that we have set up almost an automatic, or a protocolized referral over to the cardiac rehabilitation services following coronary angioplasty. In other words, we don't rely on me to remember to order it. Is that a good way to do this, or?

RANDAL THOMAS: It's exactly the right way to go. And thanks to you and other colleagues, our surgical colleagues as well, you've been great supporters of cardiac rehabilitation referral over time, so Mayo Clinic, we're at least double the national average for participation in rehab. But there are three key things. One is that there needs to be an automatic process in place, as you've mentioned. And if we have to think about it, we're going to forget it sometimes. So an automatic referral process.

Second is to have a person who contacts and communicates with the patient in the hospital setting. So they talk and they say, this is why you should go to rehabilitation. It's important for you, we're going to help you set that up. The third is the rehab program itself. The staff in the rehab program needs to make sure that they contact the patients to kind of ease the pathway for the patient to get there. Set up an appointment for them, help them find how to park, where they need to park, et cetera. Those three things are what we do, and other centers do, that make the referral much more easy.

CHET RIHAL: Randy, this-- again, congratulations on a wonderful paper. And if I can summarize for our audience, what this paper shows is that a policy of cardiac rehabilitation in the PCI patient results in better medication adherence, greater surveillance for recurrent symptoms and initiation of further therapies, exercise training with its inherent benefits, and, if you put all these together, it's associated with a 45% mortality reduction, which is highly significant. And Randy, I thank you for your conversation this morning. It's been wonderful.

RANDAL THOMAS: Thank you.