How Far do we Come From?
How Far can we Go?

Frank Lievens¹,², Malina Jordanova³
¹Managing Director of LIEVENS-LANCKMAN BVBA, Belgium & AKROMED, France
²Executive Secretary ISfTeH, Belgium, lievens@skynet.be
³Space Research & Technology Institute, Bulgarian Academy of Sciences, Bulgaria, mjordan@bas.bg
The topic is vast, dynamic and almost open ended. The aim of the authors is to provide a basic view on the subject and reference sites for possible further consultations. Sometimes, it is just as important to know where to go for available information as to receive the exact information itself.
Telemedicine & eHealth

Universal Health Coverage

Digital Health

Telehealth

eHealth

mHealth

Telemedicine

XXVI International School "Modern Aspects of Telemedicine", Moscow, Russia

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Where do we come from?

Telegraph, the “Victorian Internet”
Where do we come from?

ECG machine designed by W. Einthoven, 1905

Tele-ECG device AEKS-1, 1970's, Russia

ECG auto-transmission by telephone, Canada, 1976-1979

ECG Radio telemetry transmitter by Dimond et al., USA, 1961

TEK-1 biotelemetry devices – transmitted & receiver, Russia, 1960s

Telecardiology in a geriatric institution, Brazil, 2016

Tianhe-1 supercomputer, China
Where do we come from?

More History …

- https://www.isfteh.org/media/category/telemedicine_ehealth_history
- http://blog.evisit.com/history-telemedicine-infographic
- https://www.timetoast.com/timelines/the-history-of-telemedicine

Sources: http://www.esa.int/SPECIALS/Telemedicine_Alliance/ESA4428708D_0.html
Where are we?
Nowadays eHealth is everywhere, influencing the Entire Healthcare System! It is able to provide healthcare everywhere and reach those that are in need on land, at sea or in the air.
Mobile Clinics

Mobile Telemedical Unit (UNICAT GmbH, Germany)  [Link](http://www.unicat.com)

ISRO’s Ophthalmologic Mobile clinic (India), [Link](http://www.isro.org)

media Lab Asia (India), [Link](www.medialabasia.in)

Mexican Mobile Clinic (Mexico) – [Link](http://www.mobileclinicsinternational.com/)

TANA Telemedicine unit (Russia)  [Link](www.tana.ru)
ePharma - The New Way of Doing Old Things

- >400,000 community pharmacists in EU
- The use of electronic prescription has been designated as an important strategic policy to improve health care in Europe
- The aim is to have a cross-border electronic healthcare system in Europe, which will enable the citizens to obtain e-Prescriptions anywhere in Europe
ePharma is Getting Strength

- Pharmaceutical Group of the European Union (PGEU) mission is:
  - To promote and develop cooperation in Community Pharmacy among the European nations;
  - To advocate for the contribution community pharmacists make to health systems and to public health through the provision of health services and the promotion of the rational and appropriate use of medicines;
  - To ensure our vision of Community Pharmacy is reflected in EU policy and legislative developments

Moving From Reactive to Proactive Care via Mobile & Wearable Techs
Smart Devices for Chronic Diseases Management & Homecare

- Large pre-programmed picture buttons
- MedPartner medication reminder
- Fall detector
- Pendant or wristband transponder, carrier may activate alarm when he (she) feels unwell
- Motion monitoring, nutrition notes, energy balance
- Homecare medical suitcase
- Air Smart Spirometer, https://www.pfizer.co.uk/
Smart Devices for Chronic Diseases Management & Homecare

Digital health tools help schizophrenia patients: https://www.wellframe.com/

Monitoring patients at home using SMS & MMS. Portable telemedicine system for emergency situations.

Early and non-invasive detection of lower limb ischemic disease.

Intellis(TM) platform for spinal cord stimulation, https://www.news-medical.net/news/20170919/...

Management of Obesity

Activity recording with AiperMotion 3xx

Measurement of movement
- Recording of Everyday Activity via 3D high tech acceleration sensor
- Movement Duration (Determination into different activity classes)
- Calorie Consumption (Consideration of age, sex, height, weight)
- Distance (Consideration of individual step size)

Activity Classes
- Active: all Movements except steps, like house or gardening work
- Slow Walking: normal walking speed (3-5 km/h)
- Fast Walking: faster walking speed (5 km/h or higher)
- Sporty (from 7 km/h on)
mHealth for Behavior Change

Development of an integrated web-based platform for the provision of mHealth interventions (counseling through one to one telephone calls and SMS) to promote lifestyle changes among pre-hypertensive subjects in poor urban settings of Argentina, Guatemala, and Peru.
Education & Capacity Building
Education & Capacity Building

- 7 partners from EU and Africa
- Strategic goal - improving the capacities for health research and education in Africa through Information and Communication Technologies
Telemedicine Training Outline – More at

- https://www.isfteh.org/education
- https://www.isfteh.org/media/category/good_practice_models
- ...

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Knowledge Resources

More info

- https://www.isfteh.org/media/category/reports
- https://www.isfteh.org/media/category/knowledge_resources
- ...
How far can we go?
How far?

International Space Station

Telemedicine monitoring & telemedicine stomatology within frameworks of the “Moon-2015” project

Artificial intelligence

Nano medicine
Titian, Allegory of Prudence (c. 1565–1570)

The three human heads symbolise past, present and future, the characterisation of which is furthered by the triple-headed beast (wolf, lion, dog), girded by the body of a big snake. https://kulturologia.ru/blogs/121117/36614/
How far?

- How far can/should it still go?
  - No way back!
  - Constant broadening of the applications field

- No limit, but OPTIMALISE is “key”, not MAXIMALISE
Optimalisation

- IT
- Apps
- Management
- Financing
- Politics
- Internal Coordination
- Education
- Time
- Communication

Patient

Healthcare professionals
The Challenges
The Constant Challenges

- **Coordination/Integration** between all actors (Medical/Clinical, Communication Tools, Informatics, Apps/Mobile Tools, Management, Politics, …) for the ultimate benefit of the patient/citizen

- Development adapted to the **Social Context**

- Contribution to the **Quality of Life**

- Role of **Education**

- Appropriate control of the **Financial Means**

- To reach **Universal Health Coverage**

- …
The main challenge is international cooperation
International Cooperation

- International cooperation refers to actions and/or resources exchanged between actors from different countries, voluntarily and according to their own interests and strategies.

- This concept includes all cooperation activities whether by governmental or non-governmental organizations, bilateral or multilateral, centralized or decentralized.

- In the late 19th century international relationships became more interconnected and complex, which led to the establishment of the first general treaties as well as international organizations.
Characteristics

- This is a continuous and dynamic process;
- Emphasizes on unity of efforts;
- Pulls all the activities together so that they become complementary to each other and contribute positively to the performance of others;
- Its principles are:
  - Effective communication;
  - Reciprocity;
  - Continuity
Why International Cooperation?
1. Health is a Universal Right

- "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including ... medical care."

  Universal Declaration of Human Rights, Article 25 (1), 1948

- The **CHALLENGE** for most countries is how to expand the health services to meet growing needs with limited resources, i.e. to achieve **UNIVERSAL HEALTH COVERAGE**. This requires a strong, efficient, well-run health system; access to essential medicines and technologies and sufficient, motivated health workers

  WHO, World Health Report 2013
2. Addresses Global Health Issues

- Global disproportions of medical care;
- Rising health costs;
- Growing demand of medical specialists due to:
  - Increasing and ageing population;
  - Movement of people (including immigration);
  - Unprecedented speed of distribution of pathogens;
  - Scarce human resources …

Number of physicians per 1,000 people (WHO, GHO, 2015)
3. **Globalization is a challenge**

- Today Globalization is shaping our world
  - The world is moving closer together - trade, technology and investment increasingly connect countries and people around the globe. People and products move, time and distance are no longer obstacles
  - Ideas do spread faster than ever before
  - Boundaries between global issues and national issues are weakened
  - But globalization leads to growing inequalities
- Globalization is also influencing healthcare
  - This will require a transformation in the organization of health services in order to keep up with the changing needs
4. International Regulations & Ethics

- The International Health Regulations are an international legal instrument that is binding on 196 countries across the globe.

- Their aim is to help the international community prevent and respond to acute public health risks that have the potential to cross borders and threaten people worldwide.

- International Health Regulations:
  - Foster global partnerships
  - Strengthen national disease prevention, surveillance, control systems
  - Strengthen public health security in travel and transport
  - Strengthen WHO global alert and response systems
  - Strengthen the management of specific risks
  - Sustain rights, obligations and procedures
  - Conduct studies and monitor progress

- More info
  - http://www.who.int/ihr/about/en/
  - https://www.eugdpr.org/
Global Health

- Global Health covers “all health problems, issues, and concerns that transcend national boundaries, which may be influenced by circumstances or experiences in other countries, and which are best addressed by cooperative actions and solutions” (Institute of Medicine, USA, 1997)
- Examples include infectious diseases (Zika, HIV/AIDS, TB, avian influenza, malaria,) non infectious diseases (diabetes mellitus, tobacco related diseases) and other health risks (global warming, conflict, nuclear power), etc.
- Global health affects everyone – there are no borders for diseases
- Good health is the foundation for building a stable economy

The way forward is the wide application of the achievements of ICT and benefit from extensive implementation of eHealth

- Global health care expenditures are projected to reach $8.7 trillion by 2020, from $7 trillion in 2015.
- Chronic and communicable diseases are an ongoing threat. Health care spending as a percentage of GDP will rise from ~10.4% in 2015 to 10.5% in 2020.
- Life expectancy is projected to increase by one year by 2020, which will increase the aging population (> 65 years old) by 8% in 2020.
- By 2020 50% of global health care expenditures will be spent on 3 leading causes of death: cardiovascular diseases, cancer and respiratory diseases.
- From 2015 to 2050 the prevalence of dementia is forecast to increase all over the world. The cases of dementia are anticipated to double every 20 years.

2017 global health care outlook, Deloitte, 2017
Local or Global Health – The Unfair Dichotomy

- Our understanding of health and wellness, illness and health care are changing rapidly as the world changes
- Boundaries between global and national challenges are weakened because of developing globalization
- Local and global health challenges are intricately connected
How to Meet The Global Health Challenges?

- The health of a population is the result of the decisions taken at the political, economic and social level. Therefore, health problems should be solved by interdisciplinary and inter-sector action, not only by health professionals.
- The investment in public health has to be increased. Encouraging prevention is a must.
- Health problems such as chronic non-communicable diseases must be addressed by improving primary health care and promoting healthy lifestyles.
- Finally, innovative solutions must be explored.
- We must understand that health is a pillar of development or social and economic improvements won’t be sustainable.
HEALTH IN THE SDG ERA

3 GOOD HEALTH AND WELL-BEING
ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

SDG = Sustainable Development Goals (SDGs)
Barriers to International Cooperation

- Countries sovereignty;
- Large disparity in power and resources;
- Great differences in cultures, languages and communication systems;
- Disagreement on objectives;
- Different expectations related to coordination;
- Lack of trust;
- Cost/benefit perceived as unsatisfactory;
- Poor transition preparations;
- Competition for resources;
- ...
International cooperation and coordination is the only way forward
Yet, we are witness of **GLOBAL COOPERATION DEFICIENCIES:**

- The lack of sufficient global cooperation results in governments continuing to negotiate, renegotiate, revisit and experiment with health care policies and philosophies
- The re-inventing of the wheel continuous

Respect and Understanding are the key points in international cooperation
International cooperation and coordination is the only way forward. It is time to combine the best practices from different countries and cultures from all over the world.
The way forward is collaboration and cooperation in order to make the benefits of science, information and technology, available to all. A major international forum helps bringing experts and stakeholders together.
Mission

ISfTeH exists to facilitate the international dissemination of knowledge and experience in Telemedicine and eHealth and to provide access to recognized experts in the field worldwide.

- Non governmental and non for profit society with close relationship to WHO
- Primarily an umbrella for national Telemedicine and eHealth organizations, also including associate, institutional, corporate, individual, nurse and students memberships

www.isfteh.org
Actions

- **Promoting & Supporting** Telemedicine/eHealth activities around the globe
- **Incubating & Assisting** the start-up of new national organizations
- **Networking & Scientific Platforms**
- **Annual International Events**
- **Supporting member countries** in the field of Telemedicine and eHealth
  - Strategy & Policies
  - Regulations & Standards
  - Business Model & Reimbursement
  - Education & Training
  - ...
20 years ago, in May 1997, the International Society for Telemedicine was officially founded in the margin of the 3rd International Conference on the Medical Aspects of Telemedicine, held in Kobe (Japan).

You can find a detailed history of the founding of our Society under https://www.isfteh.org/about/history

Frank Lievens (left) holds the original minutes recorded at the two meetings in Kobe (Japan) at which the Society was founded, on May 30 and 31, 1997, and Dr. Guy Harris, founding Secretary, holds the conference bag.
Worldwide Membership
(99 countries as per May 2018)
Membership

- National
- Associate
- Institutional
- Corporate
- Individuals
- Students
- Nurses
Working Groups as per May 2018

- Students
- Tele-Nursing
- Chronic Diseases Management
- Collaborative Care Team in Open Source
- Education
- eHealth Economics
- Francophonie
- Iberian and Iberian-American

- Social Media
- Medical- and Bio-Informatics
- Tele-Audiology
- Tele-Dentistry
- Tele-Dermatology
- Tele-Cardiology
- Women (WoW)
- Tele-Urology
Communication Tools

- Website [www.isfteh.org](http://www.isfteh.org)
- ISfTeH Newsletter (quarterly)
- Member Announcements
- ISfTeH e-Journal
Dissemination of Information

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Telemedicine History

Coming up!
A wise man learns by the mistakes of others, a fool – by his own.

Latin proverb
Спасибо! Thank You!