Overcoming hurdles to innovation - comparable data in cardiology: a case study

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At the Heart of Innovation: e-Health under Scrutiny

15 March 2011

Definition: Telecardiology

Telecardiology = Telemedicine in Cardiology
Cardiological diagnostics and therapy over distance using modern information and communication technologies (ICT)

1) „doc2doc“ Systems – Connectivity between health care providers

2) „doc2patient“ Systems – Remote patient monitoring

- device management
- heart failure management

Case 1: „Partnership for the Heart“ - Know-how Transfer Programme between Germany and the Baltic States (1999 – 2009)

PARTNERSHIP FOR THE HEART

… in the treatment of patients with congenital heart defects (CHD) using modern information technologies

Educational programme:

- Visits of Estonian Experts in Germany
- Operations in Estonia, Operations in Germany
- „ Telemedicine

Bundesministerium für Gesundheit

Grant Z 24-4077-22 B 18/1

Congenital Heart Defects (CHD) – Epidemiological Background and Results Estonia

PARTNERSHIP FOR THE HEART

Epidemiological background:

- CHD are the most frequent malformations
- 1 percent of all newborns suffer from CHD

Results

	2000	2005
Population	1.4 Mio.	1.33 Mio.
Life-Births	13.067	12.218
CHD-Patients/a	99	95
Surgery for CHD (Uni Tartu)	56	61
Infant-Mortality	**8,42** ‰	**6,11** ‰

Koehler F Schierbaum C.
Health Policy 2005;73(2):151-159

Conclusion

„Telemedicine-Bridges“ specifically for rare cardiological diseases between small countries and big institutions

- for prevention of patient transfers between countries
- for know-how transfer between specialists
- for compensation of regional lack of medical care

Publications:

Koehler F, Schierbaum C., Health Policy 2005;73(2):151-159

Schierbaum C, Koehler F, Dtsch Med Wochenschr 2004; 129 (Suppl. I):21-24

Telemedicine-Bridge“ (Charité-Tartu)

Chronic Heart Failure – a Demographic Burden

Epidemiology

- **Incidence approx. 1.2 million patients** (every tenth German citizien over 65 years)
- Approx. 200.000 new cases every year
- Mortality in class NYHA II/III approx. 9 % /a

Morbidity

- **Major cause of hospitalization (approx. 375.000/a)**
- Non-cardiovascular comorbidity (renal failure, COPD; depression)

Costs

- **Therapy costs – 3 billion €/a**
- Approx. 85 % of the costs for hospital stay

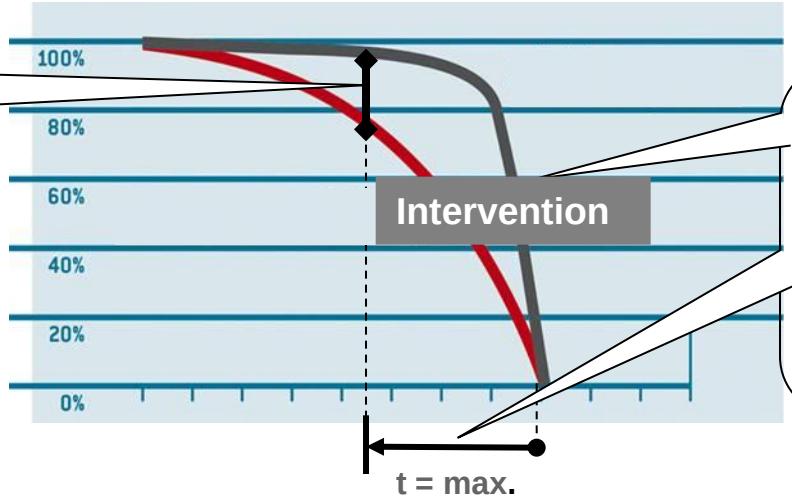
Case 2:
Remote patient monitoring in CHF

Gap between objective deterioration and subjective perception of cardiac function

„I feel healthy“

≠

„I am healthy“



- Intervention before significant deterioration (emergency)
- Time slot to intervene (hours)

Home-HF: Evaluation of Patients With Heart Failure Using Home Telemonitoring

Design:

- London
- N=182
- TM: SpO2, scale, blood pressure (HF-Nurse)
- Mo - Fr 9 – 17

Endpoint:

- Prim. endpoint: days alive and out of hospital
- Follow up 6 months

Results:

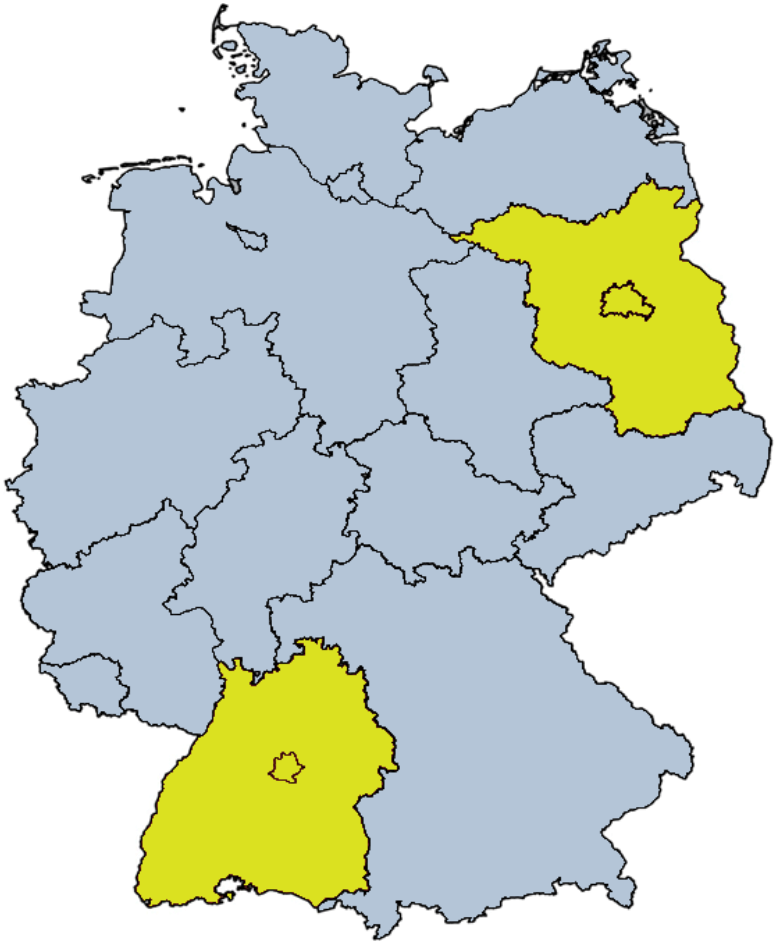
- no difference in primary and secondary endpoint
- 81% (UC) vs. 36 %(TM) unplanned hospitalizations

Dar O et al.
Eur J Heart Fail 2009 11(3)

TIM-HF: Telemedical Interventional Monitoring in Heart Failure (I)

partnership for the heart

165 cardiology, internal medicine or general medicine practices



Telemedical Centre
Berlin
373 patients

Telemedical Centre
Stuttgart
337 patients

Federal Ministry
of Economics
and Technology

01MG531

TIM-HF (II)

In stable ambulatory patients with chronic heart failure, remote telemedical management does not reduce:

All-cause Mortality
Rates of hospitalizations

Subgroups with possible benefit in cardiovascular mortality/heart failure hospitalization:

HF patients with prior HF hospitalization
HF patients without depression
HF patients without very low LVEF (i.e. <25%)

Koehler F et al., 2011
Circulation, *in press*

Requirements for a modern Telecardiology in Europe

1. Telemedical Standards (e.g. Accreditation of Telemedical Institutions and Professions)
2. Structural Support for the Implementation of Telemedicine in Rural Areas
3. Structural Support for the Exchange between Centers of Excellence and National Heart Centers in smaller Countries
4. Harmonizaton of Legal Aspects in Telemedicine
5. Support for further Research (especially Health Care Research)