

HTA Report | Summary

Monitoring heart functions using telemetry

Heinen-Kammerer T, Wiosna W, Nelles S, Rychlik R

Background

Efficiency, higher quality and rational treatment path ways are associated with the use of telemedicine. The effectiveness, compatibility with existing health care structures and cost-effectiveness of telemedicine have to be proven under everyday / real-life conditions, prior to the nation-wide implementation of telemedicine in Germany.

Heart diseases are responsible for high morbidity and lethality rates. Telemonitoring can be useful for the continuous control of heart function parameters. The time between diagnosis and treatment beginning can hereby be minimized and the treatment hence optimized.

Objective

The objective of this Health Technology Assessment (HTA) report was to examine the broad benefit of telemonitoring of heart function. This HTA report evaluates the current state of research of telemonitoring of heart functions with regards to clinical efficacy, effectiveness and cost-effectiveness.

Research Questions

The following research questions are addressed in this HTA report:

- What is the efficacy of Telemonitoring for monitoring heart functions?
- Is it possible to prevent cardiac events with Telemonitoring?
- Could Telemetry be useful in secondary prevention of myocardial infarction?
- What are the pros and cons of Telemonitoring for the patients regarding diagnosis, prevention of cardiac events, treatment, and quality of life?
- Does Telemonitoring have an impact on the treatment strategy of physicians? Is it possible that in certain cases less medication could be necessary.
- Do patients accept Telemonitoring?
- Where does the implementation of Telemonitoring make more sense: primary or secondary prevention, or treatment?
- Does Telemedicine have an impact on the treatment strategy, medical therapy and compliance of the patients?
- Is Telemonitoring more cost-effective in comparison to conventional treatment?

Methods

Published literature from 1995 to 2005 was identified by searching in the following databases: MEDLINE (ME95), MEDLINE Alert, EMBASE (EM95), EMBASE Alert, COCHRANE-CENTRAL, CCMed, SCISEARCH (95),

DAHTA@DIMDI
Deutsche Agentur für Health
Technology Assessment des DIMDI
Waisenhausgasse 36-38a
D-50676 Köln

Tel.: +49 221 4724-525
Fax: +49 221 4724-444
dahta@dimdi.de
www.dimdi.de

All HTA reports are available for free as full texts in the DAHTA database (only in German). (www.dimdi.de – HTA)

Contact at DAHTA@DIMDI

Head: Dr. Alric Rüter
E-Mail: dahta@dimdi.de

Im Geschäftsbereich des



Bundesministerium
für Gesundheit

MEDIKAT, BIOSIS (BA95), MEDITEC, HDA (HA85), CATFILEplus and SERLINE. The studies were assessed with regards to their methodological quality, by using check lists, and they had to fulfil the following criteria: Monitoring of heart functions over a distance, in adults, by means of telemedicine. The sample size had to exceed nine patients. Studies had to be published in full, not only as an abstract. Articles had to be written in English or German.

Results

From the 2.053 citations and abstracts examined, 41 articles were retrieved for full-text review. Six randomized studies, five non-randomized studies and two cost-effectiveness-analyses met the inclusion criteria. The quality of the studies varied and some methods were inadequate.

Telemedicine is well accepted by the patients. It has been indicated that the implementation of telemedicine reduces both the number of hospitalisations and the duration of hospitalisation. Treatment costs are accordingly reduced. With an early diagnosis, the therapy can be optimised precociously. Considering acute medical care, a diagnosis prior to hospitalisation can lead to a reduction in the time interval between admittance and the start of therapy. Considering preventive medical care, the continuous surveillance enables a timely diagnosis. The quality of life of the patient is hereby significantly enhanced.

Discussion

The telemedicine approaches described in the literature have good prospects. For instance, with telemonitoring treatment could be more effective, cardiac events could be avoided and the cost factor, from the perspective of the statutory health insurances, could be decreased.

However, field reports, instead of studies / trials, were mostly available for the numerous projects. There is a definite need for studies from health service research to evaluate the effectiveness of everyday treatment experienced by the patients.

Even more prevalent is the lack of health economic analyses. The total costs were given in some studies, but more frequently only some cost factors were documented. A comprehensive cost-effectiveness-analysis is required at this stage.

Due to limited resources and an ageing population, effective health care structures are essential. The technique and application possibilities for telemonitoring are versatile and available. Numerous pilot projects have been launched, but without adequate evaluation these projects will result in further isolated applications. To prove whether a nationwide implementation of Telemonitoring structures is sensible, the evaluation should consider efficacy, effectiveness and cost-effectiveness.

DAHTA@DIMDI
Deutsche Agentur für Health
Technology Assessment des DIMDI
Waisenhausgasse 36-38a
D-50676 Köln

Tel.: +49 221 4724-525
Fax: +49 221 4724-444
dahta@dimdi.de
www.dimdi.de

All HTA reports are available for free as full texts in the DAHTA database (only in German). (www.dimdi.de – HTA)

Contact at DAHTA@DIMDI

**Head: Dr. Alric Rüther
E-Mail: dahta@dimdi.de**

Conclusions

Telemetric monitoring can be applied in many areas of health care and be of positive assistance, within the single therapeutic strategies, to patients with acute and chronic cardiac illnesses. The integration of information- and communication systems available for the health sector can significantly support patient orientated medical care. This has been indicated in numerous studies/trials. Telemedicine supports the renunciation of a centralised medical care system, where the patient has to seek for consultancy, towards a patient orientated system, where expert advice (by means of care-taking networks) is transferred to the patient.

DAHTA@DIMDI
Deutsche Agentur für Health
Technology Assessment des DIMDI
Waisenhausgasse 36-38a
D-50676 Köln

Tel.: +49 221 4724-525
Fax: +49 221 4724-444
dahta@dimdi.de
www.dimdi.de

All HTA reports are available for free as full texts in the DAHTA database (only in German). (www.dimdi.de – HTA)

Contact at DAHTA@DIMDI

Head: Dr. Alric Rüther
E-Mail: dahta@dimdi.de