Beyond IT
Health in a digital era

Vinnova funded
Institute coordinator
Report
Film: Youtube Omsorg – om framtiden
Deck: Change The Game
App: Gamifiering of evidence-based policies
Institute for Future Studies. Coordinating the project, an independent research foundation that conducts policy-relevant interdisciplinary research on key future issues and participates in public discourse. Vice President Anders Ekholm is the project leader and co-author. Erika Karlsson, Communications, Dr. Karim Jebari philosopher and researcher in ethics, Gina Manzilla, project administrator. Other parties:

Mickel's Data AB, Drasko Markovic, Economist, data developers with technology that is advancing, co-author, developer

Bräcke Diakonia, Jenny Wahlgren, Master of Fine Arts, lecturer, manager of the elderly, actor. co-author

Stockholm School of Economics, SSE Business Lab, Erik Wetter Managing Director, Assistant Professor, co-author.

Institute of Design Science, University of Lund, Fredrik Nilsson, Professor, Head of Department, complex systems and user-centered design processes, co-author.

Karolinska Institute, Sara Riggare, a doctoral student in digital personal health and co-author.

The Agency for Health and Care services analysis, which works to monitor and analyze health care, Jesper Olsson, PhD Healthcare Improving, co-author.

Leading Health Care Foundation, Hans Winberg, Executive Director, Lic Ec, Management Researchers, Anna Krohwinkel, Jon Rognes, Britt-Marie Ahrnell, co.

SALAR, SKL, Patrik Sundström, Head of e-health, Principal Secretary in the investigation of the right information in healthcare, co-author. Fredrik Lindencrona, psychologist, Ing-Marie Wieselgren, psychiatrists, Tomas Bokström, project leader in Psynk project, co-author
The report covers

Health in a social system
The Licensed patient
Artificial Intelligences
Meaningfulness, happiness and decreased mental illness as targets for health policy
Learning based on data
Moral Philosophical considerations for privacy
Reimbursement schemes
Future leadership
Future legislation
Cabinet Offices function
Future care architecture
The need for social technology
Number of deaths at various ages, Sweden 1751-2110

Source: Human Mortality Database. University of California, Berkeley (USA), and Max Planck Institute for Demographic Research (Germany), SCB.
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Health is different from healthcare - almost

- Only a third of the cost for bad health is spent by healthcare system
- 10 percent of the improvement in life expectancy during the 1900s due to care
- Today 25-35 percent
- Half of 1900's GDP growth due to improved health
- Large part of the diagnosis of diseases depends on lifestyle ca 60-80 percent
- Large part of the care is handled by patients, and families, particularly chronics
- Two thirds of elderly care is managed by family members
Health depends on the whole society and our behavior
The patient is the one who coordinates today
Future T-shaped business orientation - service delivery and development together with other actors (shops, gym, pharmacy, hairdressers, etc.) (horizontal) and within-disciplinary administrative knowledge (vertical silos).
Productivity

• Impossible to coordinate health and care services manually, breaks down quickly.
• Same problem in all countries and systems,
• We haven't even started to include relatives and the civil society,
• Regardless of the organization of systems, private-public, for-profit vs non-profit and so on
• It's due to the fact that this is a complex phenomenon
Dave Snowden’s Cynefin framework

Complex
- Probe
- Sense
- Respond
- Emergent

Complicated
- Sense
- Analyze
- Respond
- Good Practice

Chaotic
- Act
- Sense
- Respond
- Novel

Simple
- Sense
- Categorize
- Respond
- Best Practice
Dunning-Kruger effect

The **Dunning–Kruger effect** is a **cognitive bias** in which low-ability individuals suffer from **illusory superiority**, mistakenly assessing their ability as much higher than it really is.

High-ability individuals may underestimate their relative competence and may erroneously assume that tasks which are easy for them are also easy for others.

We can not handle complicated systems (most of us), but we don’t know that
We have problems managing our own health

- We have the world's best health care in the siloes but less well when it comes to health care between the clinics
- The average consumer over 70 years has four diagnoses
- Meets with 12-16 different care units each year.
- They can on average account for 3 facts after each visit
- In 48 hours, it's forgotten.
- We must understand that health care is currently very information-driven business. There are 100,000 apps in the market.
- Behavioural science tells us that nothing that doesn't go in circles will work;
- Care must get info from the patient, and the patient must get information from healthcare: continuous feedback loops
Manage a system or a individual patient

- Coordination has to be done digitally between the various healthcare stakeholders and users.
- Decision support and various AI systems can be taught to coordinate these systems, if we can feed them appropriate data.
- Let's face the fact that no homo sapiens can do it!
- Increased co production - patients / users do things themselves with welfare technology.
- Tacit Knowledge can surface via new technology.
Technology

- Technology is the result of the development of society, but also a catalyst for further development, Benjamin R Barber
- Technology evolution is the foundation of the welfare state
- Both that we can afford it, but also what we can do

- The rate of development is stunning

- 1960: 13 million university students globally. Today, 200 million students. In 15 years it is forecasted 400 million students.
- Pharma sales 1 100 billions USD, Medtech 400 billions USD, growth rate 6-7 per cent per annum
Robots in care

- Totally inhuman.
- The robot will be taking pictures of me and publish on Facebook.
- Will copy my football betting pool, submit it and rake in the full pot.
- It's probably the end for society.
• As part of the care team, which also consists of people it's OK.
• If they do not become aggressive it may well work.
• Phew, then you can get help with the shower/bathroom in the middle of the night, if you feel like it.
• We will develop.
New technology

Big Data
Artificial intelligence
Robotics
Decision support system
Coordination systems
Social physics
Sensors – stress, happiness, wellbeing, interaction,
Matching

Sociometric Solutions
- Measuring who's talking to whom and the quality of the conversation.
- Can also measure the flow of ideas through the organization.
  - Who matches with whom?

- Combined with stress sensors, we can systematically schedule staff with patients that enjoy each other's company
The licensed patient - lead patients - relatives

- Can prescribe medicines, supplies, aids herself
- Involved in development of processes, gadgets, assistive devices
- Have inverse care meetings
- Supervises other patients
- Take care of their relatives, for instance rare diseases, renal function or older

- Licensed: via web based legitimization testing
Cost containment?
About 3 billion SEK in savings per year, even at small changes in autonomy
Cost Impact Study Västerås municipality, elderly care

Digitization can provide for care in the home. If only 10% of home care recipients using digital services would save:

Between 2.4 to 4 million SEK for a rural municipality with 8,000 inhabitants
Between 16-25 million SEK for a medium-sized city with 90,000 inhabitants
Between 42-60 million SEK for a city with 500,000 inhabitants

Converted to a national level, this would yield savings of 1-5 billion SEK
Approximately 1-5 per cent of total cost of elderly care
Cost Impact Study Västerås

- The study also provides examples 90 per cent of home care recipients would use digital technology, which would give net savings amounting by 2020 to:
  - 34 million for a rural municipality with 8000 inhabitants
  - 220 million for a medium-sized city with 90 000 inhabitants
  - 590 million for a city with 500 000 inhabitants

- Translated into figures for the whole of Sweden gives it a range of 12 to 42 billions
- i.e. saving potential of between 12 to 40 per cent of the total cost of elderly care
Vetlanda municipality social services (Individ och familj)

- Meet the clients 25 percent
- Statutory documentation 50 percent
- Other 25 percent
Research vs Societal technology

Research is driven by curiosity; to understand the world around us
Technology is intended to be useful; to provide results

We are in need of Societal Technology, which uses scientific method, with less of traditional academic research ie Hawthorn or placebo effects

We can not have the welfare technology in only one sector, but it is something that must permeate the entire public sector and also pair it with the world around

Patient data
Data to and from the Med Tech
Data flow between the various public partners
Measures 1 rules that lead to dynamics

Rule 1: All lead times in all publicly funded systems will be halved. Every year.
Rule 2: All publicly funded IT systems must have open APIs (Application Program Interface).
Rule 3: All data that is not likely to disclose sensitive information about individuals should be freely available in real time,
Rule 4: All data searches about you as a person should be logged.
Rule 5: There should be a common portal,
Rule 6: Data flows to private companies, other than as anonymous research dataset, may not be generally allowed
Rule 7: All publicly funded activities may, in consultation with their patients orchestrate rule-free experimentation activities.
Rule 9: Building on the citizens' focus and choice.
Rule 10: 500 kronor rule.
Measures 2

State finances non geographic operations such as AI decision support systems or automatic care online, online doctors

Money taken from the general grant
Because it reduces the burden on the municipality / county
Will incentivize county council to develop digital services and offer them to other
Becomes an opportunity for businesses to develop new services with stable reimbursement
Same as the financing of foreign-care (Försäkringskassan)
Measures 3

- Regulatory free zones
- Reboot the Data Inspection, Data Inspektionen, focus on privacy, and a risks and benefits
- SCB, an authority that focuses on data transfer in real time
- Changed the mission to the Inspectorate for Health Care (IVO) to support improvement, rather than finding errors
- Entrust SBU (health technology assessment agency) a new mission: Provide algorithms for decision support, to firms, professions and patients
- Data-driven improvement largely prohibited today
- Share information between municipalities / county councils State
- Care process ID
- Digital ID - people, organizations and gadgets
Measures 4

• Dynamic requirements rather than detailed regulations
• Prohibit thinning of data: Knowledge or information for case management?
• Give medical supplies (förbrukningsartiklar), medical facilities (medicintekniska) and support infrastructure (personal assistance) Today three different areas, responsibilities and budgets – no holism!
• Change the rules so that machines can make decisions such as prescribing pharmaceuticals
• Change the rules so that patients and their families get the right to prescribe
• Review the Cabinet Office and the ministries
• Set up an Effect Council
• Mindlab
• Nudging ie The Behavioural Insights Team in London
Measures 4 Complex systems

• Simulation: the solution to complex problems
• Start building complex agent-based microsimulation models of society /health systems

• Start building the atomic-based simulation models of the human body

• Where research can implement their findings ie a research / knowledge infrastructure that is more technological
• Require contribution to model to get research funding
• Shall not be hosed by the academy, but used by practitioners

• The first complete simulation of a single cell type was made five years ago
IT versus Digitalization

• Buying IT systems are necessary but not sufficient
• The development and potential, will come only when we use data for learning and development
• We rarely connect digitizing with data =
• Digitization without data = video games
• But nothing is done to allow use of data (in principle)

• New data sources such as social psysics, and user data ie smart phones
• Means that we can start managing thriving, meaningfulness, happiness

Life itself!
Thanks!

www.regeringen.se/LEV
www.iifs.se När vården blir IT
www.iifs.se/bortom_it
https://www.youtube.com omsorg -om framtiden