Co-production of Health and the Digital Health Continuum

Idea and Principles for building an European service model

Niels Boye, MD
WHO definition of (individual) health 1946:

“a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”
Dr. Amy Compton-Phillips, Kaiser Permanente, USA:
Setting the Scene: New Care Models for Persons with Chronic Diseases
Kaiser Permanente complete care program (my compilation):

Telemedical activities are well integrated

Demonstrates a very good business case

Based on few diseases (chronic conditions), where screening and rehabilitation programs are available and implementable as “low-cost” algorithmic directed activities.

However: The USA “gross-national-BMI” is still increasing (no specific data for Kaiser-Permanente is available)

A standard Kaiser Permanente insurance is still about 10 times the price of a similar and paid-by-tax product in Denmark.

Can we do it in a more holistic and European way - using the demonstrated business case as our societal incentive??
The Digital Health Continuum

100% Citizen 100% Patient
The Digital Health Continuum

100% Citizen → Lifestyle → Prevention → Ambient Assisted Living → Chronic Disease Management → Telemedicine → Hospital → 100% Patient

Co-production range

Professional range
Strokes
Colon Cancer (PIK3CA+)

100% Citizen

100% Patient

Aspirin
Male erectile stamina

100%
Citizen

→

Patient
Components of a Healthcare Provision
100% Citizen → Co-production range → Knowledge → 100% Patient

Teamwork

Evidence based medicine → Evidence based health
Example: Prevention and lifestyle

Citizen Modifiable Risk Factors
- Tobacco smoking
- Alcohol consumption
- Diet
- Physical inactivity
- Obesity

Non-Modifiable Risk Factors
- Accidents
- Working environment
- Environmental factors
- Family history and gender

Conditions
- Type 2-diabetes
- Preventable cancer
- Cardiovascular disease
- Osteoporosis
- Musculoskeletal disorders
- Hypersensitivity disorders
- Mental disorders
- Chronic obstructive pulmonary disease
Current and future knowledge-flows and -vehicles for health and disease

Tacit unstructured health knowledge in “Society”

Extraction by statistical methods (Epidemiology, RCT)

Personalisation of knowledge

Healthcare ICD-10

Community Medicine

Additional grouping by disabilities (ICF)

Professionals

Citizens and Technology

Grouping

Complex Computer modelling
Knowledge hurdles

Medical evidence to situation
Health issue
Choice architectures

From situation to use

Choice architectures is a term that embodies the regulations, policies, and incentives at societal and actual level – the background for a decision taken.
Knowledge hurdles

Medical evidence to situation
Health issue
Choice architectures

From situation to use
Behavioural psychology
Personal context
Potential Co-producers

Data (facts)
Information
Knowledge

Choice architectures

Political, social, economic
Co-production of Health

- Co-producers (Eco-system)
- Choice architectures
- InSilico digital avatar (Health-GPS)

Data
Information
Knowledge

Political, social, economic
Clinical encounter

EHR

Quality Assurance

HMO/Region

Hospital

Healthcare Professional service provision
EHR Quality Assurance

HMO/Region

Clinical encounter

Research/Pharmaceutical Co

EHR

Quality Assurance

Hospital

Data- and Information Flows (from ecosystem)

Digital avatar

Trusted information banker & broker (patient-NGO?)

Healthcare

Co-production

Coproduction of evidence
Coproduction of Health:

Spans the entire digital health continuum – the citizen is the point of coordination and the evidence based knowledge utilisation.

Coproduction of Health means that health considerations and knowledge can be embedded and utilized in any activity in society. Synergies between professional healthcare, selfcare, informal care, and the commodity segment will be turned into “health added value” for the individual human being.

Coproduction takes place in an “ecosystem”, which is cross-sectional to the formal organisation of society.

The ecosystem hosts “value networks” that share information resources and can generate the “value propositions” which are the basis of the business models that fund the CpH-healthcare services delivered.

Conventional healthcare systems and providers, the medical evidence in these systems and the specific information that healthcare holds about the individual in context plays a major role in CpH.

Coproduction of Health also implies “Co-production of Evidence”.
Coproduction of Health - ICT:

Ecosystems formations, where relevant stakeholders can communicate, access, and utilise relevant data using ICT.

To be innovated: Complex adaptive computer models (multilevel, multiscale, multiactor multi-stakeholder) able at visualizing value-streams.

An agreed ICT-based conceptual model for updating from “data” through “information” onto “knowledge” in the individual's context - probably based on a systems-medicine approach.

Lightweight technologies in ICT hardware with connection to "big data" – also known as the WEB2.0 paradigm - for providing the needed societal pervasiveness into societal structures and the required access to computational resources.