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Health Care Data in real time

Citizen - Patient
System - Science



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

describing



Different user groups different kind of data

Patient

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

micro decision support



Different user groups
different kind of data

System

- Retrieving data out of daily actions
 - Eg tracking of outcome parameters
 - Eg tracking of prescriptions
- Supporting system decisions
- Supporting actions in administrative areas

macro decision support



Different user groups different kind of data

Science

- Easy data collection in every day on specific health conditions
 - tracking of laboratory data (as 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)

macro analyzing support
micro decision support



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
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Based on health

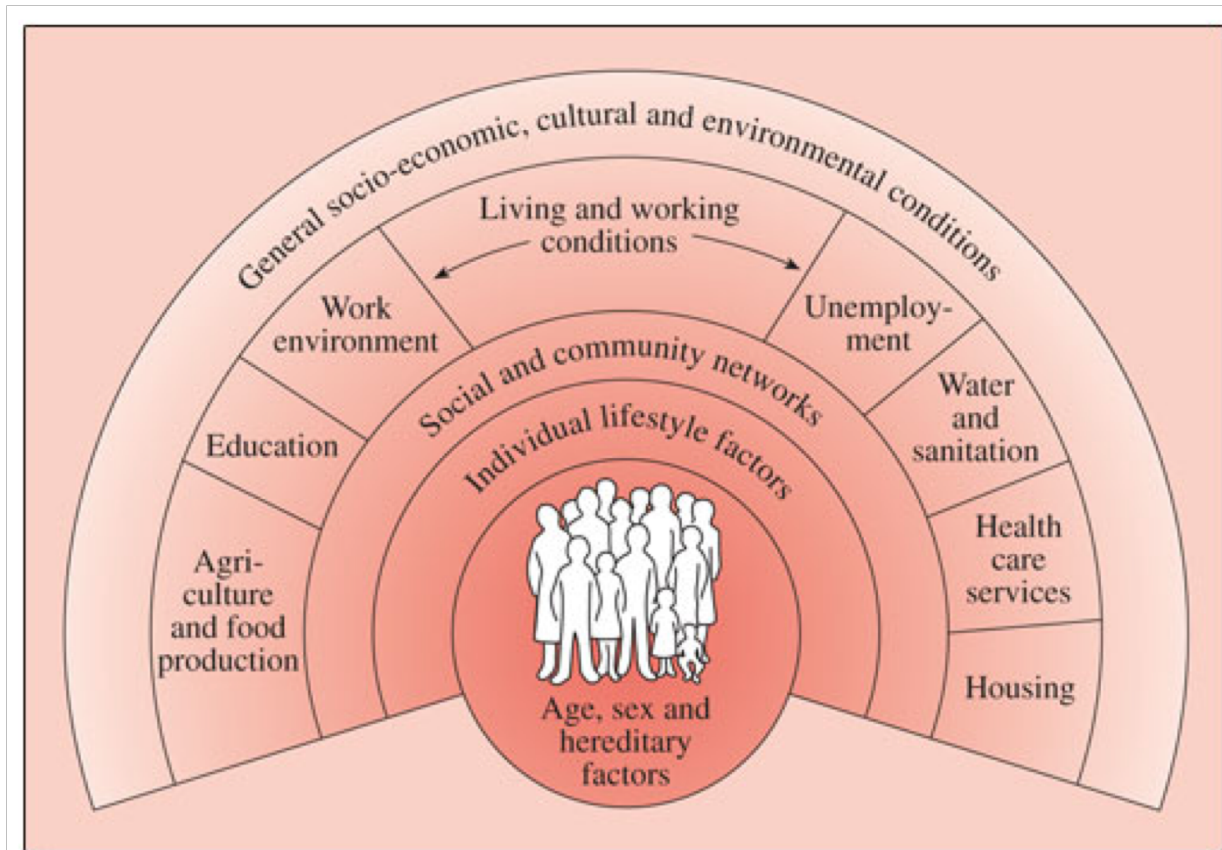


Figure 1 The main determinants of health (Dahlgren and Whitehead, 1991)



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



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?

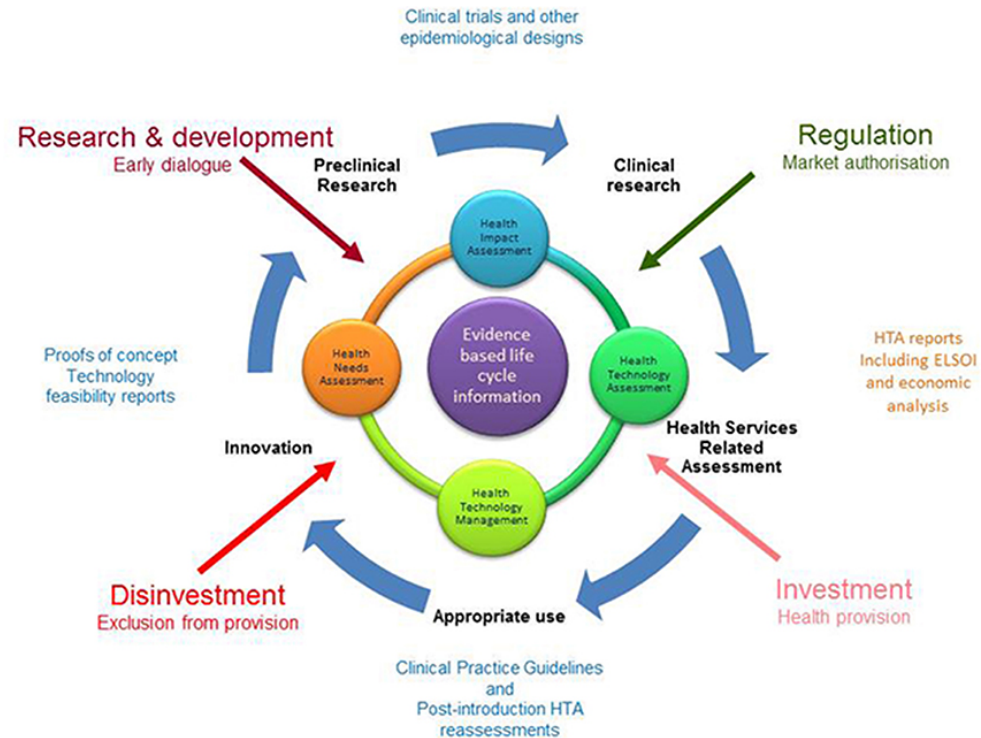
- Medical prediction:
 - based on published information
 - based on models
 - based on

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



Disease / Service models

Health system models

Knowledge pool
Modeling

Personal prediction
micro decision support

Public Health care prediction
macro decision support

