Dr Pim de Feyter is a professor of noninvasive cardiology; about 8 years ago, a joint chair in cardiology and radiology at Erasmus Medical Center was created for him. At that time, the development of noninvasive imaging techniques in cardiology needed more encouragement and support. “We just invented this post,” he says. “As far as I know, there is no other such chair in the Netherlands. Maybe more will come in the future.”

Although he acknowledges that in some institutions such a dual role might be unsettling and cause friction between clinicians in the 2 departments, his personal experience has been only positive. He says, “We find it a very agreeable position. Cardiologists and radiologists share all the publications. It has promoted better communications. We feel everyone should work together in this way.” The close working relationship of the cardiology and radiology departments at Erasmus, facilitated by the joint chair, has improved the interpretation of the images produced, and Dr de Feyter believes this ultimately has benefited patients.

Dr de Feyter received his MD in 1970 from the Free University, Amsterdam, the Netherlands, and he held a position as an army medical officer between 1970 and 1972. He subsequently trained as a cardiologist between 1972 and 1977, again in Amsterdam, and he eventually joined the cardiology staff. He received his PhD in 1981.

During his training, he took inspiration from Paul Hugenholtz, MD, emeritus professor of cardiology at the Erasmus University in Rotterdam, who instilled in him “a fantastic international outlook,” encouraging him to look towards his betters and to strive to compete with them.
In 1983, Dr de Feyter moved to the Erasmus Medical Center as a cardiologist, with a particular commitment to invasive and noninvasive coronary diagnostic techniques and percutaneous coronary interventions. High technology interested him because of the possibility of making a diagnosis without involving other specialists. “I was working in coronary artery disease, and we only had invasive angiography as a diagnostic tool. Then, we started using electron beam computed tomography [CT] 8 or 9 years ago to look at coronary calcification,” he explains. “We tried to use it for coronary angiography—it was possible, but not great. We also started noninvasive magnetic resonance imaging.”

Despite the potential benefits of noninvasive diagnostic techniques with CT and magnetic resonance for coronary imaging, Dr de Feyter views CT and magnetic resonance imaging at this time solely as research tools (Figure 1). He explains, “I believe that we are not so far on yet that we can replace invasive coronary angiography, but that is the goal we have.” He continues, “It is only when there is a negative CT that it is very reliable. But a positive scan is not always reliable. As a result, so far surgeons are not willing to do their operations on the basis of a scan alone. The same goes for percutaneous coronary interventions. We need a better technique.”

He cites 2 main problems—the fact that arterial calcification makes it difficult for CT to show the severity and significance of lesions, and the radiation dose associated with the procedure. He points out, “Magnetic resonance imaging would circumvent the problem of radiation exposure, but for coronary disease—though not myocardial or valve disease—CT is a much better option.”

He adds, “Of course, you need better resolution—the old invasive technique is about twice as good as the current noninvasive technique, and the lost information may be vital for patient care.”

However, Dr de Feyter stresses an enormous optimism around noninvasive imaging, particularly because it is so patient friendly. He believes noninvasive techniques may eventually have a role in detecting stenosis or coronary artery disease in symptom-free individuals at high risk (Figure 2). “For 40% of those who have an infarct, this is the first sign they have of their disease, and it is already too late for them by then. We are setting up trials to test the possibility of screening—this is a goal for the future,” he says. “It is only a matter of time,” he adds, “perhaps 5 to 10 years, before the diagnostic angiogram will be replaced by noninvasive scanning.” Thus, he advises anyone starting out in cardiology with an interest in imaging to “be certain to take up noninvasive imaging. If cardiologists are wise, they should get the training and the knowledge.”

Dr de Feyter’s unique appointment may well pave the way for additional, similar posts across Europe, possibly stimulating cooperation and communication between cardiologists and radiologists. He says, “The hope is that research will demonstrate where and how noninvasive imaging can add new information that can benefit cardiologists and their coronary patients in a cost-effective manner.” He concludes, “I have an independent position. I do not make money with the machines. What I really want to know is whether it adds anything to the existing technology. I see the stream of patients on the one hand—we do 10 patient clinics per week—and the technology and the machine on the other. I have access to both. Radiologists only have access to the machine. Cardiologists only have access to the patients. There is no doubt in my mind; you really need both.”

Monika Polak is a freelance medical writer.
Dr Corinna Brunckhorst is one of very few women to achieve success in the field of electrophysiology. She was a member of the research team led by Shlomo Ben-Haim, MD, DSci, whose 3-dimensional electroanatomic mapping system, CARTO, from Biosense Webster, Diamond Bar, Calif, revolutionised the field of catheter ablation. Her current role is to build on such systems to expand possible curative procedures and increase the number of indications and therefore the number of patients.

CARTO has helped electrophysiologists treat more complex arrhythmias in patients with unusual cardiac anatomy—for example, with a scar, fibrosis, or a congenital defect. This has led to increased success rates and fewer complications in catheter ablation procedures. With CARTO, a magnetic field positioned underneath the patient enables the position and direction of a catheter to be detected. When combined with the electrical signal data, the catheter’s position and direction can be stored and displayed in real time.

Recently, the technology has taken another step in which magnetic resonance imaging or computed tomographic imaging is combined with the electrical information (Figure 1). Dr Brunckhorst says, “We have been using CARTO for 10 years, and we have been combining it with magnetic resonance imaging and computed tomography imaging for the past 2 years. We’re still in the establishment phase of, for example, working out the best way to merge the images. But it has the potential to further increase the success and safety of catheter ablations.”

In addition to Dr Ben-Haim, Dr Brunckhorst has had the opportunity to work with many other well-regarded experts in the field of electrophysiology, partly because of the vast number of institutions she has worked in. She began her medical training at Freiburg University, Germany, and she continued in Hamburg, Munich, and Berlin, all in Germany, but her studies soon led her around the world. The first stop was Aberdeen University, Scotland, where she spent her third undergraduate year studying internal medicine. Dr Brunckhorst’s next stop was the United States in 1988, where doors opened more easily for a woman than in Europe. “My interest in cardiology triggered my dissertation in this speciality, and on completion, I tried to get into a top institution for further training. I went to Bernard Lown, MD, at Harvard School of Public Health, who had invented electrical cardioversion and defibrillation and won the Nobel Peace Prize.” She continues, “He is a very impressive character, and he inspired me a lot by his brilliance in practising and teaching cardiology and by his philosophy. The time with the Lown group was a kickoff point for me, and I never lost that contact, even though it was a long time ago.”

Dr Brunckhorst continued her travels, spending some time in 1989 at the University of New South Wales, Sydney, Australia, before moving on, in 1990, to the University of California, San Diego, where she underwent training in cardiovascular surgery. She then moved to Cape Town, South Africa, in 1991, where she gained experience in a trauma unit and emergency department at the University Hospital. “I consider it a great privilege to have been able to work in different medical systems and cultures.
I was lucky enough to encounter great teachers at medical schools with very high standards. It was definitely worth the constant bureaucratic hassle that occurred throughout my curriculum,” she says.

Arriving back in Germany in 1992, Dr Brunckhorst took up a post at the University Hospital Rudolf Virchow, moving on to the German Heart Center and the University Hospital Benjamin Franklin. Then, out of the blue, in 1997, came the offer of a fellowship back at Harvard, at Brigham and Women’s Hospital.

At Brigham and Women’s Hospital, she worked with one of world’s most recognised electrophysiologists, William Stevenson, MD, on invasive electrophysiology, catheter ablation (Figure 2), and pacemaker and defibrillator implantation. There, Dr Brunckhorst first began her research on the catheter ablation of ventricular tachycardia.

This breathtaking tour of the world’s best cardiology departments ended in 2000, when she moved to Switzerland to the department of electrophysiology at University Hospital Zurich, to work with Thomas F. Lüscher, MD, FRCP, one of Europe’s top cardiologists. But no matter what country she has been in, Dr Brunckhorst has been struck by the universal nature of medicine and the interventions that can be offered. “The fascinating thing about electrophysiology is that most of the time, the diagnosis and treatment are logical, clear, and can be proven. The patient is very troubled by a fast heart rhythm, and we offer ablation, after which they go home and are cured for life. This experience remains fascinating every day.”

Enormous strides have been made in electrophysiology in the past 20 years, but many challenges lie ahead for this fledgling discipline. “One major goal,” explains Dr Brunckhorst, “is to improve success rates with ablation of atrial fibrillation and even ventricular fibrillation, giving people a lifelong cure, as has been done with supraventricular and ventricular arrhythmias.” She points out, “Ablation of atrial fibrillation is established—in 1998, the pulmonary vein triggers were identified—but we need to understand more about atrial fibrillation and the basic physiology to develop advanced strategies and even better technology. Also, the ventricular tachycardias are neglected because we can just give patients an implantable cardioverter defibrillator, but that is not the end of the story, because such patients may receive recurrent shocks that can be very problematic. But, if we can offer them an ablation, it’s an important improvement.”

Dr Brunckhorst is married, with a 5-year-old son, but she is one of few women working in her field for obvious reasons. “It requires a very long postgraduate education process. That is probably the number 1 reason, and it is a speciality where you always need to be available, on call; you can have an emergency at any time, and the hours are never predictable.” She recalls, “Since I started my career, most of the time I’ve been the only woman, although sometimes there might have been just 1 or 2 others. And once you’re in the speciality, you have to prove yourself all the time.” However, she is quick to point out that she has always judged her success by her own standards rather than the standards set by those around her.

Despite her great love of travelling, she says Zurich will be home for the immediate future. “Last year, I had an offer from the Charité University Hospital in Berlin. It was a very prestigious position, and declining it was a very difficult decision. Berlin is a fascinating place for me, and it took me a couple of months to decide where my future lay, but the university and the cardiology department in Zurich have great standing. We have the highest standard in patient care and also in research in each subspeciality, and we have a great team with a great spirit.”

She concludes, “I have lived in a lot of different places, but I still have 25 years ahead in my career, and for now I’m pretty happy that I decided to stay here.”

*Emma Wilkinson is a freelance medical writer.*
Climbing the Cardiology Career Ladder: Denmark

The New Danish Cardiology Training Programme Faces Some Teething Problems

In a country where cardiologists are almost middle-aged before they qualify and where some cardiology departments have unfilled vacancies, a new logbook-based training programme is requiring intensive care. Hans Eiskjaer, MD, chair of the Working Group for Education and Training of the Danish Society of Cardiology, takes to Barry Shurlock, MA, PhD.

Applying for a specialist training post in cardiology in Denmark is rarely straightforward and uses a complex points system. If you are unlucky enough to apply at a time when other highly qualified applicants are in the ring, the appointment committee of the hospital in question may never consider you, because they are bound to offer the job to the applicant with the most points, explains Dr Eiskjaer, who, in addition to his role as chair of the Working Group for Education and Training, is a consultant cardiologist at the Skejby University Hospital, Aarhus, Denmark (Figure 1). “Each candidate’s application is awarded points according to a complex but precise schedule, so that, for example, 12 months’ experience of general cardiology earns 2 points, and various courses covering 40 hours of teaching earn 1 point. Periods of working abroad, research degrees, and experience in other areas of internal medicine and surgery also help to build up the points,” says Dr Eiskjaer, who is 1 of the 6 to 8 adjudicators who take part in the twice-yearly meetings (held in March and September) of the Central Committee for Evaluation of Applications in Cardiology.

He comments, “We go through all the applications and decide how many points each applicant has—you can’t change the total once that has been decided. This is sent to all the local regions, who then have a secondary meeting to decide whom to appoint. The decision is made mostly on the basis of the number of points, though if 2 applicants have the same number of points, other factors are considered.”

By the time budding cardiologists have reached this stage, they will be in their early 30s. They will already have completed their basic medical training, which can take more than 7 years, and then have undergone the necessary rotations (6 months each in surgery, medicine, and general practice) to obtain a licence to practise. Also, they will have completed a 12-month introductory period of work as a hospital doctor, probably in the institution in which they would like to train. Hence, by the time they are qualified specialists, they will usually be in their late 30s or early 40s. Dr Eiskjaer says, “An introductory post is not hard to get, but the next step is like going through the eye of a needle. You usually have to get 8 to 12 points, depending on the post. In some parts of the country, such as Northern Denmark, where there are not many applicants, you may be lucky with a smaller total of 4 or 5 points. If you have a PhD, you usually get a training post with the first application. In our department, you must have a PhD, which contributes 5 points, in order to get a training post. Some doctors apply between 3 and 6 times before they accumulate enough points—for example, by going on more courses or doing more scientific research.”

At any one time, about 100 cardiologists are in training in Denmark (Figure 2), which has a population of 5.5 million. A million of this total are in the Copenhagen area. The Danish Society of Cardiology, which was founded in 1960 and joined the European Society of Cardiology in 1970, has about 1000 members. Specialist training takes 5 years, the first 2 years of which cover the European “common trunk” in internal medicine, usually in a community hospital. Fellows then transfer to a major cardiac centre in a university hospital, where they cover all aspects of clinical cardiology. They study subspecialities such as interventional cardiology or electrophysiology after completing their specialist training.

Dr Eiskjaer comments, “There are no specific curricula for subspecialities in Denmark, but if, for example, you want to be responsible for coronary angiography, you must have done 500 angiograms. Most Danish cardiologists have all their training in 1 locality, where they have their family and friends. In our department, we try to motivate doctors to go abroad after speciality training, to Germany.
or the United Kingdom, for example. The volume of patients is greater in these countries. In 1 year abroad, you may see 3 to 4 times as many patients as you would see in the same time in Denmark. Because of this, a greater part of our electrophysiology training is done in Germany.”

Before January 2004, cardiology fellows in Denmark were evaluated informally, and they gained speciality status by working for 4 years in a university cardiology department. Qualification is now fully documented, with fellows assessed on the basis of a logbook-based system in which their competence in each area of clinical cardiology is evaluated and then signed off on by their mentors. They also must attend 20 days of courses on a range of specific cardiological subjects, including such topics as arrhythmia, valvular disease, and heart failure, and another 20 days on more general subjects. These might include subjects such as caring for the older patient or internal medicine.

Fellows without research experience take a 4-week course and write a short thesis to cover such subjects as statistics and experimental method. Failure to complete cardiology training is virtually unknown. Dr Eiskjaer says, “We know our applicants. They have been with us for a year or two before they apply, and we know they are doing well. The system is working well, but it is time consuming, and some of the older consultants can’t understand why we have to do all this. I chair the working group of the Danish Society of Cardiology, and on behalf of the Ministry of Health, we are considering the present description of the competencies. Do we need to change them? Are there too many specific things? Is it too complex? How can we get it more operational? Also, the 20 days of courses involve a lot of travelling—we are trying to have fewer courses, but to make them longer.”

Once trained in their speciality, Danish cardiologists tend to take posts in community or university hospitals as specialist registrars for 1 to 2 years before seeking jobs as consultants. Although hospitals have quite large cadres of cardiologists—for example, Dr Eiskjaer is 1 of 22 in his own hospital—overall, a substantial number of unfilled vacancies exist. Commenting on whether cardiologists trained elsewhere might find jobs in Denmark, he says, “Nobody wants to go to the smaller hospitals, especially in the extreme north and south of the country. The solution may be to bring in doctors from other countries such as Poland or Germany, and especially from Sweden, as the Scandinavian languages are very similar. We don’t look in an unkindly way on foreign doctors, though they need to speak Danish. If a hospital appointments committee likes you, they will help.”

Before taking his consultant post at Aarhus, Dr Eiskjaer spent a year gaining experience in the management of heart transplantation patients at Papworth Hospital, which is a teaching hospital of the University of Cambridge, United Kingdom. And, as an aficionado of windsurfing, it suits him to be a short distance from the sea.

On other occasions on his time off, he might go skiing or work on his golf. With a little arm twisting he revealed his handicap. “It’s 22, but I’ve only been playing for 2 years,” he says with a smile.

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The opinions expressed in Circulation: European Perspectives in Cardiology are not necessarily those of the editors or of the American Heart Association.