INTERVIEW

SAM HEUTS

Sam Heuts has a dream

The night before he was to have his interview at the Dutch Heart Foundation for the Dekker Clinical Scientist grant, Sam Heuts lay wide awake in a hotel in The Hague. “This represented nine months of work, which in my view would be wasted if I didn’t get the grant. My girlfriend and me had just had our first child and the preparation of the project took a considerable amount of time in that busy period, so I would have found it really hard to come home with the news of a rejection.” Sam did get the grant, with which he is hoping to clarify the grey area of peri-operative myocardial infarctions.

When Sam began working at the Department of Cardiothoracic Surgery in 2015, as a PhD candidate and physician-not-in-training, he briefly thought it was he who got it wrong. “During the morning handover, the postoperative blood values of the patients – which quantify the damage to the heart – were discussed, and one doctor would say: ‘There’s something wrong here’, while another said: ‘Oh no, not at all.’ After a couple of years, I realised that these blood values, which help decide whether someone has had a myocardial infarction after an operation, were interpreted differently by different doctors. Hospitals in the Netherlands use different biomarkers and cut-off values for certain breakdown products in the blood, and those in other countries often also check different compounds, so it’s impossible to compare centres and studies.”

WORK AS A HOBBY

The topic has kept him occupied ever since. A year after having received his PhD in 2019 on the topic of mitral valve surgery, he was given a trainee post in cardiothoracic surgery at Maastricht. His decision to go for this specialist discipline was partly the result of the research he had done as a student at this department during a scientific internship. “Now my work has also become my hobby and am fascinated by the heart. On the one hand, the heart is a beautiful organ, as it’s always in motion, but on the other hand it’s very complex.” Together with the Departments of Clinical Chemistry, Intensive Care and Cardiology, he has in recent years focused on the diagnostics of peri-operative myocardial infarctions. They have been trying to find out what are the best biomarkers to measure, such as CK-MB and cardiac troponins. This resulted in the application for a Dekker grant, drawn up together with the Department of Radiology and Nuclear Medicine. “All of these departments were already involved in CARIM, and this research project made their clinical ties even tighter, which is great.” In his view, this illustrates the added value offered by CARIM, by forming a bridge between scientific research and the clinic.

DETERMINING A CUT-OFF VALUE

He realises that cooperation has made all the difference for his grant application. “It’s a personal grant, but without all these people I wouldn’t have stood a chance of course. We want to standardise this diagnostic trajectory further. The first step towards this is to make MRI scans of 143 patients before and after their cardiac surgery, in order to objectively map the damage to the heart. We can then correlate this to the blood values; which compound best reflects this damage? This then allows us to determine a cut-off value for it. It’s something that has never been done in this way yet.” This should improve current practice, which currently still leads to underdiagnosis or overdiagnosis. In Sam’s view, the present practice, which causes patients to be told in one hospital that they have had a heart attack after the operation, while another hospital comes to a different conclusion based on the same blood values, is no longer tenable.

HELPFUL FEEDBACK

Since he had completed his research proposal in time, he had the opportunity to pitch it with the CARIM Research Council. “I would really recommend that to anyone, and after that, asking various external people for feedback also really results in improvements. Their answers are sometimes a bit hard to swallow, as you may get comments like ‘What on earth is this? Makes no sense at all.’ You have to be able to take that and accept it, as it really makes things better. There was a world of difference between the proposal that I thought was good enough to be submitted in December 2022 and what I actually submitted one month later.” One month after the interview, which he qualifies as ‘reasonably easy-going’, he

got the message that the grant was his. There was one condition: he should not make MRI scans only at the Maastricht hospital; at least one other hospital had to participate in the project, to ensure the generalisability of the results.

In addition to his diagnostic research, Sam will work together with a colleague from the University of Innsbruck (Can Gollman-Tepeköylü) to set up the world's largest international database, comprising about six thousand patients, and storing their post-operative biomarkers and their longer-term outcomes. "This allows us to combine diagnostic and prognostic research."

DREAM

A PhD candidate (Brian Swinnen) will work on the project for three years, while Sam himself will have a day a week available for research. "That really is a must if you want to collaborate with colleagues who are not medical doctors. For most people, it's not an option to plan meetings before seven in the morning or after seven at night, and rightly so", he laughs. At this time in his life, his days are dominated by his work and his family, which will soon welcome a second child. "I've temporarily set aside the other hobbies I used to have. But I derive a great deal of satisfaction from my research. It's my dream to solve this problem, which has been going through my mind for years. And I want to become a good cardiac surgeon; I've got another two years of training ahead of me."

I REALISED THAT THESE BLOOD VALUES WERE INTERPRETED DIFFERENTLY BY DIFFERENT DOCTORS