

# One system that covers it all for Rijnstate Hospital

## WHO/WHERE

The Rijnstate Hospital  
Arnhem, The Netherlands  
General regional hospital  
700-bed hospital  
First MultiDiagnost Eleva  
installation in the world

H.E. Deenik, MD, radiologist  
G.B. ten Haken, MD, radiologist  
Tj.G. Wiersma, MD, PhD, radiologist  
L. McBride, radiographer  
Y. Enklaar, radiographer



## CHALLENGE

Handle both fluoroscopy and  
angiography examinations  
on one X-ray system.

## SOLUTION

Philips MultiDiagnost Eleva  
multi-purpose X-ray system



The Rijnstate Hospital is a regional hospital that was created when three hospitals in Arnhem merged with each other in 1994. It is housed in an impressive modern facility that provides a warm and welcoming atmosphere for both patients and staff. Rijnstate is a teaching hospital and offers services for virtually all medical specialties. The hospital strives to make high quality care accessible to everyone in its service area. One way it does this is by investing in progressive medical technology that helps staff work as effectively and efficiently as possible.

## Full fluoro and angio - in one

The large radiology department at Rijnstate handles everything from routine X-ray to MR imaging, performing some 150,000 examinations per year. This volume of work kept their three angiography rooms and two fluoroscopy rooms continually in use. When it came time to replace one of their angiography systems they looked at how they could make the most efficient use of the room. That's when Philips new MultiDiagnost Eleva, multi-purpose X-ray system became very appealing. This tilt C-arm system had been developed on a new technology platform within Philips' business line X-ray and supports an exceptionally broad range of applications.

# PHILIPS



Mr. G.B. ten Haken (MD)

The MultiDiagnost Eleva features a number of standard pre-set and custom settings that allow clinicians to adapt the system exactly to the way they work. Rijnstate's radiology department chose the MultiDiagnost Eleva so they would have a system where they could do full angiographies and interventions as well as fluoroscopy examinations. Rijnstate Hospital received the first MultiDiagnost Eleva in January 2003 and it will serve as an international reference site for the system.

G.B. ten Haken, M.D., a radiologist at Rijnstate, gives a first impression: "This system is better than any of the other fluoro systems that we have. And the C-arm has a tremendous range. You can cover the entire patient in a single movement; from head to toe, you get it all in one go." At this moment, the hospital performs interventions on the MultiDiagnost Eleva and uses the system as a backup for fluoroscopy examinations.

### Precise positioning

The C-arm makes a full 180° isocentric rotation around the table, making it very useful for angiography. H.E. Deenik, M.D., radiologist, "The multi-dimensional positioning gives you more control than ever over the exam. You can position the system exactly where you need it and move it slightly one way or the other to get just what you need in view." Fluoroscopy examinations are easier now as well. Tj.G. Wiersma, M.D. Ph.D., radiologist, performs a large number of Dynamic Rectum Examinations (DRE), "DRE examinations require a small portable lavatory that I used to attach to the stand. That was very unstable and it would sometimes roll off onto the floor. Now I can just set the lavatory on the ground and move the system around to where it is needed. It is a much more stable setup."



Dr. Tj. G. Wiersma (MD, PhD)

### Easy patient access

Examinations are much easier on patients with the MultiDiagnost Eleva. Ten Haken, "It used to be we had to turn the patient, but now the C-arm rotates around them. That is especially nice for our older patients who can get dizzy when they turn too quickly." Wiersma adds, "MultiDiagnost Eleva has a very stable sturdy table and stand. When a patient is on it, they feel quite secure."

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*"The automatic step up position moves the table to a very low position and moves the tube back so the patient can easily get on the table"*

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A number of features make it easier to move patients on and off the table. Y. Enklaar, radiographer, "The automatic step up position moves the table to a very low position and moves the tube back so the patient can easily get on the table. After the examination, the table can be lowered and turned slightly forward to help patients get off more easily."

The MultiDiagnost Eleva examination table is supported on one end of the stand so clinicians can approach it from three sides. Ten Haken, "The MultiDiagnost Eleva has excellent access. You can very easily move around on all sides. Plus, the patient table is positioned far enough away from the main stand so you can easily get next to the patient and access them from all sides."

Mr. H.E. Deenik (MD) and  
Mrs. Y. Enklaar with the  
MultiDiagnost Eleva



**“Exceptionally good image with very little dose”**

Of course, image quality was also a very important consideration for the Rijnstate radiology department when they were considering a system for both angiography and fluoroscopy. The MultiDiagnost Eleva has clearly exceeded the expectations of the radiologists in this area. Deenik, “I’ve been working as a radiologist for 30 years and the MultiDiagnost Eleva has the most beautiful fluoroscopy images that I’ve ever seen.” Ten Haken adds, “The images are incredibly clear. I can see more details and gray tones and I get superb depth. With the MultiDiagnost Eleva, we get an exceptionally good image with very little dose. Even with fluoroscopy.”



Mrs. L. McBride

Grid Controlled Fluoroscopy or GCF plays a key role in making crisp fluoroscopic images from the MultiDiagnost Eleva. Ten Haken, “We can choose several different settings depending on what we are looking at”. The MultiDiagnost Eleva features a flat display monitor that ensures a compact control room design. Deenik, “When we used to work remotely, we would view the exam through the lead glass of the control room on the monitors in the exam room. Now the MultiDiagnost Eleva’s control room monitor helps you really concentrate, especially when you are performing conventional fluoroscopy.”

**“Extremely user friendly”**

The MultiDiagnost Eleva offers a number of new time-saving controls. An orientation switch allows clinicians to switch the orientation of the controls so the system always moves in relation to the direction they are working from. L. McBride, radiographer, “This is a very practical feature for us because the control panel is constantly being moved around for different examinations, meaning your orientation is constantly changing. Now when you turn to the other side, you just flip the switch and the system moves in the direction you expect.”

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***“The images are incredibly clear. With the MultiDiagnost Eleva, we get an exceptionally good image with very little dose.”***

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There are also a large number of pre-set system positions that move the system automatically. McBride, “Two positions that I find very handy, certainly for cerebral angiography or for selective abdominal vessels, are the pre-set AP and lateral positions. You start off with an AP and then you always have to do a lateral.



View inside the Rijnstate hospital

Now you just press the button and the system automatically adjusts the position of the table and the C-arm, and centers the X-ray beam. Otherwise, you would have to do three or four handlings just to get the right position. The machine also auto centers the height and the AP or lateral so you can start straight away after it has stopped. I find that very handy.”

The pre-set positions speed up procedures considerably and that’s an important consideration for the radiology staff. McBride, “Our machines are running at full capacity. We do between 15 and 23 examinations per day so every little bit helps.” The pre-sets make it easier for staff as well. Radiology has a large clinical staff meaning people might be working in the MultiDiagnost Eleva room who do not have much experience with the system. McBride, “If you are standing sterile and you can’t reach the controls, it is much easier to just say ‘push that button’ and the system moves itself around.”

Philips’ systems have a user-oriented design for controls that has made it very easy for staff to learn the new MultiDiagnost Eleva. Deenik, “Philips systems are extremely user friendly. The buttons are located in the correct position. They are enjoyable to use.” Enklaar adds, “It’s really easy to see what the controls are used for and what movements they make. They really speak for themselves.”

### Practical documentation

The MultiDiagnost Eleva allows clinicians to save examinations on its hard disk or transfer them to the radiology PACS. That is proving very useful for training purposes. Wiersma, “We used to store dynamic images on video and now we can make movie clips for use in powerpoint or other presentations. I’ve found that very useful for in-house consultations and clinical meetings. It is much easier to discuss the exams now.”

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*“We have an exceptional working relationship with Philips. I myself have been working with Philips for several decades and I’m very satisfied with this organization”*

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### Exceptional working relationship

The MultiDiagnost Eleva has only been in place for a few months at Rijnstate Hospital, but the radiology staff is already quite positive about the system and looks forward to working with it. They have long experience working with the Philips organization which in part contributed to their choice of the MultiDiagnost Eleva. Deenik sums it up, “We have an exceptional working relationship with Philips. I myself have been working with Philips for several decades and I’m very satisfied with this organization.”



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