Personal Health: The New Paradigm to make Sustainable the Health Care System

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Goal

To be aware of the current management of the chronic conditions, the raising costs to cope with such diseases, and the need of a new paradigm where ICT and patient empowerment are the drivers towards a new sustainable health system based on a patient-centered approach.
Noncommunicable diseases are responsible for 86% of deaths and 77% of the disease burden in Europe.

Chronic conditions comprise 8 of the top 11 causes of hospital admission in the United Kingdom.

Chronic conditions are estimated to account for 70-80% of health care expenses in Denmark.
Kaiser Permanent Pyramid

- Level 3: High complexity
  - 3-5% of CDM population

- Level 2: High risk
  - 15-25% of CDM population

- Level 1

- Level 0
  - 40% of adult population

- Self care

- Disease/care management

- Case management
Chronic diseases

60% adults
ACC/AHA Practice Guidelines

ACC/AHA Guidelines for the Evaluation and Management of Chronic Heart Failure in the Adult: Executive Summary

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1995 Guidelines for the Evaluation and Management of Heart Failure)

Developed in Collaboration with the International Society for Heart and Lung Transplantation

Endorsed by the Heart Failure Society of America

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I. Introduction

Heart failure (HF) is a major public health problem in the United States. Nearly 3 million patients in this country have HF, and nearly 100,000 patients are diagnosed with HF for the first time each year. Thus, the number of hospitalizations for HF has doubled during the last decade. In 1985, the annual number of hospitalizations for HF was estimated at approximately 400,000 (2 to 3 times the number of hospitalizations for MI). Since then, the number of hospitalizations has increased to approximately 2,000,000 (2.3 times the number of hospitalizations for MI). The increase in the number of hospitalizations for HF is primarily due to 2 factors: increased incidence of HF and increased severity of the disease.
Disruptive innovation

High cost → Affordable
Complex → Simple
Oligarchy → Net
Disruptive innovation

- Personalized vs massive
- Sustainable care services
- Better quality of service
- Closed loop relationship
- Evidence based medicine

ICT for personal health systems
The paradigm shift: PHS

From...

- Treatment
- Disease management
- Patient consent
- Patient

Towards...

- Promotion, prevention and treatment
- Health and life management
- Patient empowerment
- Client
Key elements – WHO recommendations

1. Identify, score and stratify population
2. Planify and coordinate care within all health care levels, using case management methodology
3. Specific guidelines and protocols for each disease
4. Specific educational disease programmes
5. Integrated Information Systems, allowing a predefined Balanced ScoreBoard
6. Align resources and incentives
7. Evaluate and improve quality, cost and service

Where can technology help?
Technologies

**RFID**
- Localisation
- Tracking
- Management

**SENSORS**
- Medical parameters
- Virtual sensors
- Data processing
- ...

**INTERNET 2.0**
- Communities
  - Experts
  - Experts-patients
  - Patients

**ELECTRONIC HEALTH RECORD**
- Public and private sector
- HL7, openEHR, ...

**AMBIENT INTELLIGENCE**
- Integration
- Interoperability
- Home, work, car and family

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**ICT applied to health**
Ethical and legal considerations

- Patient consent
- Data protection
- QoS guarantee
- Security
- Non repudiation guarantee (source and destination)
- Ethical aspects
  - Private information in social networks

Around a common basis, there are specific issues to be addressed for each service
To sum up and discuss

There is no unique recipe to deploy successfully telemedicine systems as they need to be based in the specific needs of each area (user need driven vs technology driven) without reinventing the wheel at any stage.

All the stakeholders needs to be involved since the beginning with a clear roadmap and a win-win schema.

Be careful with maintenance and sustainability.

A proper selection of architecture and standards are key to guarantee scalability and interoperability.
To sum up and discuss

pHealth will happen. No other way. The question is when. A new model of health care is required for an integral management of the chronic conditions.

Please, keep in mind that R&D projects, standardisations, EHR, ethical aspects,... are only TOOLS.

Health 2.0 is already here and aligned with Personal Health Systems.

Synergies among all the biomedical engineering disciplines are key to succeed with this challenge.
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This presentation is also available in http://www.slideshare.net/vtraver/

Thanks for your attention