Health Care Data in real time

*Citizen - Patient System - Science*

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Different user groups
different kind of data

Citizen

- Easy data collection in every day
  - Eg tracking of actions (as walking)
  - Eg tracking of heart beat (frequency)
- Supporting behaviour
- Supporting actions in day time
Different user groups
different kind of data

Patient

• Easy data collection in every day on specific health conditions
  – tracking of laboratory data (as blood glucose)
  – tracking of heart rhythm disturbances
• Supporting treatment conditions
• Supporting actions in day time in connection to specific training courses
Different user groups

different kind of data

System

• Retrieving data out of daily action
  – Eg tracking of outcome parameters
  – Eg tracking of precreptions

• Supporting system decisions

• Supporting actions in administrative areas
Different user groups
different kind of data

Science

• Easy data collection in every day on specific health conditions
  – tracking of laboratory data (e.g., blood glucose)
  – tracking of heart rhythm disturbances
• Supporting analyzing health conditions
• Supporting actions in day time on macro level (e.g., guidelines) and micro level (patient treatment)

Health Care Data in real time
Based on the kind and use

- data can be connected to
  - easy handling private information
  - being part of medical device legislation
  - pharmaceutical device legislation
  - health care data legislation
  - data protection legislation
  - ......
Based on health

Figure 1 The main determinants of health (Dahlgren and Whitehead, 1991)
Due to the different legal use cases

• Data must assure
  – different level of secureness
  – different level of reliability
  – different level of legal requirements
New IT techniques: eg block chain actions

- Might be useful in
  - Technical transaction of eg. prescriptions
  - Issues: spreading of data into an undefined cloud
  - Solution: describe the technology by itself without potential existing implementations (eg. Bitcoin)
Data from lifestyle gadgets

• Can be useful in behaviour changes but must be very clear separated from laboratory data.

• Using as hints there is a low risk
• Misusing as diagnostic tool there is the medical device hurdle to ensure the correctness of data

• Is there need to follow this?
In prevention less could be more and innovation implementation to get more real life data could be useful.
Data from social networks

• Anonymous data from people with unclear situations (whether real or not) can be also just hidden advertisement

• Personal experiences are not necessary following scientific requirements and being base on feelings more than on facts
Trade off: Accuracy, Risk of use, Risk of decision

There is a continuous requirement regarding the level of decision

- the risk of decision within micro decisions (the life of a patient)
- the risk of decision within system (macro) decisions and failing in investments

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Trade off: personal data protection and scientific requirements

• The access to data for scientific analysis must be as easy as possible taking into account the personal needs and requirements to protect a person.

• This is including: the potential risk of combining data from different sources

• It should ignore: whether or not the scientific idea is following stream line scientific ideas or not.
Scientific issues in “big data“

- Populistic data with very often unclear scientific results
- Are not helping to avoid the use of natural intelligence
- Have never proved to help in medical areas on micro decision level
- Unclear costs (no assessment whether the use is really helping)
- Can’t replace personal ‘translation‘ of evidence (ebm)
Proposal health data

• Data must be transparable
• Only as many data as needed
• Informing the owner of data about the use of their data
• Using technologies to approve the validity of data
• Using data according to the level of decisions
From history to future
How to handle predictive information?

• Medical prediction:
  – based on published information
  – based on models
  – based on ......

How can evidence based medicine be included?
Evidence based medicine

• Incorporating
  – personal information
  – Local services in health care settings and daily life affairs
  – Published knowledge information in health models
Requirements in communication

• The knowledge and the predictive data have to be transformed in readable information:
  – Fulfilling the requirements of the different customers
  – Supporting their background knowledge and language
Proposal predictive models

Personal information:
- Preferences
- Conditions
- Relationships

Published information:
- Related to personal information
- Related to generic information
- Related to different health care areas

Knowledge pool Modeling

Disease / Service models

Health system models

Personal micro decision support

Public macro decision support