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European Perspectives in Cardiology



Spotlight: Christian W. Hamm, MD, PhD, FESC, FACC, FAHA



Renowned in Germany as an Interventionist and Renowned Elsewhere for His 1992 Article on the Prognostic Potential of Troponin

Christian W. Hamm, professor of internal medicine and cardiology and medical director of the Kerckhoff Heart and Thorax Centre, Bad Nauheim, Germany, talks to Jennifer Taylor, BSc, MSc, MPhil.

In Germany he is known as an interventional cardiologist; elsewhere people think of biomarkers when his name is mentioned. Now professor of internal medicine and cardiology and medical director of the Kerckhoff Heart and Thorax Centre in Bad Nauheim, Germany, Christian W. Hamm, MD, FESC, FACC, FAHA, is a third-generation doctor—both his father and grandfather were “very dedicated” general practitioners, and his father was a professor of family medicine. His middle initial stands for Wilhelm, his grandfather’s name.

After high school, Hamm chose to study German literature, which his father said was fine provided he studied medicine as well. After 1 year, medicine won over the literature. “The people were more interesting and the practical work in the hospital really attracted me,” he says. “I was interested not only in working with my brain but also with my hands. That’s also a reason why I ended up in cardiology because it’s a field where you can do both.”

On completion of medical school at the University of Hamburg, Hamburg, Germany, Hamm wanted to pursue research. Most people went to the United States, but he obtained a research grant from the Deutsche Forschungsgemeinschaft (German Research Foundation) to go to the

laboratory of Professor Lionel H. Opie, MD, DPhil, DSc, FRCP, at the University of Cape Town, Cape Town, South Africa. So, from 1980 to 1981 he did basic research, primarily animal experiments, as a research fellow in the Ischaemic Heart Research Unit. He says, “It was a very nice time to be in Cape Town, which is one of the most beautiful cities you can think of. There I learned how to write scientific papers, how to think scientifically, how to approach problems from a scientific point of view. I learned a lot about science from Professor Opie, who was a very good teacher.” Hamm also describes Professor Opie as “a very strict person” and “very English.”

The time in Cape Town provided Hamm with an opportunity to improve his English, which he had learned during the year he spent as an exchange student in Michigan, MI, while in high school. The result was that he arrived in Cape Town as a German speaking English with an American accent. “That was a little bit strange,” he recalls with a laugh. He has since added a South African layer to his American accent.

Hamm returned to the Department of Cardiology at the University of Hamburg in 1981, intent on improving his clinical skills. In 1982, he had the opportunity to work in

On other pages...

Team 2009: The Kerckhoff Heart and Thorax Centre in Bad Nauheim, Germany

Christian W. Hamm, MD, PhD, FESC, FACC, FAHA, medical director, executive director, and managing director of research of the Kerckhoff Heart and Thorax Centre, Bad Nauheim, Germany, describes how the 6 research teams at the Kerckhoff Heart and Thorax Centre share their expertise in biomarkers and noninvasive imaging and translating it to other research fields to provide high-quality patient care and develop new and better therapeutic options.

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During the early part of his career, Professor Hamm's focus was less on research and more on improving his skills in the catheterisation laboratory. He says, "That's the reason why in Germany I'm much more known than outside of Germany for interventional cardiology. Probably outside Germany no one knows that I am still quite active in the cath lab." Photographs courtesy of Professor Hamm.

the catheterisation laboratory thanks to his clinical teacher, Professor Walter Bleifeld, MD. Professor Hamm says, "That was in the beginning of the 80s when coronary intervention and balloon angioplasty started, and later stents and so on, and I was very early in that field. I have close to 27 years of interventional experience, which is quite a long time now."

As a young fellow, Hamm, together with colleagues, built up the interventional programme at the University of Hamburg. During this early part of his career, his focus was less on research and more on improving his skills in the catheterisation laboratory. He says, "That's the reason why in Germany I'm much more known than outside of Germany for interventional cardiology. Probably outside Germany no one knows that I am still quite active in the cath lab."

The longevity of his practice in this area has given Professor Hamm a reputation for being one of the most experienced interventional cardiologists in Germany. Despite being in charge of a big cardiac centre and the administrative work which that entails, he still performs at least 500 procedures each year, which he estimates "is probably much more than the others in my field are doing." His caseload consists of private patients and complex referral cases that other hospitals don't want or at which they have been unsuccessful. "I enjoy doing things when others give up," he says.

Another important influence at the University of Hamburg was Professor Thomas Meinertz, MD, chair of cardiology. "He taught me during my last years in Hamburg how to talk to patients and that good communication is an important aspect for being a good doctor," says Professor Hamm. "You not only have to know the facts, but you have to sell it to the patient to convince him."

"The Advantage of This Nonprofit Foundation Is That Most of the Profit We Make Can Go Into Research"

Professor Hamm's current position in Bad Nauheim is unique for Germany. Since 1999, he has been full professor of cardiology in the State of Hessen and chief of cardiology at the Kerckhoff Heart Centre, as it was known at the time. For the past 2 years, he has also been medical director and research director, and since 2008 he has been chief executive officer. The centre became the only nonprofit foundation of its type in Germany in 1999, the day Professor Hamm took up his post. It has close links to the university and to the Max Planck Institute for Heart and Lung Research.

Professor Hamm explains, "We also used to be a Max Planck Institute, but it was too difficult for a research organisation to run a hospital, so we changed to this nonprofit foundation. The advantage is that we can reinvest all the profit we make here—and in such a place you make some profit. Today we can decide how to reinvest this profit in patient care and research."

The government, the State of Hessen, is one of the owners of the foundation, together with the Max Planck Institute, and representatives from each make up the board. The setup makes his job easy as chief executive officer, says Professor Hamm, because he has autonomy in decision making, which means that choices about where to invest money are very straightforward. Since becoming a foundation, more money is actually available for research.

The hospital at the centre is one of the largest in Germany. It features a cardiology unit with 128 beds, a large intensive care unit, an active and well-known electrophysiology group that does a lot of procedures, the catheterisation laboratory—Professor Hamm's favourite section—and a noninvasive diagnostics unit with 2 magnetic

Kerckhoff Heart and Thorax Centre in Bad Nauheim, Germany, where Professor Hamm is professor of internal medicine and cardiology, medical director, research director, and since 2008, chief executive officer. Professor Hamm says, "We used to be a Max Planck Institute, but it was too difficult for a research organisation to run a hospital, so we changed to a nonprofit foundation. The advantage is that we can reinvest all the profit we make here—and in such a place you make some profit. Today we can decide how to reinvest this profit in patient care and research." Photo courtesy of Professor Hamm.



resonance imaging (MRI) units and 1 computed tomography (CT) unit. Cardiologists in the unit carry out 2500 MRIs of the heart per year, more than in any other centre in Germany. Professor Hamm says, "In many other parts of the world and Germany MRIs and CTs are done by radiologists, but here we do it ourselves."

"That's What I'm Known for Outside of Germany—How to Use Biomarkers in Clinical Practice, and the Breakthrough Was This First Article on Troponin in Acute Coronary Syndrome"

Professor Hamm's four most important publications have all been published in the *New England Journal of Medicine* with him as first author and reflect his 2 major fields of research activity: biomarkers and interventional cardiology. The first, published in 1992, was the first report ever published on the prognostic potential of troponin.¹ His group found that troponin was a marker for outcome in patients with acute coronary syndrome. "Today measurement of troponin in the coronary care unit or in the emergency unit is routine, so that's something I should be proud of," says Professor Hamm. "That's what I'm known for outside of Germany—how to use biomarkers in clinical practice, and the breakthrough was this first article on troponin in acute coronary syndrome." In 1997, his group showed that measuring troponin routinely in the emergency unit improved decision making and had an effect on outcome.²

A third study, published in 1999, closed the loop by providing a therapeutic answer. They investigated how to treat patients with an increased risk as described by elevated troponin and showed for the first time that these patients benefited from potent antiplatelet treatment.³

Professor Hamm is still actively working on biomarkers, and a number of articles on novel biomarkers have been

published by his fellows in *Circulation*, the *New England Journal of Medicine*, and the *Lancet*. "We are still looking for perfect biomarkers for the emergency room in terms of inflammation," he says. Although many biomarkers have been identified, they would prefer to identify others that are more specific for cardiac events.

A fourth important article, this time in interventional cardiology, was published in 1994.⁴ "It is still cited today as one of the early trials that compares interventional cardiology, balloon angioplasty, with bypass surgery," says Professor Hamm. "The key finding was that balloon angioplasty—this was before stents—is, in terms of mortality, equivalent to bypass surgery in multivessel disease."

Professor Hamm's Interventional Research Now Takes the Form of Multicentre Studies, of Which He Is Either Principal Investigator or on the Steering Committee

One of the most interesting of these multicentre studies is the Paclitaxel-Eluting PTCA-Balloon in combination with the Coroflex Blue Stent (Coroflex DEBlue system) vs the Sirolimus Coated Cypher Stent in the treatment of advanced Coronary Artery Disease (PEPCAD-III) study, which is investigating the new concept of a drug-eluting balloon.

Professor Hamm is also fond of the Ongoing Tirofiban in Myocardial Infarction Evaluation (On-TIME) 2 trial⁵ because it reflects his passion for taking treatment out to patients. In ON-TIME 2, a multicentre study done with a Dutch group, patients with ST-elevation myocardial infarction were given a glycoprotein IIb/IIIa antagonist in the ambulance en route to the catheterisation laboratory. "The finding was that it improves the ECG but did not result in a difference in outcome because the study was too small," says Professor Hamm. Germany has the highest density of



Professor Hamm says, “Professor Eugene Braunwald was my good mentor for acute coronary syndrome, and we have been good friends for 20 years. Here we are Professor Braunwald (left) and Professor Antman (right) celebrating 20 years of unstable angina [research] at a symposium in Hamburg.” Photograph courtesy of Professor Hamm.

catheterisation laboratories in Europe, and every patient with ST-elevation myocardial infarction can be taken to the catheterisation laboratory. One of Professor Hamm’s goals is to improve the treatment of these patients during transport.

On top of his own research in interventional cardiology and biomarkers, the centre has a basic science research group that carries out stem cell research and a group that studies noninvasive imaging, including cardiac magnetic resonance imaging and computed tomography.

This year Professor Hamm has received a major honour in interventional cardiology because he will give the Andreas Grüntzig Lecture on Interventional Cardiology, which is 1 of 4 named lectures at the annual congress of the European Society of Cardiology (ESC) In 2008, his life work on biomarkers and interventional cardiology was acknowledged with one of the most important prizes in Germany, the Paul Morawitz Prize, which is presented annually by the Germany Society of Cardiology.

“Because I Am Still Very Active in Clinical Work, Writing Guidelines Is Something That Interests Me”

Bad Nauheim, Germany, where Professor Hamm works, is the birthplace of the German Society of Cardiology, but the small town’s historical significance extends beyond Germany. The American College of Cardiology was founded there after World War II. Add into the mix that Bad Nauheim hosts Germany’s only Max Planck Institute for Heart Research, and the town has become the most important centre for cardiology in the country. As such, Bad Nauheim holds the most fruitful work opportunities for Professor Hamm, but he misses the sea breeze of his own birthplace, Hamburg. He still has an apartment there and frequently visits with his wife at weekends. “People who

know me know I miss the sea and I’m a little bit lost here,” he says. “I need the sea from time to time.”

From a work point of view, some of his happiest moments are completing an article or one of the many guidelines for which he is known. He enjoys writing and has just finished the guideline for acute coronary syndrome in Germany. In Germany, he has also been chair of the writing committee for guidelines on myocardial infarction and diagnostic catheterisation, in addition to many others. He has also taken part in several guideline committees for the European Society of Cardiology. For example, he cochaired its committee for the guidelines on acute coronary syndrome without ST elevation,

which were published in 2007.

Professor Hamm says he enjoys contributing to guidelines because he is always looking for ways to translate research results into patient care. He explains, “Guidelines are a very good opportunity to interpret scientific evidence and interpret studies and make recommendations for clinical practice. And because I am still very active in clinical work, this is something that interests me.”

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Jennifer Taylor is a freelance medical journalist.

Team 2009: The Kerckhoff Heart and Thorax Centre in Bad Nauheim, Germany

“A Team Built on Early Promotion and Taking Responsibility at a Young Age”

Christian W. Hamm, MD, PhD, FESC, FACC, FAHA, medical director, executive director, and managing director of research of the Kerckhoff Heart and Thorax Centre, Bad Nauheim, Germany, describes the team and how it works to Jennifer Taylor, BSc, MSc, MPhil.



Staff of the Kerckhoff Heart and Thorax Centre in Bad Nauheim, Germany. Photograph courtesy of Professor Hamm.

The 35 fellows and 12 consultants at The Kerckhoff Heart and Thorax Centre in Bad Nauheim, Germany, are divided into 6 research teams, each focusing on a key area of research as follows:

- invasive cardiology and biomarkers, led by Associate Professor Michael Weber, MD, PhD;
- noninvasive imaging led by Professor Thorsten Dill, MD, PhD;
- heart failure (pharmacology and transplant), led by Professor Veselin Mitrovic, MD, PhD;
- electrophysiology (atrial fibrillation), led by Heinz Pitschner, MD, PhD;

- pacemaker/implantable cardioverter-defibrillators (new devices), led by Johannes Sperzel, MD; and
- echocardiography (myocardial function), led by Roland Brandt, MD.

In addition, a research group for basic science (stem cells, myocardial regeneration, Tako Tsubo cardiomyopathy) carries out both bench and animal research in a 500m² research laboratory. This group has 8 members including a biochemist and is led by Helge Möllmann, MD, and Holger Nef, MD.

More information can be obtained from the team's Web site, www.kerckhoff-klinik.de, which is primarily in German.

Areas of research include the investigation of biomarkers in valve disease and acute coronary syndrome, using cryotechniques to treat atrial fibrillation ablation, and the study of mechanisms in Tako Tsubo cardiomyopathy.^{1–6}

“Come to Work Smiling”

In general, Professor Hamm says, the 6 research teams work together by using their expertise in biomarkers and noninvasive imaging and translating it to other research fields.

One focus is Tako Tsubo cardiomyopathy, which is investigated by the invasive, magnetic resonance imaging (MRI), and basic science research groups. The aim is to better define the mechanisms that lead to this disease. The invasive and basic science groups also look for mechanisms in restenosis and target drugs.

The electrophysiology group cooperates closely with the noninvasive imaging (MRI/computed tomography) group in improving imaging guidance during ablation procedures.

The biomarker research provides many links to the heart failure and imaging research groups.

Professor Hamm says the Kerckhoff Heart and Thorax Centre team is highly committed and enjoys doing research. “They must come to work smiling, otherwise there is no sense in spending so much time of your life in the hospital or research labs,” he explains. His philosophy is to promote research fellows early and to give them responsibility at a young age. “This ensures an open minded approach and willingness to cooperate,” he says. “I understand myself only as a mediator. At my level I need no further promotion, but they appreciate the support, I think.”

A highly professional research team with study nurses has been established for conducting industry and investigator-initiated multicentre trials, resulting in involvement in up to 80 studies. The team itself has initiated important studies such as the German Angioplasty Bypass Surgery Investigation (GABI) study,⁷ the recent Ongoing Tirofiban In Myocardial infarction Evaluation (ON-TIME) 2 study,⁶ and the ongoing Paclitaxel-Eluting PTCA-Balloon in combination with the Coroflex Blue Stent (Coroflex DEBlue system) vs the Sirolimus Coated Cypher Stent in the

treatment of advanced Coronary Artery Disease (PEPCAD) III study, which investigates a new drug-eluting balloon.

Close Links to Medical Research Benefit the Patients

The 289-bed Kerckhoff Clinic has an excellent reputation as one of the largest and best known cardiac, lung, and rheumatology clinics in Germany, providing treatment for more than 38 000 patients each year.

The cardiology unit has 128 beds and special units that focus on specific disorders. Approximately 10 000 patients attend the cardiology outpatient department and over 2500 heart operations requiring the heart–lung machine are carried out each year. The range of surgery includes treating patients with dilated cardiomyopathy (DCM), and special experience in mitral valve reconstruction (the maze operation, and a further development, the mini maze operation). Ongoing research projects include investigating DCM, cardiac arrhythmia, and neurological complications after heart surgery.

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