

## Partnership for the Heart presents clinical study Telemedicine helps risk patients live longer and with better quality of life

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- ▶ Study delivers arguments in favor of telemedicine in the case of patients with heart failure
- ▶ System proves its worth as valuable support for physicians
- ▶ Greater security for patients as a result of improved care in the home

Düsseldorf – Telemedical monitoring can significantly improve the quality of life and life expectancy of cardiac risk patients. This is the finding of a randomized controlled study presented this week by Partnership for the Heart (PfH), a medical-technological consortium, at a congress of the American Heart Association.

The study of telemedical interventional monitoring in heart failure (TIM-HF), conducted as part of the PfH project, furnished evidence that the quality of life of patients under telemedical care improves significantly. Moreover, it was possible to reduce mortality among high-risk patients. Conducted in Germany, the study is exceptionally precise and comprehensive in design. No other study has been conducted for so long with so many patients. “This underscores the significance of its findings,” said the chairman of the TIM-HF steering committee, Prof. Dr. Stefan Anker of Charité Universitätsmedizin Berlin. The TIM-HF study was carried out under the joint auspices of the Charité Hospital in Berlin and the Robert Bosch Hospital in Stuttgart. The medical personnel taking part received technological support from Bosch, a supplier of technology and services, from Aipermon GmbH & Co. KG, and from InterComponentWare AG (ICW). The German Ministry for Science and Technology (BMWi) has given the project a roughly seven million euro grant.

In the study, a population of 710 patients with chronic heart failure were followed up over a more than two-year period. The participants were divided into two equal groups on a random basis. The control group was treated

Seite 1 von 6

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according to current medical principles, while the intervention group received additional telemedical care on a daily basis.

## **Mortality halved**

Among the non-depressive patients with sufficient cardiac output who were treated in hospital for decompensation in the two previous years, mortality as a result of cardiovascular conditions was half as high in the intervention group as in the control group. TIM-HF thus precisely defines for the first time which patients with chronic heart failure will benefit most from telemedical care.

Among the patients, acceptance of telemedical care was high. “The patients quickly realized that telemedicine offers them a significant improvement in quality of life,” said Dr. Ulrich Behner, managing director of Bosch Healthcare. As the lead company of the technical consortium, Bosch healthcare was responsible for system integration, ongoing operation, and the quality of the overall system. Apart from the enhanced feeling of security, Behner said, there was the benefit that patients were able to stay at home, in their familiar social environment. This form of care was also well received by patients in rural areas, who otherwise had to travel long distances to their attending physician. Regular, standardized patient surveys provided statistical evidence of improved quality of life.

## **System proves its practical value**

In the study, a telemonitoring system was used that remotely monitors patients by measuring and transmitting vital parameters. Apart from measuring blood pressure and body weight, patients performed an ECG themselves on a daily basis. In addition, each patient provided a self-assessment, which provided important information about their subjective state of health. “Surprisingly, we found that the patients’ appraisals were usually a good interpretation of their objective values,” said Dr. Michael Schieber, deputy clinical director and senior physician at the Robert Bosch Hospital. For the first time, the study also included a monthly exercise (walk) test, the results of which were measured using a new activity sensor developed by Aipermon. In the case of acute heart complaints, for example, a social alarm system means that a push of a button is all that is needed to establish an audio connection to the telemedical

monitoring center. An ECG under oxygen saturation conditions is then performed and transmitted in real time to the telemedical monitoring center. The physician at the center can use this information as the basis for further necessary measures. “The use of mobile telemedical measuring systems allows patients to be treated better in the home. Care has been taken to ensure that the systems are easy to operate for patients, and that their medical data can be transmitted quickly, securely, and reliably,” said Dr. Thomas Schweizer of Aipermon.

All measured values, as well as case history notes, were saved in an electronic case book which could be accessed by the telemedical monitoring centers of the Charité and the Robert Bosch Hospital. In addition, the structure of the software used at the telemedical monitoring workstation was based on the telemedical processes, so that simple workflows were ensured. “The high level of integration of the system components and the high level of automation in the system as a whole also made the system easy to operate for the staff in the telemedical monitoring centers. To achieve this, the various users were closely involved in the development phase, and so optimum processes were ensured,” said Dr. Peter Heinze of ICW.

## Supporting physicians

“The telemedical monitoring centers help physicians in private practice care for chronically ill patients, but they cannot replace physicians,” said Dr. Friedrich Köhler, the principal investigator, consortium manager, senior physician, and director of the Center for Cardiovascular Telemedicine at the Charité Hospital. The study demonstrated the benefits of the cross-sectoral collaboration of telemedical monitoring centers and physicians and specialists in private practice. Changes in state of health were identified more quickly, and remedial action could be taken rapidly with the close involvement of all parties. In some cases, the intensive care resulting from the collaboration of physicians in private practice and the telemedical monitoring centers saved lives.

## Significance of the study

Because of its especially comprehensive approach and pioneering character, the study had been eagerly awaited by health professionals. At the American

Heart Association congress held this week in Chicago, the study's findings caused a sensation among heart specialists. The methods used have met with broad acceptance. Indeed, a number of experts regard the approach as exemplary for new studies. The detailed findings of the TIM-HF study will also be published in a leading medical journal. "The study unequivocally demonstrates the benefits of telemedicine for clearly defined patient groups," Köhler said. It is now up to healthcare providers and politicians to take the decisions that will allow many people in Germany to benefit from this solution quickly. Following these initial findings, the results of the accompanying study into the costs of this form of healthcare will be presented next year. Further detailed analyses will also be carried out.

Contact person for press inquiries:

Andreas Kempf,

Bosch press spokesperson

Phone: +49 (711) 811-6285

Andreas.Kempf@de.bosch.com

Corporate communications

Robert Bosch GmbH

Postfach 10 60 50

70049 Stuttgart

## *Charité – Universitätsmedizin Berlin:*

*The Charité is one of Europe's largest university hospitals. The research, teaching, and patient care provided by its 3,800 physicians and scientists is internationally renowned. More than half of the German Nobel Laureates for Medicine and Physiology come or came from the Charité, including Emil von Behring, Robert Koch, and Paul Ehrlich. The university hospital has a global reputation as an excellent teaching center. Its campus is spread over four locations, which include more than 100 clinics and institutes that are grouped into 17 Charité centers. With a staff of more than 13,000, the Charité generates annual sales revenue of roughly one billion euros, making it one of Berlin's largest employers. In 2010, the Charité is celebrating its 300th anniversary.*

*Additional information can be accessed at [www.charite.de](http://www.charite.de)*

*The Robert Bosch Hospital is an endowed hospital that can trace its beginnings to a private initiative of Robert Bosch in 1936. The body responsible for the hospital, which opened at its present site in 1973, is the Robert Bosch Stiftung. Together with the hospital management committees, this foundation determines the direction that medicine, treatment, and care will take. The Stiftung makes medical research possible and, on a case by case basis, finances innovative investments that are not covered by other funds.*

*Since 1978, the Robert Bosch Hospital has been one of the teaching hospitals of the University of Tübingen. With more than 880 beds, the hospital and its two associated clinics – the Klinik Schillerhöhe in Gerlingen and the Klinik Charlottenhaus in Stuttgart – care for more than 38,000 inpatients every year. Some 2,000 staff ensure that patients feel individually looked after. Additional information can be accessed at [www.rbk.de](http://www.rbk.de)*

*The Bosch Group is a leading global supplier of technology and services. In the areas of automotive and industrial technology, consumer goods, and building technology, some 275,000 associates generated sales of 38.2 billion euros in fiscal 2009. The Bosch Group comprises Robert Bosch GmbH and its more than 300 subsidiaries and regional companies in over 60 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for growth. Each year, Bosch spends more than 3.5 billion euros for research and development, and applies for some 3,800 patents worldwide. With all its products and services, Bosch enhances the quality of life by providing solutions which are both innovative and beneficial.*

*The company was set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.*

*Additional information can be accessed at [www.bosch.com](http://www.bosch.com).*

*Aipermon GmbH & Co. KG, based in Munich, Germany, is a manufacturer of telemedical systems. It supplies complete telemonitoring systems for the remote transmission of medical data from the home. These systems are used in many studies of the care of chronically ill patients, in intervention measures focusing on movement and prevention, and increasingly also in medical intervention. Aipermon also developed the AiperSunny activity sensors and the AiperMotion 440™ energy balance coach. These sensors are used in programs for diabetics and the obese, as well as in health promotion programs. Additional information can be accessed at [www.aipermon.com](http://www.aipermon.com)*

**About InterComponentWare:**

*InterComponentWare AG (ICW) is an internationally leading e-health specialist, with offices in Germany, Austria, Switzerland, and the United States. ICW supplies compatible e-health infrastructure solutions and applications for the providers of health services and their patients. The technologies supplied by ICW allow institutions to expand their existing IT infrastructure, to network with diverse systems, and to save patient data in a secure environment. ICW has already successfully installed its solutions in Europe and North America. Additional information can be accessed at [www.icw.de](http://www.icw.de)*