



GE Medical Systems
Information Technologies

Telemetry Case Study

Telemetric ECG Monitoring at the Ruppiner Kliniken in Neuruppin.



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Reasons for purchasing the telemetry system

“Without telemetry, ECG monitoring can only be conducted in the ICU”, explains Dr Schmailzl. In other words, all patients requiring rhythm monitoring have to be “tied” to their beds and placed together with critically ill patients.

Dr Schmailzl tells us about one particular case which finally prompted him to purchase a telemetry system: a young pregnant woman was referred to the Ruppiner Kliniken by her GP because she was found to be suffering from cardiac irregularities. Following an electrophysiological examination it was clear that the woman needed rhythm control

throughout the pregnancy. As the delivery date drew closer, the risks of arrhythmias became too high, so the woman was admitted as an inpatient for rhythm monitoring. The only place where ECG monitoring could be performed was the ICU; in other words an otherwise perfectly healthy and mobile, very pregnant woman had to be subjected to this extremely stressful environment. **The possibilities offered by telemedicine**

The pressure of costs facing hospitals, together with the desire of patients to be treated in greater comfort and a more familiar environment, is resulting in patients being discharged from hospital sooner than ever before. Thanks to telemedicine, hospitals are better able to satisfy these requirements. Dr Schmailzl described three different types of telemedicine:

Holter ECG

A nurse in the diagnostics department sets up the holter ECG. The patient is monitored for a period of 24 hours, after which the results are analyzed. The main disadvantages of this method are that the index event may not even occur during the 24-hour monitoring period and that an event cannot be registered online. **Telemetry patients**

Dr Schmailzl listed a number of different patient groups whose ECG can be monitored via telemetry:



CASE STUDY - SOLUTIONS IN ACTION.

Patients who are prescribed antiarrhythmic drugs

Patients who are prescribed a new antiarrhythmic drug are often unwilling to be admitted to the ICU. In such cases telemetric ECG monitoring is the ideal way to monitor the effects of and the patient's compatibility with the new drug.

Patients after acute myocardial infarction (AMI)

In the past, such patients would remain hospitalized for several weeks, despite the fact that "bedrest alone has never cured anyone", as Dr Schmailzl puts it. Thanks to telemetry, these patients can be mobilized yet reliably monitored at the same time.

Patients who have undergone a cardiac catheter examination

At the Ruppiner Kliniken a new method is used which involves sealing an artery after catheterization, thereby allowing patients to get up immediately after the operation. This method incurs additional costs and should only be applied if reliable telemetric ECG monitoring is available, as this method of monitoring, unlike bedside monitoring, allows mobilization of the patient. The Ruppiner Kliniken in Neuruppin north of Berlin consists of 15 specialist clinics and outpatient facilities, providing care for more than 1000 patients per day. In spring 2000, Medical Clinic A was equipped with the telemetry system CD Telemetry-LAN from Marquette. We asked Priv.-Doz. Dr. Kurt Schmailzl, medical director at Medical Clinic A, to tell us what he perceives to be the advantages of telemedicine in general and what he thinks of our telemetry system so far.

Installation of the telemetry system

The telemetry system encompasses the ICU, intermediate care, the so-called "functional tract" (ECG, ultrasound etc.), the staircases and a beautiful garden directly in front of the hospital building. The central station for the entire telemetry system is situated in the ICU and is manned 24 hours per day. In the intermediate care, antennas are mounted in the patients' rooms, while the functional tract is covered by antennas in the hallway. In addition, there are antennas in the staircases and two more attached to the outer wall of the hospital, thus allowing patients to walk round the garden within a radius of 300 meters.

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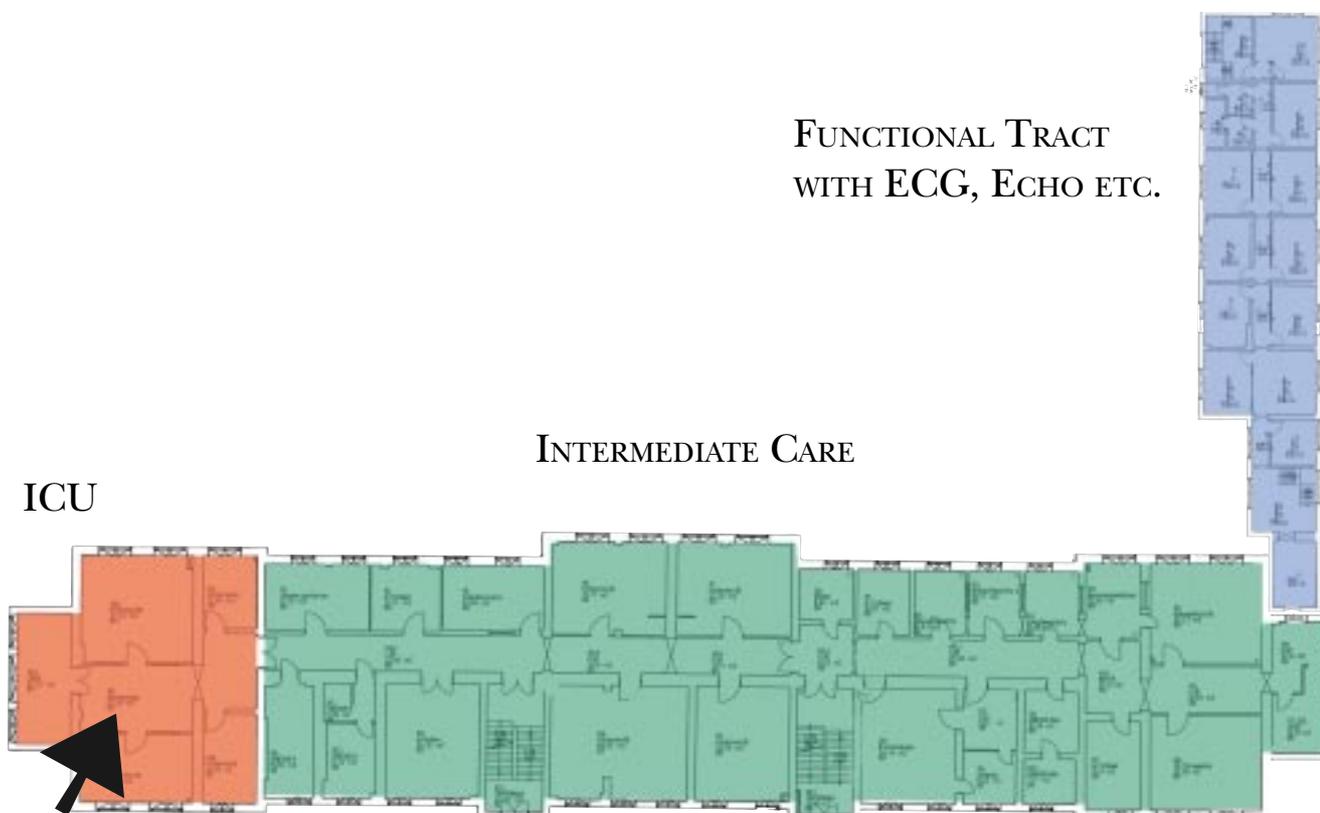
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FUNCTIONAL TRACT
WITH ECG, ECHO ETC.

INTERMEDIATE CARE

ICU



CENTRAL STATION





CASE STUDY - SOLUTIONS IN ACTION.

TELEMETRY – SOLUTIONS IN ACTION

Rhythm cards

If an event occurs, rhythm cards are placed on the chest and, at the push of a button, can record a 30-second ECG twice. This allows the patient to remain in his or her familiar home environment. If an event occurs the patient transmits the recorded EKGs via the telephone line to the attending doctor, who analyses the data. The disadvantage of rhythm cards is that the patient can only record events which he or she actually notices, so the card is not suitable for asymptomatic conditions.

Telemetric ECG monitoring

Using telemetric ECG monitoring, patients can be monitored continuously and online over the course of several days. With this system, cardiac specialists have at their disposal a reliable monitoring and diagnostic tool which is considerably more likely to detect events than is the case with holter ECG and rhythm cards.

Retrospective Holter analysis: a step forward

At the Ruppiner Kliniken, roughly one third of telemetry patients are subjected to a further holter ECG prior to discharge.

The Mars 8000 Combo system from Marquette would allow the Ruppiner Kliniken to optimize its workflows.

The MARS 8000 Combo is a clinical review station which stores ECG data recorded both at the bedside and telemetrically and makes this data available both for full disclosure (Recall) and Holter analysis. Using this system, Dr Schmailzl could at any time perform the necessary Holter analyses retrospectively for his telemetry patients, without having to arrange for the nurses in the diagnostics department to set up another holter ECG. If necessary, for example if during the ward round a telemetry patient were to complain of discomfort at a particular time, Dr Schmailzl could use a retrospective Holter analysis to check whether indeed an event had occurred.

Telemetric SpO₂ monitoring

At the Ruppiner Kliniken only telemetric ECG monitoring is used for cardiac patients. "The need to monitor other patients depends", explains Dr Schmailzl, "on the type of patients a hospital generally treats." For lung patients, for example, it is useful to be able to monitor oxygen saturation telemetrically, something which can be done using the Apex Oxymeter from Marquette.



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