Best medical care at home or on the move –
Remote patient monitoring for chronic diseases.

Telemonitoring of patients – high quality healthcare through telemedicine.

In Europe the general health of the population has improved considerably in recent decades. Average life expectancy alone has increased by more than six years over the last 20 years. At the same time, people in Europe and the other industrialized nations are healthy for the longest time of their lives. However, the progressive aging of society has led to increased afflictions due to chronic diseases, particularly in the latter years of life. The demand for age-appropriate and continuous treatment and care is therefore increasing significantly.

On the other hand, the number of doctors and medical personnel is stagnating and even reducing considerably in some regions. Over the past ten years the number of doctors has not increased in several EU states. In addition, the ratio of specialist doctors to general practitioners has reversed in the last decade. There are less and less general practitioners in Europe who can ensure local primary healthcare for age-related and chronic diseases.

Increasing health expenditure and gaps in care due to demographic changes.

The demographic changes are taking place most rapidly in rural areas. Today the lack of medical personnel is already leading to regional care shortages. In future, elderly people will be affected not just by one, but by several diseases (multimorbidity). The resulting increased frequency of treatment will inevitably lead to greater expenditure on healthcare. The public sector has very little room for maneuver from a financial perspective due to the global economic and financial crises. The cost impact on health services financed from taxes is therefore on the rise.

The growing demand for healthcare in the face of reducing numbers of doctors, budgetary constrains and austerity packages present massive challenges for EU states. These can only be overcome by significantly boosting productivity in the health sector. It is only possible to provide cost-effective care structures whilst ensuring that a high quality of medical care is maintained if doctors and nurses can work location independent on modern IT and communication technologies. The use of secure eHealth applications, such as telemedicine, can contribute to this.

Telemonitoring is gaining in importance for the diagnosis, treatment and continuing care of patients.

The medical benefit and cost-effectiveness of modern forms of telemedical care have been proven in a series of clinical and health-economics studies (e.g., at PfH - Partnership for the Heart, in collaboration with Charité). The rapid development of mobile data networks in terms of broadband speed and network coverage means that today telemonitoring can be widely used through mobile medical devices. Real-time transmission of vital data gives doctors and patients alike more security in managing high-risk chronic diseases around the clock, even at home. Telemedicine is also synonymous with interdisciplinary healthcare. Secure networking, coupled with electronic patient documentation and IT-supported treatment processes are the key elements of telemedicine, which not only ensure patient security and optimized follow-up care, but also effective help in home emergencies.

The potential of high-quality medicine remotely:

- Access to advanced medicine for everyone through digital second opinions and virtual consultations
- Improved quality of life for patients affected
- Prevention through technical monitoring
- At the same time, high patient security avoids “revolving doors”
- Avoidance of duplicate services (especially diagnostic)
- Shortened treatment duration
- Increased effectiveness of research, training and professional development
- Interdisciplinary treatment
- Faster access to relevant patient data
- Faster and secure diagnosis and treatment initiation
- Easy access to expert systems and the latest scientific discoveries
- Increased diagnostic confidence, reduced risk of incorrect treatment
- Shorter inpatient treatment times and hospital stays
- Avoidance of unnecessary burdens as a result of transfers (patient transportation)
- Better access to information for doctors and patients
- Savings by avoiding treatment errors and misdiagnosis
- Rationalization potentials from secure networking based on information and communication technologies

We offer: Comprehensive monitoring of heart failure patients.

Nowadays almost half of all hospital treatment already applies to elderly persons. Cardiac and circulatory diseases are high up on the list. Heart failure is therefore one of the main diagnoses responsible for hospital stays in Germany, where approximately 1.8 million people are currently receiving clinical treatment for heart failure. Heart failure is the third most common cause of death in Germany. Partnership for the heart (PfH) lays the foundation for evidence-based telemedicine to treat high-risk patients with chronic heart failure. According to the PfH study, telemedical care can significantly improve the quality of life and even the life expectancy of at-risk patients with chronic heart failure. Approximately 10 to 15% of chronic patients benefit from a telemedical care program. In collaboration with GETEMED Medizin- und Informationstechnik AG, T-Systems has developed a complete interdisciplinary system for the comprehensive monitoring of high-risk patients with chronic heart failure. Mobile medical devices and analysis software for patient monitoring have been integrated based on Deutsche Telekom's eHealthConnect platform, which enables the secure transmission, processing and storage of data for the professional service providers in the healthcare sector. All the devices and the software are compliant with the requirements of the German Medical Devices Act (MPG).

The benefits.

- Increased quality of life and mobility
- Cost reduction in particular by avoiding re-hospitalization
- Increased patient security and satisfaction through interdisciplinary collaboration

The equipment for home.

- ECG with oxygen saturation
- Blood pressure monitor
- Scales
- Terminal device for sending vital data and recording physical wellbeing
- Patient call-for-help device

Physiogate (base station)

ECG (with oxygen saturation)

eHealthConnect 2.0 for heart failure, the telemedical workplace with electronic patient record.

1 Structured patient data
2 Internal process control of the patient monitoring
3 Analysis and findings of vital data

The complete interdisciplinary system for T-Systems' telemedical center: Clear, comfortable, user-friendly, scalable.

How it works.

The patient takes his/her daily vital data measurements independently after having received operation instructions and according to his/her individual home measurement plan. The data is transmitted from the respective medical device to a base station via Bluetooth and is then added to the telemedical patient record via a secure mobile VPN for medical assessment. The data is analyzed in the clinic's telemedical center. If irregularities according to patient specific settings occur, the patient will be contacted and in serious situations the attending physician can follow the data measurement again in real-time via ECG streaming. In emergency situations the ambulance are notified immediately.

Key features (excerpt).

- Complete documentation on all patient-related treatment information such as diagnosis, medication, treatment, findings, lab results, documents, imaging data, etc.
- Prioritization support through batch processing with consideration of thresholds
- ECG live streaming in emergency situations
- Organization support through appointment and notes function
- Overview of alternative telemedical centers in case of non-availability
- Geodata of registered patients
- Interdisciplinary collaboration by providing access to general practitioners/specialists/emergency services
- Seamless integration into the existing IT landscape through standard interfaces such as HL7 and IHE
- Integratable patient call-for-help and patient positioning
- The whole system complies with the German Medical Devices Act (MPG)
- Data protection conformity
- ... and much more

Also available for other telemedical applications.

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