Utrecht University

Faculty of Science
Department of Information and Computing Science
Master of Business Informatics

Seminar Medical Informatics

mHealth: Mobile Apps for Health

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Agenda for today

Discussion about: The EU Green Paper on m-health

mHealth

- What is mHealth?
- mHealth for professionals of care
- mHealth for patients
- Driving Forces of mHealth Technology
- mHealth Challenges

Workshop's assignations
Assignment for next February 25th
Final project of the course

The EU Green Paper on m-health

‘Potential of m-health for healthcare’

- Increase prevention and quality of life
- More efficient and sustainable healthcare
- More empowered patients

11 challenges of m-health for healthcare:

1. Data protection, including security of health data
2. **Big data**
3. State of play on the applicable EU legal framework
4. **Patient safety and transparency of information**
5. mHealth role in healthcare systems and equal access
6. **Interoperability**
7. Reimbursement models
8. Liability
9. Research and innovation in mHealth
10. International cooperation
11. Access of web entrepreneurs to the mHealth market

The EU Green Paper on m-health

2. Big data:

What measures are needed to fully realise the potential of mHealth generated “Big Data” in the EU whilst complying with legal and ethical requirements?

- Interoperability and need for standards
- Clear governance structures to promote the trust of the public
- Share data from mHealth with EHRs
- Anonymization
- Accountability and control measures

The EU Green Paper on m-health

4. Patient safety and transparency of information:

What good practices exist to better inform end-users about the quality and safety of mHealth solutions (e.g. certification schemes)?

- Certification of mHealth applications/labelling system
- Share best practices
- Guidance and education of potential users

Which policy action should be taken, if any, to ensure/verify the efficacy of mHealth solutions?

- Safety requirements in the App store
- National bodies to review mHealth solutions, such as the NHS health apps library

How to ensure the safe use of mHealth solutions for citizens assessing their health and wellbeing?

- Regulation for quality, safety and security issues: certifications and standards
- Transparency and user-friendly products: for patients and professionals

The EU Green Paper on m-health

6. Interoperability:

What, if anything, do you think should be done, in addition to the proposed actions of the eHealth Action Plan 2012-2020, in order to increase interoperability of mHealth solutions?

- Foster the use of international standards
- Develop an EU eHealth Interoperability Framework

Do you think there is a need to work on ensuring interoperability of mHealth applications with Electronic Health Records? And if yes by whom and how?

- Interoperability of mHealth with EHR could be of benefit
- Government should have a leading role to ensure safety
- Establish strict rules on how to integrate mHealth data into EHRs (only clinically relevant data)

What is mHealth?

Mobile health| mHealth | m-Health | Connected health

“Represents the evolution of eHealth systems from traditional desktop ‘telemedicine’ platforms to wireless and mobile configurations”

Described as a catalyst for healthcare change

Share your experiences with healthcare-related apps and or wearable sensors/devices. Why are you (or are not) using any healthcare apps?

mHealth for professionals of care: Types and prevalence of devices used

(PDAs), Smartphones and Tablets: Allows easy and fast access and use at the point of care

Features offered to users:

- Voice and text
- Web searching
- GPS
- High quality cameras
- Sound recorders

- Powerful processers and OS
- Large memories
- High-resolution screens

HANDHELD COMPUTERS

mHealth for professionals of care: Uses for Mobile Devices and Apps by Health Care Professionals

Information Management
- Write notes
- Dictate notes
- Record audio
- Take photographs
- Organize information and images
- Use e-book reader
- Access cloud service

Time Management
- Schedule appointments
- Schedule meetings
- Record call schedule

Health Record Maintenance and Access
- Access EHRs and EMRs
- Access images and scans
- Electronic prescribing
- Coding and billing

Communications and Consulting
- Voice calling
- Video calling
- Texting
- E-mail
- Multimedia messaging
- Video conferencing
- Social networking

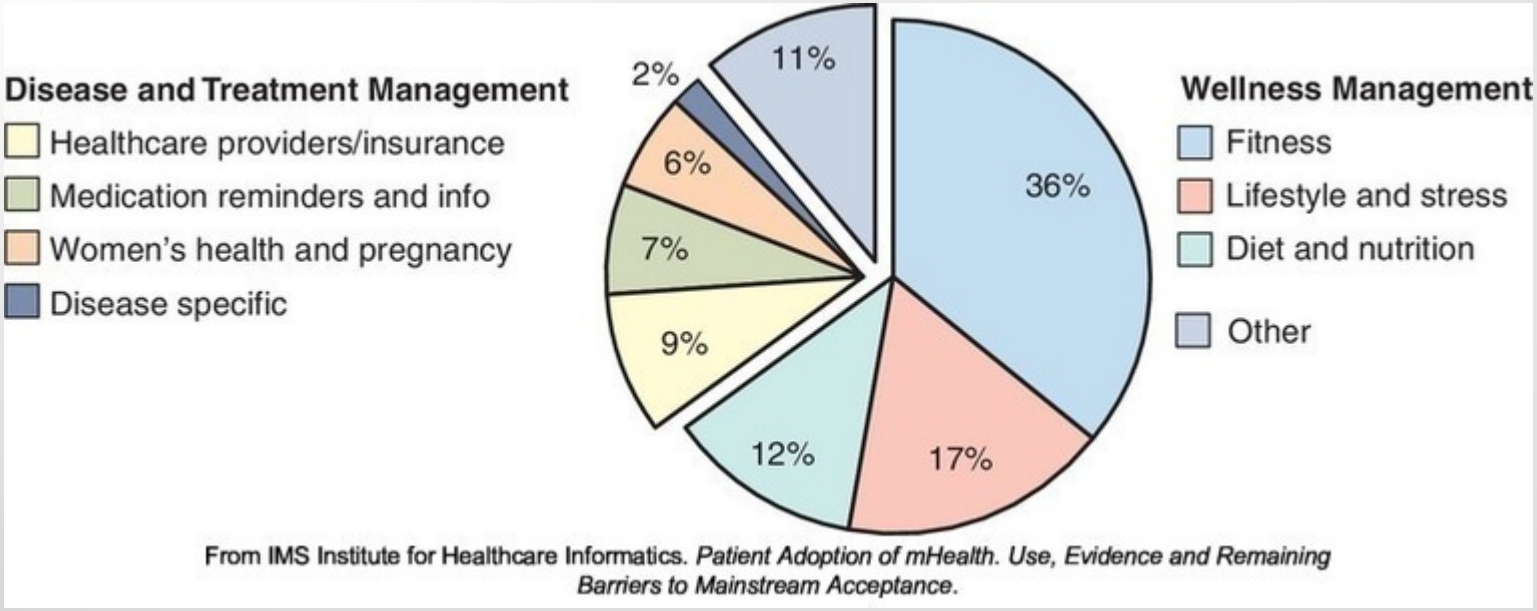
Reference and Information Gathering
- Medical textbooks
- Medical journals
- Medical literature
- Literature search portals
- Drug reference guides
- Medical news

Clinical Decision-Making
- Clinical decision support systems
- Clinical treatment guidelines
- Disease diagnosis aids
- Differential diagnosis aids
- Medical calculators
- Laboratory test ordering
- Laboratory test interpretation
- Medical exams

Patient Monitoring
- Monitor patient health
- Monitor patient location
- Monitor patient rehabilitation
- Collect clinical data
- Monitor heart function

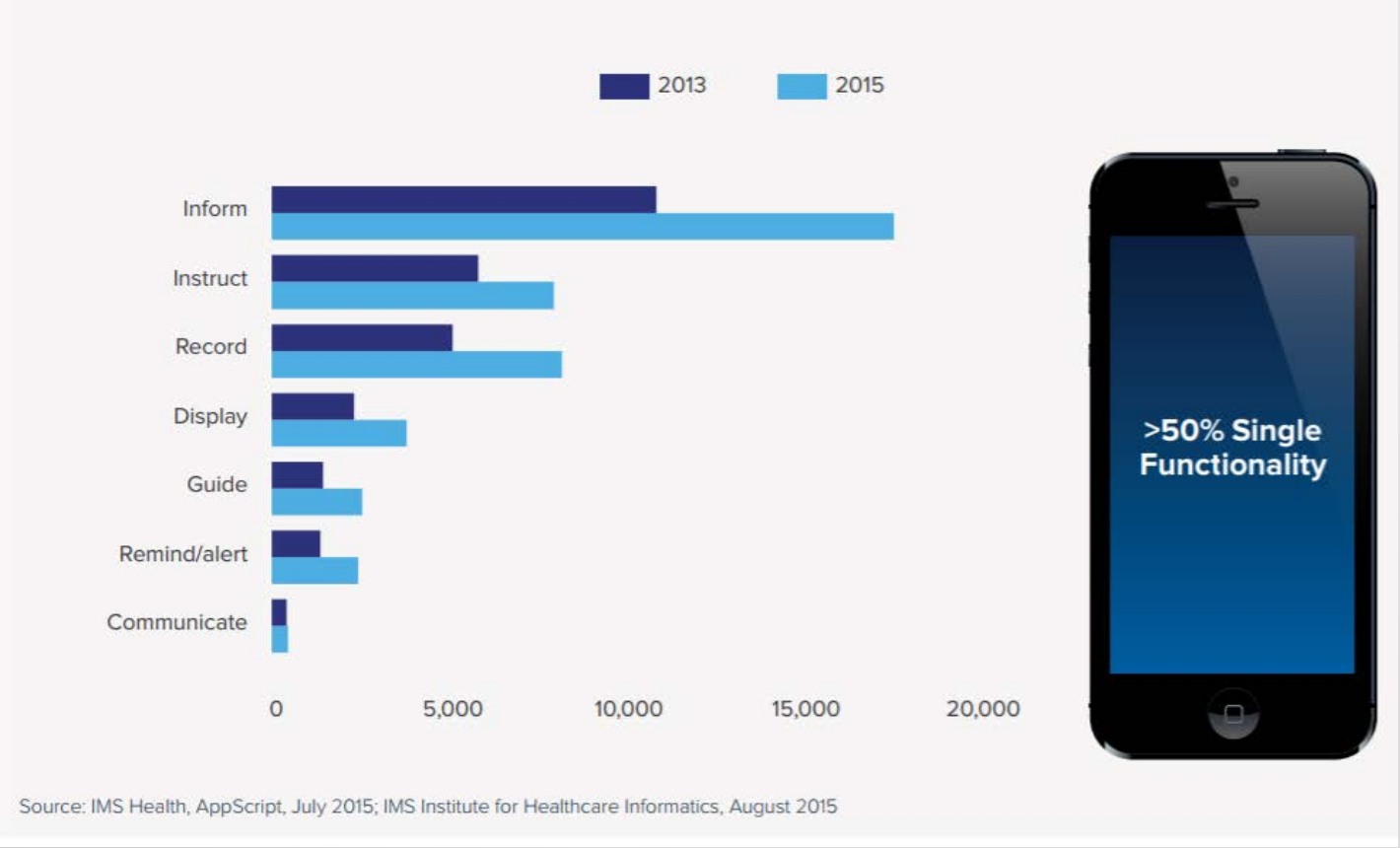
Medical Education and Training
- Continuing medical education
- Knowledge assessment tests
- Board exam preparation
- Case studies
- E-learning and teaching
- Surgical simulation
- Skill assessment tests

mHealth for patients: use of medical Apps



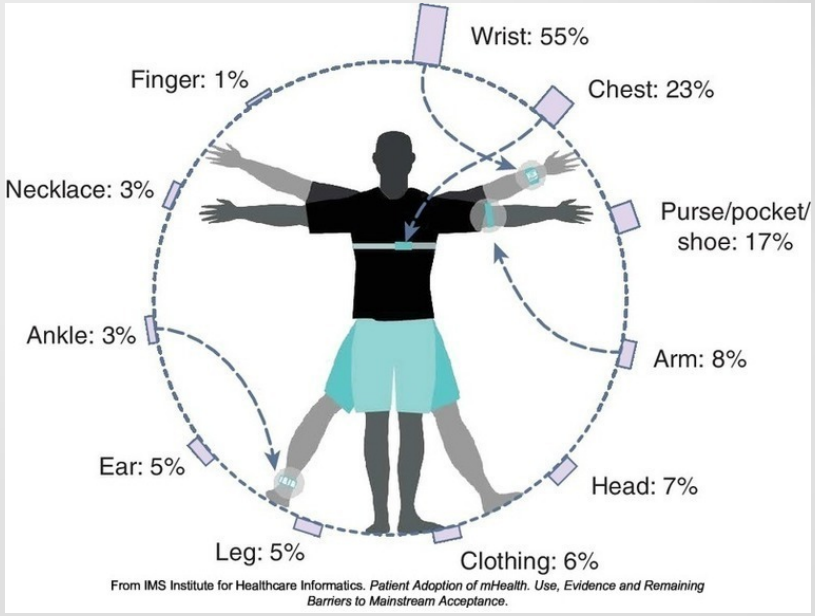
From IMS Institute for Healthcare Informatics. *Patient Adoption of mHealth. Use, Evidence and Remaining Barriers to Mainstream Acceptance.*

mHealth for patients:
Dimensions of Apps functionality



mHealth for patients: connected to devices or wearables

- 1/10
- Improves the accuracy and consistency of data
- Majority connected to fitness apps
- Integrated with daily functions of patient
- Data collection convenient, automatic and seamless



From IMS Institute for Healthcare Informatics. *Patient Adoption of mHealth. Use, Evidence and Remaining Barriers to Mainstream Acceptance.*

mHealth for patients:

Work in 4 groups: How mobile devices could help patients (or caregivers) to handle a chronic disease?:

Functionalities:	• Inform • Instruct • Record • Display	• Guide • Remind/alert • Communicate

Group 1: Diabetes

Group 2: Alzheimer

Group 3: Asthma

Group 4: Overweight

Driving forces of mobile health

1. Technology—access, reduced cost, and its increasing functionality
2. The consumer/patient engagement movement
3. Global health or connected health—expanding healthcare services to remote and marginalized populations
4. Research, policy, and business—both cost savings and earning potential

mHealth Challenges

- People misinterpreting their own data
- Data privacy and legal risks
- Leading mHealth organizations, key resources, and information repositories

Workshops' assignations

Assignment for next February 25:
mHealth solutions Workshop

Final project of the course:
Write a scientific paper about a mHealth App

Give your opinion about mobile technologies in health care

Workshops' assignations

Mobile Apps for Health (February 25th)
- Hedy te Rietmole
- Floris Emanuel
- Sara Altamirano Ortega
- Charlotte Kuijer

Electronic Health Record (March 4th)
- Hugo Helder
- Gudrun Thorsteinsdottir
- Leon de Reeder
- Andreas Sakapetis

Telemedicine (March 11th)
- Marit Bentvelzen
- Jasper van den Berg
- Stamatis Kantiloros
- Alquin Nooteboom

Data Science in health care (March 18th)
- Leonardo Vida
- Jathin Nagesh
- Esmée van Vilsteren
- Noël Bainathsah

Bioinformatics (March 25th)
- Amber Brauer
- Hielke Koopstra
- Antoine Lyonnet
- Charles Vernerey

Assignment for next February 25: mHealth solutions Workshop

Assigned students:

- Hedy te Rietmole
- Floris Emanuel
- Sara Altamirano Ortega
- Charlotte Kuijer

Topics (choose one):

- Diabetes
- Alzheimer
- Asthma
- Overweight

Each assigned student:

1. **Select a paper** of maximum 8 pages about a mobile App for health and send it to v.burriel@uu.nl **before Wednesday at 13.00.** During the afternoon all selected papers will be published on course's website.

2. **Prepare a presentation** of **7/8 minutes** about the paper and include some questions (at least 2) at the end of the presentation to challenge the audience and activate the discussion.

3. Join with the other assigned students and **prepare 1 or 2 group activities** to make during the last 30 minutes of the session. This activities should be related to the solutions presented.

Assignment for next February 25: mHealth solutions Workshop

Each no-assigned student:

1. **Read all the selected papers** and **prepare some questions or comments** (at least 2) per paper to discuss them after the presentation. Try to be critical and/or creative.

2. Send the questions/comments using this form **before Monday** https://goo.gl/forms/K69vlahNqxzFe1ZG3

Final project of the course: Write a scientific paper about a mHealth App

Design an develop a prototype of a mobile App to improve the prevention, diagnosis, treatment or rehabilitation of a disease or health condition of your choice.

- **Work in pairs**: Choose your mate
- **Choose a disease or health condition** which could be improved by using a mobile App (excluding Diabetes, Alzheimer, Asthma and Overweight)
- **Include your names and the chosen disease / health condition** into the excel file of Final Projects using this form: https://goo.gl/forms/o0SOQ91o1cmBUY2G2 **Check first** that the disease/health condition you choose hasn't been chosen by other mates before. Deadline to fill the form: **February 28th**
- **Be creative!** Imagine how a mobile App could improve life of people suffering this disease or health condition

- **Start your research!**

Final project of the course: Write a scientific paper about a mHealth App

Your paper should include (at least):

- Introduction (incl. motivation)
- Problem statement (research about the disease/condition and needs detected)
- State of art (literature review of related Apps)
- Solution design (incl. design, technologies and functionalities)
- Conclusions (incl. expected benefits)
- Future work

Paper in Springer format: You can find the templates in Word and LaTeX here: http://www.springer.com/gp/computer-science/lncs/conference-proceedings-guidelines

Maximum **12 pages (including references and appendix)!**

Final project of the course: Write a scientific paper about a mHealth App

Submissions:

- **Mid-term submission (*March 21*, 5 PM)**
  - Should include:
    - Introduction
    - Problem statement
    - State of art
    - Solution design (an overview)
  - Assessment (20%) ***(March 28, 5 PM)***:
    - It will be assessed by 2 students (10% grade)
    - You will assess 1 paper (10% grade)

- **Paper presentation *(April 3)***
  - Grade = 20% (10% students grade and 10% teachers grade)

- **Final submission *(April 13, 5 PM)***
  - Grade = 30%

Tomorrow's guest lecture:

Making mobile Apps

Vanessa Vorteil

See you tomorrow!