- My name is Bruno Scheller. I'm interventional cardiologist working at the university hospital of Saarland in the Southwest of Germany, which is close to the French border. And I'm also a full professor for clinical and experimental interventional cardiology at Saarland University.

**Importance of this Study**

So, the treatment of coronary in-stent restenosis remains a challenge. If you look for example, at numbers from the United States, more than 10% of all [Inaudible], coronary procedures are related to the treatment of re-narrowed stents. So, this is a relevant clinical problem we have to deal with.

In Europe we have two preferred treatment options for the treatment of in-stent restenosis: Number one, is the implantation of [Inaudible] drug-eluting stent and number two, with the same high level of evidence is the use of a drug coated-balloon without the implantation of another layer, of metal in a restenotic stent. The advantage of DCB based treatment is that you avoid additional layers of metal, which increase your risk for stent related events over time and you have only to address the mechanical problems of the initial stent and the repeated track application is done by the balloon. And this may turn out, if you look at very long-term, follow-up, in a lower clinical event rate with reduction of death or myocardial infection. So, that's the big advantage of the balloon-based treatment of in-stent restenosis.

However, if you look at the available data in some of the trials, TLR rate is somewhat higher with DCB based treatment of in-stent re-stenosis compared to the stent-based treatment with the two layers, because the second stent gives you another mechanical force to open the lumen. For balloon-based treatment, the quality efficient preparation is very essential step.

If you look at the available drug-coated balloons, almost all are coated with paclitaxel.

Why?

Because paclitaxel has persistence inhibition of cell growth if it's done locally. Whereas a Limus agent like sirolimus, which are dominating the stent-based treatment, have a reversible binding to them to a receptor complex. And this means if you want to, well have a longer-term efficacy in recent ones, prevention by Limus drugs, longer term release is mandatory for this treatment.

**Study Design and Patient Cohort**

So, in this trial, we included patients with a drug eluting stent restenosis in the coronary arteries, and all patients were treated by a drug-coated balloons. However, we randomised them either to treatment with the best-in-class paclitaxel coated-balloon, which is SeQuent Please Neo or with a new sirolimus coated-balloon with a highly crystalline coating, the, which is the SeQuent SCB. And the trial was conducted in parallel in two randomised settings. The one was in Malaysia, five centres of cardiology there, and five centres in Germany and Switzerland also randomising patients in two identical trial designs. And for this analysis, we combined both study sets & investigated 101 patients included in this trial. All patients were followed up clinically up to 12 months and underwent angiographic control at six months.

The primary endpoint of the trial was late lumen loss. This means the difference of lumen diameter at follow-up versus the result at the initial procedure. And the study was powered to show non-inferiority of the sirolimus coated-balloon compared to the paclitaxel coated-balloon in terms of late term loss at six months.

**Key Findings**

The key findings are, were that both devices worked very well during the procedure. We had almost 100% procedural success in both groups. And interestingly at six months, we had almost the same late lumen loss in both groups. It was 0.25 millimetres plus minus 0.57 millimetre in the paclitaxel coated-balloon group, and 0.26 plus minus 0.60 millimetre in the sirolimus coated-balloon. And the predefined non-inferiority margin was 0.35 millimetres and this was not reached by the sirolimus coated balloon compared to paclitaxel coated-balloon. So, we could demonstrate, demonstrate non-inferiority of these new highly crystalline sirolimus coating vs the well-studied paclitaxel coated balloon.

**Impact on Practice**

The impact of this trial is that we could demonstrate for the first time that a sirolimus coated balloon, has similar angiographic outcomes in the treatment of drug load extend restenosis at six months. If you look angiographically at it, and we have now to look further, if this will translate in similar clinical outcomes, (the study was not decided for this question, of course) and we will have to look about long-term effects, long-term efficacy because we have different mechanisms of action of the two drugs.

**Next Steps**

So, the next steps are that we have to look at different clinical indications for this new sirolimus coated balloon. In our trial, we looked at in-stent restenosis where the stent is already present. However, we have learned from paclitaxel coated balloons in the [Inaudible] lesions that we see an effect we call lumen enlargement. This means you have an improvement of the vessel lumen over several months after the initial procedure. And this is related to growth in [Inaudible] vessel area. And the question is or was, if this is a paclitaxel specific effect, or do we see the same effect sirolimus too, an improvement of the vessel lumen over time? And for this there's a parallel trial, which is also presented at a TCT meeting and giving us more insights in the mechanism of action of these two drugs. And furthermore, of course, we need a larger randomised trials in different indications, ISR de novo lesions comparing the clinical outcome of sirolimus coated-balloons with a standard of care, is maybe paclitaxel coated-balloons or current generation drug-eluting stents.