

# PAPER-FREE PATIENT CARE:

The use of networked cardiopulmonary diagnostics at the Ammerland-Klinik



## CASE STUDY:

### FACILITY:

Ammerland-Klinik

### LOCATION:

Westerstede, Germany

### SUMMARY:

Interview with graduate engineer Holger Kuper, head of Ammerland-Klinik's IT department, regarding the use of networked cardiopulmonary diagnostics to achieve paper-free patient care in the hospital.

The Welch Allyn CardioPerfect™ Workstation software has helped this medical centre in Germany integrate test results from cardiopulmonary diagnostic equipment with an existing HIS, guaranteeing a prompt transfer of recorded data directly to the patient file. This is just one example of how this multifaceted software can integrate with electronic medical record systems worldwide in virtually any medical facility.

*Like many hospitals, Ammerland-Klinik, located in Westerstede, Germany, has been moving toward implementing electronic medical records (EMR) for several years. In 1997, the 356-bed hospital opted for the hospital information system (HIS) ORBIS, developed by Agfa (formerly GWI). In 2007, the decision was made to also upgrade the hospital's entire inventory of cardiopulmonary diagnostic equipment. Graduate engineer Holger Kuper, head of the hospital's IT department, spoke with Ralf Mateblowski from the journal "Management & Krankenhaus" about the reasons for this change and his experience integrating new devices into an EMR system.*



Ralf Mateblowski (left) from "Management & Krankenhaus" spoke with graduate engineer Holger Kuper (right), head of IT department, Ammerland-Klinik (Westerstede, Germany).

**Mr. Kuper, in 2007, you tendered the whole range of cardiopulmonary monitoring systems. What was so special about the decision to move to a cardiology system integrated with the (paperless) HIS?**

**H. Kuper:** We invited bids for a standardized resting ECG and a 24-hour ambulatory blood pressure monitoring system. Our hospital has, for some years, been undergoing a process of further development and expansion of the HIS. The goal was to integrate test results from cardiopulmonary diagnostic equipment for a comprehensive HIS by 2008, thereby enabling the hospital to work paperlessly. The last major step in achieving this objective was to transfer the data straight to the patient file or to the patient's bedside, especially as

part of a visit to the wards or as part of gathering patient information upon an individual's entry into the facility.

In the course of analyzing the new cardiopulmonary diagnostics units, the problems concerning recording and interpreting of ECGs were also discussed. With this challenge in mind, the search focused on a patient- and process-oriented system. The prospective modules had to be capable of being integrated into the existing HIS, as well as into the wireless network, making digital ECG recording at the patient's bedside possible. We needed to guarantee a prompt data transfer to the patient file as well as access to it from any authorized workplace in the hospital.

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*“Welch Allyn’s concept was coherent and comprehensive. Not only did they provide us with solutions customized to our demands concerning organization and integration—they also stayed well within the stipulated time frame.”*

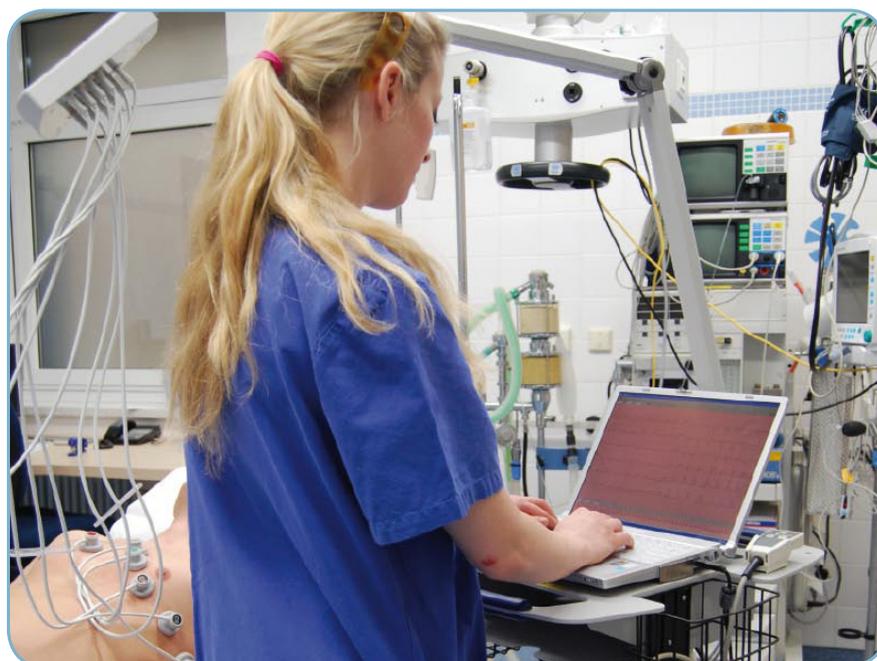
*- Holger Kuper,  
Ammerland-Klinik*

*“...the staff can deal with additional requests even while the ward round takes its course. Immediately after the test, the ECG data is made available to the whole network and can be accessed from any authorized workplace.”*

*- Holger Kuper,  
Ammerland-Klinik*

So you are saying that the challenge was to integrate the cardiopulmonary data into the HIS. Did this aspect prove to be an early knock-out criteria for many device manufacturers and providers?

**H. Kuper:** Indeed, it did. We invited all market-relevant manufacturers, but only one was able to provide a comprehensive concept that takes into account the user requirements as well as the challenge of data integration, which was Welch Allyn.



What were the crucial factors for the decision to contract Welch Allyn, the developer of the CardioPerfect Workstation?

**H. Kuper:** The market had until then been void of satisfactory solutions. We were looking for a software solution that met all of our requirements. Welch Allyn’s concept was coherent and comprehensive. Not only did they provide us with solutions customized to our demands concerning organization and integration—they also stayed well within the stipulated time frame.

How did the implementation proceed? Did you have to cope with technical difficulties or resentment on the part of concerned physicians or the nursing staff?

**H. Kuper:** Naturally, there will always be initial problems when new systems are introduced and implemented. First off, a stable wireless network is essential to making the mobile recording of ECGs work.

New systems and a modified workflow require a fresh approach and some amount of staff training. In the majority of cases, employees have to completely readjust and adapt their work procedures accordingly. Such demands do not always meet with approval.

However, since the hospital has been undergoing a process of change for years, we found that, rather than resisting our efforts, the staff displayed a high amount of willingness to implement the new systems. It took only six months to complete the adaptation process—including the implementation, training, introduction and establishment.

Can you give us a sense of how the new concept of ECG data management in your hospital works?

**H. Kuper:** Of course. Every time a physician needs an ECG, an order is carried out electronically through the HIS management system. The order is put on a work list intended for the functional diagnosis department staff. It includes the patient’s name, the ward and the request for an ECG. The ECGs are then digitally recorded on a mobile laptop computer with Welch Allyn’s 12-lead ECG recording software at the patient’s bedside and saved in a central database. If there are other orders incoming while the current ECGs are being executed, these will be displayed on a mobile ECG unit. Hence the staff can immediately respond to additional orders as they become available. Immediately after the test, the ECG data is made available to the whole network and can be accessed from any authorized workplace.

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*“[since connecting our devices,]  
the quality of ECGs has  
increased significantly... and  
the cost and consumption  
of resources can now be  
quantified.”*

*- Holger Kuper,  
Ammerland-Klinik*

#### How does the physician use the recorded ECG data?

**H. Kuper:** The physician responsible for interpreting the ECG data receives them in his work list after they have been recorded with Welch Allyn's 12-lead ECG recording software. The reporting is carried out by directly filling out the appropriate form or by way of digital dictation. For this use, a second monitor is provided at the workstation. Text modules suited for direct entry have been created in order to facilitate this task. The digital dictation is then transmitted to the central writing service where it is typed.

#### After one year of having operated the system in your institution, can you point to a noticeable or measurable improvement of patient care or of the efficiency of work sequences? Have there been cost savings?

**H. Kuper:** It is possible to measure how the system simplified the staff's work. Thanks to quicker direct order transfer, the processes have become leaner. The data is immediately available for the attending physician. The digital dictation, too, can be transferred without unnecessary delays. The physician can perform his reporting at many different workstations within the hospital. Also, the quality of the ECGs has increased significantly with Welch Allyn's 12-lead ECG recording software, since all data is saved permanently and without loss of quality. Another advantage is that no ECG gets lost. Each is examined and interpreted. What is more, the cost and consumption of resources can now be registered and quantified, which could not be done before.

#### What are you particularly enthusiastic about in your IT department? Have all your expectations been fulfilled or exceeded?

**H. Kuper:** Now, the process leading from the individual order to the final report is reproduced digitally in its entirety, and is traceable. It is carried out promptly, because all the relevant information is made available faster. Our expectations have been fulfilled in every aspect.

#### Did the Welch Allyn CardioPerfect Workstation bring you nearer to your goal of working paperless in the Ammerland-Klinik?

**H. Kuper:** Yes, the Welch Allyn CardioPerfect Workstation has brought us a big step closer. Not every provider offers concepts suitable for everyday use. It is here that the cooperation between hospital and provider is of the utmost importance for developing a product that, first and foremost, actually supports the user in his daily work instead of constraining him.

As I said, the process of moving toward a paperless patient record has been going on for several years. The last great step after adjusting all ambulances to the HIS, introducing the new systems and integrating sub- and supporting departments was to integrate the up-to-now paper-based documentation systems in all wards.

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To find out more about how the Welch Allyn CardioPerfect Workstation software can interface easily with your system and help bring solutions to your facility or practice, visit [www.welchallyn.com](http://www.welchallyn.com).

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