THE FUTURE OF E-HEALTH IN THE AI ERA

State of art and scenarios in the EU
Why is eHealth important?

Digital innovation in the healthcare sector has the potential to improve the management of chronic disease and the efficiency of healthcare systems.

- Electronic Health Records
- Mobile health device
- Decision support tools
- Internet based technologies and service
- Telemedicine and teleconsultation
- ePrescription
eHealth: a lot of benefits but security is the most worrying issue

BENEFITS

- Enable faster and better diagnosis, improved monitoring, more effective treatment and better health outcomes
- Boost patient engagement
- Reduce administrative burdens, thereby increasing clinicians’ time with patients
- Enhance quality of care through enhanced clinician-patient engagement

Trust and confidence are key elements for ensuring the swift uptake of digital health applications by end-users.

80% of EU citizens agree to share their health data if privacy and security are ensured!
Market trust in digital health

**Adrenaline rush**

United States, digital health startup funding, $bn

<table>
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<tr>
<th>Year</th>
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<td>2010</td>
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Source: Accenture

*Forecast

**eHealth Market by Region, 2023 (USD Billion)**

- Rest of the World
- Asia Pacific
- Europe
- North America

Market Size in 2023

Economist.com
The eHealth evolution

2004
first eHealth Action Plan

2011
Directive on the Application of Patients' Rights in Cross-Border Healthcare

7 December 2012
eHealth Action Plan 2012-2020 - Innovative healthcare for the 21st century

25 April 2018
Communication on Digital Transformation of Health and Care in the Digital Single Market, empowering citizens and building a healthier society

- wider interoperability in eHealth services, addressing the technical and semantic levels, the organizational layer and legal issues;
- support research, innovation and competitiveness in eHealth;
- facilitate deployment and adoption of eHealth;
- promote international cooperation on eHealth at a global level.

- citizens' secure access to their health data, also across borders;
- personalized medicine through shared European data infrastructures across the EU;
- citizen empowerment with digital tools for user feedback and person-centered care.
The role of artificial intelligence in healthcare

AI applications in healthcare

- Artificial intelligence
- Keeping well
- Early detection
- Diagnosis
- Treatment
- Decision making
- End of life care
- Research
- Training

The main benefits of AI in healthcare

- Reduce medical errors
- Improve medical decision making
- Improve quality of care
- Improve precision medicine
- Improve diagnostics
- Save time
- Generate new knowledge
- Process large amount of data

Source: PwC, Sherlock in Health: How artificial intelligence may improve quality and efficiency, whilst reducing healthcare costs in Europe, 2017
Himss Analytics, eHealth Trend Barometer, May 2018
"Failure to diagnose or delay in diagnosis are the most important reasons for malpractice litigation in the United States, which in 2017 accounted for 31% of lawsuits”

Eric Topol, *Deep Medicine*, 2019

**Defensive medicine is a strong driving force**

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**Concerns about malpractice litigation**

"...Physicians may respond to the perceived threat of litigation by ordering more referrals and more tests, some of which may be recommended by clinical guidelines and beneficial, but others might be wasteful and harmful"
Only 16% of healthcare facilities in Europe already use AI, 25% have a specific plan and 59% of respondents do not use AI tools and have no plan to do so.

**Why?**

Different challenges and risks may significantly impinge on the adoption of AI technologies.

**% of European health facilities using AI tools**

- 16% Already use
- 25% Have specific plans
- 59% Not use and have no plans

**The biggest challenges for AI in healthcare according to healthcare organizations in Europe**

- Insufficient maturity of the products
- Lack of trust from medical staff
- Data privacy
- Interoperability
- Legal approval issue
- Lack of sufficient high quality data to train AI...
- Insufficient user education/knowledge
- High costs
- Lack of trust from patients
- Implementation of new software

Source: Himss Analytics, eHealth Trend Barometer, May 2018
Can AI power a more human healthcare?

“Imagine if a doctor can get all the information she needs about a patient in 2 minutes and then spend the next 13 minutes of a 15-minute office visit talking with the patient, instead of spending 13 minutes looking for information and 2 minutes talking with the patient”

Lynda Chin, Professor of Genomic Medicine, University of Texas MD Anderson Cancer Center