The digital world - challenges and opportunities for the cardiologists professional future

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SGK - SGHC
June 10, 2015
## Agenda

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### Terminology

e-Health

m-Health

Connected Health

Digitization of Health Care => e-Health

Kaiser Health News  September 27, 2012
1 How digitization works: The convergence of changes as tipping point

Exhibit 1: The convergence of multiple positive changes has created a tipping point for innovation.

- **Demand for better data, for example:**
  - Huge cost pressure in the context of reform, economic climate, payment innovation
  - First movers showing impact; risk of being "beaten to the punch"

- **Supply of relevant data at scale, for example:**
  - Clinical data will become "liquid" thanks to EMRs and information exchanges
  - Non-healthcare consumer data are increasingly aggregated and accessible

- **Technical capability, for example:**
  - Significant advances in the ability to combine claims and clinical data and protect patient privacy
  - Analytical tools now prevalent in front line across all functions

- **Government catalyzing market change, for example:**
  - Continued commitment to making data publicly available
  - Government is enabling private sector participants to create interoperable standards

Source: McKinsey analysis

Groves P. et al., The "big data" revolution in healthcare, McKinsey & Company, January 2013
1 How digitization works: The convergence of changes as tipping point

In parallel: Value orientation of healthcare delivery

Value for money
(Michael E. Porter)

Value = ________________________________
Costs of care

Health results (clinical, patient experience)

Value is measured for the care of a patient’s medical condition over the full cycle of care
- Outcomes are the full set of health results for a patient’s condition over the care cycle
- Costs are the total costs of care for a patient’s condition over the care cycle
1 How digitization works: The convergence of changes as tipping point

In parallel: New business models as expression of disruptive changes

The Economist  March 7th, 2015
Big data = to analyze a vast amount of data from different sources and formats in a very short time

- **Volume:** Data at Scale – Terabytes to petabytes of data
- **Variety:** Data in many forms – structured, unstructured, text, multimedia
- **Velocity:** Data in motion – analysis of streaming data within fractions of a second
- **Veracity:** Managing the reliability and predictability of inherently imprecise data types

Blattner Marcel, BigData - Challenges and risks, Chief Data Scientist Tamedia Digital, 2015
1 How digitization works: The transformation of industries

How digitization transforms industries
The position of an industry on this curve depends on the degree to which companies and customers within it have embraced digitization. While conceptual, the curve shows how laggard incumbents have already disappeared from industries in which digital disruption began early, such as traditional media. In industries where digitization is less pervasive but more a gathering force, there is still time for incumbents to adapt and survive.

- Healthcare was always and is still a backward industry
- The healthcare industry dislikes transparency
- e-Health – a chance to end paternalism in healthcare?
1 How digitization works: Big Data – The Big Promise

CASE STUDY - Healthcare

$300 billion is the potential annual value to Healthcare

$165B CLINICAL

$9B PUBLIC HEALTH

$108B R&D

$5B BUSINESS MODEL

$47B ACCOUNTS

TRANSPARENCY IN CLINICAL DATA AND CLINICAL DECISION SUPPORT

AGGREGATION OF PATIENT RECORDS, ONLINE PLATFORMS AND COMMUNITIES

PUBLIC HEALTH SURVEILLANCE AND RESPONSE SYSTEMS

ADVANCED FRAUD DETECTION; PERFORMANCE BASED DRUG PRICING

RESEARCH AND DEVELOPMENT; PERSONALIZED MEDICINE; CLINICAL TRIAL DESIGN

Blattner Marcel
BigData - Challenges and risks
Chief Data Scientist Tamedia Digital, 2015

SGK – SGHC – June 10, 2015
Disruptive Innovation

Disruptive innovation, a term of art coined by Clayton Christensen, describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors.

Some examples of disruptive innovation include:

<table>
<thead>
<tr>
<th>Disruptor</th>
<th>Disrupee</th>
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<tr>
<td>Personal computers</td>
<td>Mainframe and mini computers</td>
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<tr>
<td>Mini mills</td>
<td>Integrated steel mills</td>
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<tr>
<td>Cellular phones</td>
<td>Fixed line telephony</td>
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<td>Community colleges</td>
<td>Four-year colleges</td>
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<tr>
<td>Discount retailers</td>
<td>Full-service department stores</td>
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<tr>
<td>Retail medical clinics</td>
<td>Traditional doctor’s offices</td>
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(http://www.claytonchristensen.com)
2 e-Health: «Electrification» of the status quo or disruptive technology?

Supply drivers

- **Medical & patient data**
  Electronic health records (EHRs), health sensors, social media, and genomics create rich new data sources for analytics.

- **Big Data analytics**
  Cheap computing power and sophisticated analytics drive insights into patient behaviour, treatment costs and R&D.

- **Mobile/mHealth**
  Pervasive mobile and smart phone adoption creates new engagement models within daily routines.

- **Healthcare professional digital workflow**
  Increasing integration of EHRs and telehealth driving new digitally-enabled coordinated workforce models of care.

Demand drivers

- **Rollout business models tied to patient outcomes that also reduce medical errors and improve quality**

- **Discover and deliver targeted and personalised therapies with real world evidence of impact**

- **Influence patients behaviours ‘beyond the pill’ and sustain engagement outside the traditional care setting**

- **Drive population management, protocol driven patient risk pool and stratification management**

Source: Monitor Deloitte
Mobile Health as key driver

Open-source health apps
Kitted out

How to volunteer yourself as a citizen laboratory rat
Mar 14th 2015 | Chicago | From the print edition

Key role of the Smartphone:
High performing computer and apps-carrier
Mobile health as key driver

The Future of Medicine Is in Your Smartphone

By ERIC J. TOPOL
Jan. 9, 2015 1:37 p.m. ET
THE WALL STREET JOURNAL

Klara for you

Your doctor on Klara will:
✓ Find a treatment that works for you
✓ Follow up with you on your skin problems
✓ Answer your questions
✓ Not keep you waiting
2 e-Health: «Electrification» of the status quo or disruptive technology?

Big data analytics

Unhealthy market dominance
3 Challenges

- Risks prevail, as basic principles of Data Protection and Privacy are not respected (yet?), e.g.
  - purpose specification of data collection
  - valid consent from the data subjects lacking
  - transparency about which data is collected lacking

  => e-Health: The little sister of the Big brother?
  => quantified self = qualified, uncontrollable self-exposure?

- Non validated search engines
  - advertisement bias?
  - rating bias

Mission: HON guides Internet users by highlighting reliable, comprehensible, relevant and trustworthy sources of online health and medical information, tackling the major obstacle of Web:
  - the overwhelming quantity of information
  - the uneven quality of health information available online
3 Challenges

- Users always pay (at least) once
  - with their data
  - with their access / utilization fee
3 The e-Patient

There is no approach that fits for all!

- digital immigrants
- digital natives: *1980 - … / digital junkies
- Generation Z: kids and teenagers

- Patients 2.0: Smart patients?
- Patient 2.0: Homo digitus? (E. Topol)
3 The e-Patient

Our Guiding Principles:

- To guide patients and caregivers to be actively engaged in their health and health care experiences.
- To guide health professional practices where patient experience and contribution is an integral goal of excellence.
- To encourage mutual collaboration among patients, health professionals, caregivers and others allowing them to partner in determining care.

Trend 2015: Quantified-Self/Wearables
5 Conclusions for the cardiologists professional future

As owner/member/manager of a practice or heart centre

- Define your e-health strategy (digitalize or die?)
  - early adopter?
  - mainstream consumer?

- Attention: new legislation regarding EMR (Swiss e-health strategy)

- Check and (re-) define your processes - avoid «electrification» of the status quo

- Be aware that there is no ‘sustainable competitive advantage’ (Michael Porter) any more

- Take into account, that mobile devices and software (m-health apps) + new business processes and business models will change the health care market
  Innovation 2.0: new services more important than just new products

- Agile firms do more with less, replace fixed costs with variable ones, and put long-term plans on hold
  The Economist, January 31st 2015
5 Conclusions for the cardiologists professional future

As owner/member/manager of a practice or heart centre
Attention: new legislation regarding EMR (Swiss e-health strategy)
5 Conclusions for the cardiologists professional future

As owner/member/manager of a practice or heart centre

Your future e-tool box !?

- Logo
- Homepage with integrated videoclips (just push)
- Search engine marketing
- Newsletter for registered patients (with their consent) – (just push)
- Flyers
- Online-tools, e.g. online booking of appointments
- Social media platforms (interactive)
- Links to trustworthy search engines and informative webpages
5 Conclusions for the cardiologists professional future

As member of the profession

- Promote/support the use of trustworthy apps and other m-health devices (only CE-certified items!)
- Promote/support the use of trustworthy search engines - avoid all kind of commercial bias
- Make sure, that the technology and procedures used are compatible with data protection regulation
- Use mobile health devices to empower your patients, help to increase their knowledge, change your relationship to a more collaborative one
5 Conclusions for the cardiologists professional future

Figure 3: In Arthur D. Little’s view, winning digital health offerings incorporate a clear set of principles

<table>
<thead>
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<th>Principles of winning digital health offerings</th>
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<tr>
<td><strong>Interaction</strong></td>
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<tr>
<td>• Follow customer journeys – target specific interactions in the healthcare system</td>
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<td>• Connect all stakeholders across the healthcare system</td>
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<td><strong>Value-add</strong></td>
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<tr>
<td>• Overcome disconnect between healthcare provider and patient</td>
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<tr>
<td>• Use smart solutions, offer tangible value-add: time, money, quality, outcomes</td>
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<tr>
<td><strong>Platform/connectivity</strong></td>
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<tr>
<td>• Get the initial patient connection right – ubiquitous digital channels: social media, web site, apps as touch points (mobile network of connectivity)</td>
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<tr>
<td><strong>Data</strong></td>
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<tr>
<td>• Take advantage of comprehensive user data</td>
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<tr>
<td>• Ensure accessibility and security</td>
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<tr>
<td><strong>Intelligence</strong></td>
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<tr>
<td>• Gather meaningful insights</td>
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<tr>
<td>• Use Big Data to become predictive, not reactive</td>
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<td><strong>Device</strong></td>
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<tr>
<td>• Use multiple interfaces to suit the patient’s lifestyle</td>
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<tr>
<td>• Link with technology standards and build closed-loop system</td>
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<tr>
<td><strong>Sensor</strong></td>
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<tr>
<td>• Give precise measurements</td>
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<tr>
<td>• Consider patient convenience with, e.g., wearable sensors</td>
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<tr>
<td><strong>Pharmaceutical</strong></td>
</tr>
<tr>
<td>• Add new technology dimension to core product</td>
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<tr>
<td>• Enhance value proposition beyond the molecule</td>
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<td><strong>Regional</strong></td>
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<tr>
<td>• Reflect regulatory &amp; care environment</td>
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<tr>
<td>• Understand and accept local pain points – adjust technology and value-add</td>
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Source: Arthur D. Little
5 Conclusions for the cardiologists professional future

Empower your patients

Children’s hospital builds sleep app

By James Gallagher
Health editor, BBC News website

2 April 2015

A free app to improve children’s sleep has been launched by doctors at the Evelina Children’s Hospital in London.

They think it will help the two million parents in the UK who express concern about their child’s sleep and ease pressure on the NHS.
5 Conclusions for the cardiologists professional future

Empower your patient

Find a doctor you love.
Get the care you need.

Get Started

https://www.zocdoc.com/
6 Take home message

✓ e-Health is not just the electrification of the status quo

✓ e-Health is – in combination with parallel developments (e.g. value for money-movement, new business models) - the tipping point for disruptive changes of all kind

✓ e-Health will shape the future of medicine and the relationship between carers and the patient

✓ To get there will be a long and bumpy ride