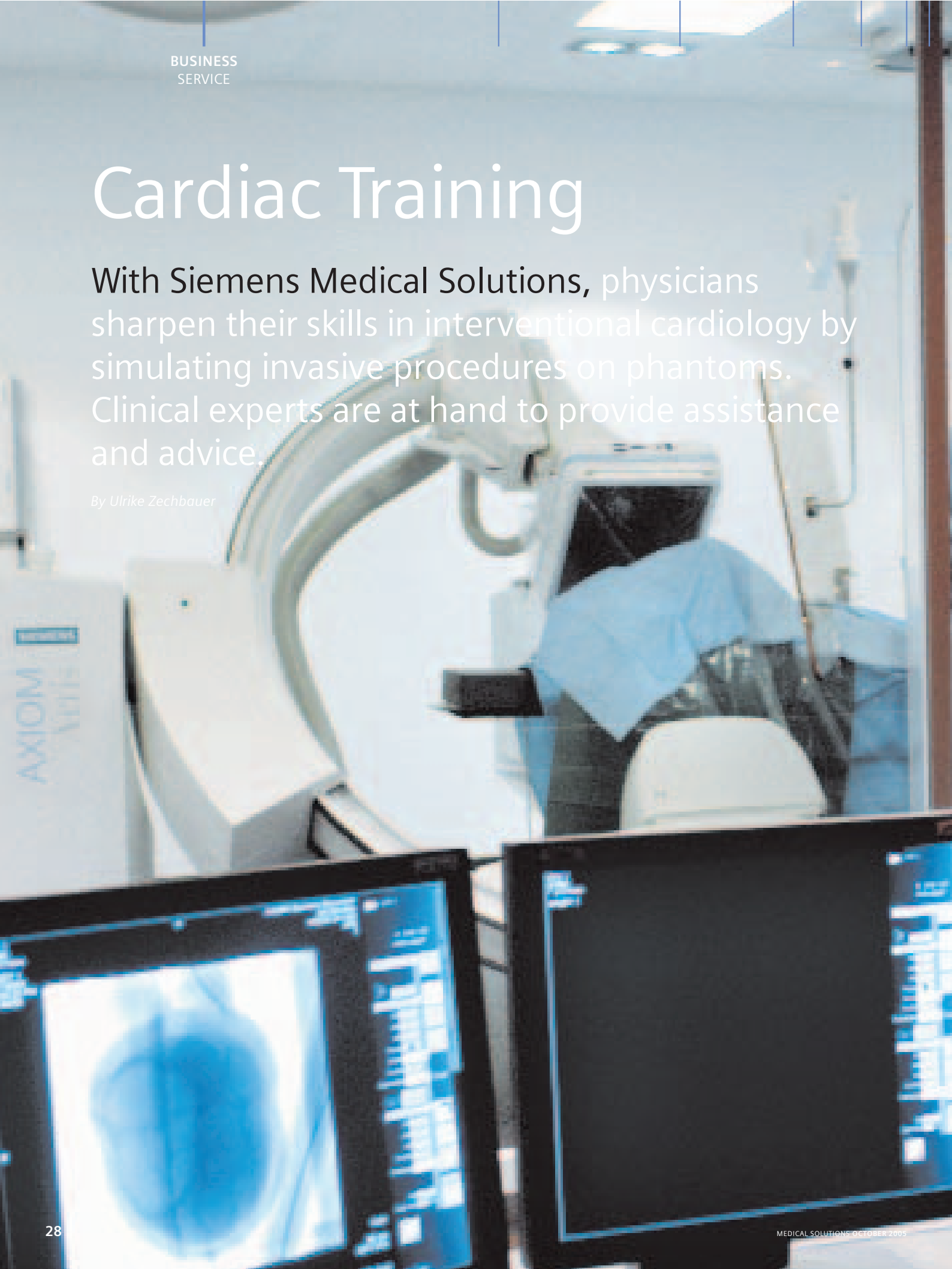


# Cardiac Training

With Siemens Medical Solutions, physicians sharpen their skills in interventional cardiology by simulating invasive procedures on phantoms. Clinical experts are at hand to provide assistance and advice.

*By Ulrike Zechbauer*





## »In the clinical routine, there is often not enough time for diligent schooling in the cath lab.«

Wolfram Voelker, M.D., assistant medical director of the Würzburg University Hospital, Würzburg, Germany

Practice makes perfect. This saying goes for both physicians and pilots. And because constant practice makes perfect, airline pilots regularly complete trainings in a flight simulator.

"Flying in a simulator has been an integral part of a pilot's training and career for decades. Studies show that repeated training in the simulator has statistically increased flight safety by a factor of 45," explains Professor Wolfram Voelker, assistant medical director of the Würzburg University Hospital.

### First Simulation Models in Medicine

Not only pilots have the chance to practice before the real thing. Thanks to new developments, physicians can now use simulators to try various diagnostic and interventional techniques, learn new procedures, and thus optimize their learning curve. However, the logistical effort associated with organizing workshops with medical simulators is high. Voelker is still optimistic: "In the meantime, the first training centers with simulation models as integral parts of their training method are being installed in Europe." The Siemens Med training center in Forchheim, Germany, is one of them.

### Keeping Track of Future Developments

Since autumn 2004, Siemens has offered workshops for prospective cardiologists in Forchheim as part of the "Life" customer care program. The customer care program includes continuous development of skills, productivity, and technology. Central ideas are to enhance knowledge and provide experience. Applica-

tions and clinical training offer physicians and radiation technicians the opportunity to exchange experiences, clinical methods, and user tips, and to discuss future developments. "Life" not only delivers optimum care for customers, it also offers a platform for the international exchange of knowledge at an expert level through intensive cooperation with clinical partners.

"The workshop for interventional cardiology is specifically tailored for physicians who are experienced in invasive coronary diagnostics and now want to get ready for interventions," says Voelker, who developed the course objectives with colleagues at Siemens Medical Solutions. The two-day course curriculum includes seminars such as "Optimized Angiographic Settings for Diagnostics and Intervention," "Quality Management in the Cardiac Cath Lab," "Basic Principles of Radiation Hygiene," and "Managing Complications in the Cardiac Cath Lab." However, practical exercises make up the lion's share of the course. In addition to various simulation workstations, the Siemens training center offers a cardiac cath lab with only one difference to the real McCoy: a heart model made of silicone pulsates on the operating table.

### In Case of Emergency – What Now?

Quickness is called for at the so-called Cathi training simulator. The diagnosis: myocardial infarction. Under the direction of Professor Voelker, a course participant selects the ideal guide catheter, then the guide wire, and tries to move it toward the constriction. No easy task. The wire is not curved correctly, so the entire process has to be repeated. Now the balloon has to be placed in the correct position. Another course participant assists, injects virtual contrast agent, inflates the balloon, and deflates it after 30 seconds. After vascular dilatation, the physician has to find the appropriate stent and then place it. But which stent is the right one? A 25-mm stent or one that is 30 mm long with a diameter of 3.5 mm? What a relief to have experts nearby, who offer advice and consultation! The stent is placed and the patient is saved.



### Professor Wolfram Voelker, M.D.

Professor Wolfram Voelker has been the assistant medical director of the Würzburg University Hospital, Germany, since January 1999 and, since November 2001, professor for cardiovascular imaging on the medical faculty of the Julius Maximilian University Würzburg. From 1995 to 1998, he was assistant medical director of the 2nd Medical Clinic of Mannheim University Hospital. From 1983 to

1985, he worked as a scientific assistant, then as a specialist in internal medicine, and later as a cardiologist at the Tübingen Medical University Hospital. He studied medicine from 1976 to 1982 at the RWTH Aachen University of Technology. Having completed his training in 1982, he focused his research work in Aachen on cardiovascular imaging and clinical simulation models.



“As a university professor and member of a research group for interventional cardiology within the German Cardiology Society, I am particularly interested in an optimized education for our physicians,” says Voelker. “The Siemens training center offers excellent prerequisites. Modern radiography systems, a very good infrastructure, and outstanding support from the Siemens team contribute significantly to the quality of the workshop. The ambience provides for a comfortable

learning environment which cannot be offered within the very clinical setting of a university hospital. In Forchheim, we have a team of experts from various well-known universities. We do not provide the one-sided opinion of individual experts, but rather the quintessential facts collected from various schools, concepts, and methods.”

In classical medical schooling, prospective cardiologists usually learn new surgical techniques by watching. Often, instructions are given very hastily. An experienced physician is called into a cardiac cath lab, where a group of assistant doctors is already waiting. Since the lab has to work through a large daily quota of cases, there is very little time, and all assistant doctors have to be trained at the same time. “At the center in Forchheim, on the other hand, the workshop participants can take their time working through all functions of the radiographic device and the simulation models,” reports Voelker.

## Life: Skills, Productivity, and Technology

The clinical workshop for interventional cardiology is embedded in the “Life” customer care program, which in turn comprises the Skills, Productivity, and Technology programs. Continually enhancing know-how, Siemens Medical supports users in fully utilizing their system’s potential. Based on the specific needs of the target group, Siemens Medical offers applications and clinical training tailored to individual requirements.

Courses offered at the training center, or on-site training courses for selected partners, cover almost all systems, and offer physicians and radiation technicians the most optimal setting: small courses in a quiet environment without distraction. All courses are tailored to customer requirements and are oriented toward the requirements and workflows within the hospital. Most importantly, participants are given the opportunity to test what they have learned on the newest systems. Additional information is available at: [www.siemensmedical.com](http://www.siemensmedical.com)

## Individualized Instruction – a Significant Advantage

The learning concept is successful. “I really enjoyed the workshop, especially the combination of theory and practice on the model,” says course participant Dr. Lotte Possler, who works as a specialist in internal medicine at the Julius Hospital in Würzburg and will soon complete her specialized training in cardiology. “Up to now, I have performed some 300 diagnostic catheter examinations. I have only done a few interventions, and



never alone. One major advantage of this workshop was receiving personal instruction from an experienced professor. This is very unusual. In the Siemens cardiac cath lab, I was able to practice under the direction of Dr. Jens Petersen for an entire hour. He watched me carefully and corrected me when necessary. As a result, I was able to benefit enormously from his experience and expertise."

Jens Petersen, M.D., is the former head physician of the renowned Bad Krozingen Heart Center, and has developed an interactive 3D learning program for the cath lab. "I have never experienced such intense one-on-one instruction. In clinical operation, it is simply impossible," reports Possler. "In addition, I could focus on how my colleagues would perform interventions and compare theirs with my own technique. I think it would be very good if an introductory course on diagnostic cardiology would be offered where participants receive instruction on the AXIOM angiography system."

## Gathering Experience for the Clinical Routine

Helge Möllmann, M.D., an assistant doctor at the Kerckhoff Hospital in Bad Nauheim, is also impressed: "I am completely satisfied with the workshop. The atmosphere was great. What I was able to learn here will certainly produce added value to my work. My understanding of subjects that are sometimes neglected during the clinical routine was increased; for example, radiation protection.

When I checked the curriculum prior to starting the course, I was surprised that this topic was even addressed. But I found it to be really interesting and I definitely want to learn more."

"My impression is that all the participants are very interested in continuing their education," says Möllmann. "Customers can acquire know-how and skillfulness in a way not possible in the clinical routine. With this basic education, the physician can better measure up to his or her responsibilities toward the patient."

"Thanks to simulators, we will meet our future objective. We want physicians to perform their first operation with some initial experience and not to gain it while operating on the patient. In five years, some types of intervention may require certification on the simulator," forecasts Voelker.

The cooperation between Siemens and clinical partners within the "Life" customer care program will increase the quality of training and will result in significant benefits for the patient.

**Author:** *Biologist Ulrike Zechbauer has worked at the Max Planck Institute for Brain Research in Frankfurt, Germany. As a scientific journalist, her articles have been published in media such as Spektrum der Wissenschaft, Fokus, and Handelsblatt.*