



International Telecommunication Union

# What is Telemedicine/E-health?

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- o Chest pain?
- o What is the reason? Acute myocardial infarction?



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- Heart disease is the single most fatal disease of modern society. Heart attacks became the No1 killer.
- 45% of the total mortality rate in USA is due to cardiac related diseases.
- Many of these deaths are a result of the time elapsed between the cardiac event and the medical assistance provided to the patient.



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- One of the leading factors in the diagnosis of a person's heart condition is his Electro Cardio Gram.
- The activity of the heart is regulated by electrical impulses, which can be measured and presented, for diagnostic purposes, in the form of an ECG.



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- Traditionally, ECG diagnostics were carried out at hospitals or clinics, where patient would be physically connected to the ECG machine and the doctor would simultaneously diagnose his condition.
- The transmission of the patient's ECG started its career in space: it was used for monitoring the health of astronauts.



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# Telecardiology

- o Today, with the development of advanced technologies, remote transmission and acquisition of ECG via the telephone became possible, giving new possibilities for a wide range of applications, ranging from home care to preventive diagnosis and emergency services.



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# Telecardiology

- It is estimated that 2% - 4% of the world population suffer from heart diseases.
- 10%-12% of the world population are considered to have two or more heart disease risk factors, which would ideally require periodical diagnosis periodical diagnostics or preventive medical treatment.



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# ECG Monitoring

- This is one of examples of telemedicine service, which is called trans-telephonic ECG monitoring.
- Telecardiology diagnosis and ECG interpretation is simple, reliable and efficient service in routine primary case. It offers instant access to cardiac assessment and supports the decision making process of general practitioners.





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# Telecardiology

- It increases chances of recovery by minimizing the immediate damage, and a potentially shorter hospitalization period following the attack.
- It is possible to reduce the mortality rate by 50% by shortening the time between the heart attack and the beginning of treatment



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# ITU and Telemedicine

- March 1994: ITU - WTDC -, Buenos Aires, Argentina - approval of new Question on Telemedicine for Developing Countries, in the ITU-D SG 2.
- This is the unique telemedicine Study Group dealing with needs of developing countries.



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- o January 1997: Report on the use of Advanced Telecommunication Services for medical purposes presented to Congress of USA.



# Report on Telemedicine to US Congress

“...Telemedicine has the potential to make a difference in the lives of many Americans. In rural areas where a patient and a closest health professional can be hundreds of miles apart, telemedicine can provide access to health care, where little had been available before. In emergency cases, this access can mean the difference between life and death...”

## First World Telemedicine Symposium for Developing Countries

- 30 June - 4 July 1997: First World Symposium for Developing Countries was organized by the ITU-D in Portugal.
- The Symposium was attended by 178 delegates from 51 different countries.
- Health sector was represented by 98 delegates from 35 countries



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## WHO

- 1997, 11-16 December, Geneva - With the active participation of ITU, WHO convened an international consultation on Telemedicine in relation to the development of the health-for-all policy for the 21<sup>st</sup> century.
- “By seeking collaboration with the telecom community, health care professionals will improve their chances of getting the facilities they need for health telematics”



# Mozambique Project

- o January 1998 - First ITU Telemedicine project was implemented in Mozambique, connecting two hospitals (one in Maputo, the capital of the country, and the second - in Beira) for teleradiology.



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# What is Telemedicine?

- *Telemedicine* is an umbrella term that encompasses any medical activity involving an element of distance.
- Telemedicine is not something completely new.
- A *doctor-patient* interaction, which involves telecommunication goes back at least to the use of ship-to-shore radio for giving medical advice to sea captains.





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## What is Telemedicine?

- Telephone is already a standard piece of medical equipment as a stethoscope.
- Healthcare could not be effectively delivered without telephone



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# What is Telemedicine/E-health?

A few years ago the term *telemedicine* began to be supplanted by the term *telehealth*, which was thought to be more “politically correct” .

But in the past several years this has been overtaken by even more fashionable term such as *on-line health* or *e-health*.



# WHO Group Consultation on Health Telematics - 1997

The concept of health telematics consists of the following functional areas:

- Tele-education
- Telemedicine
- Telematics for health research
- Telematics for health service management



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# Health Telematics

- o Health telematics is a composite term for health-related activities, services and systems, carried out over a distance by means of information and communication technologies, for the purposes of global health promotion, disease control and health care, as well as education, management and research for health.



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# What is Telemedicine?

- o Telemedicine is the delivery of healthcare services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.



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- E-health is not a replacement of existing medical and health care services, but it is an additional tool to improve access to existing facilities and resources.
- E-health or Telemedicine - strategic tool for facilitating the health care delivery.



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- All countries faced a problem of providing medical care to people working or living in situations that are remote or inaccessible to use of health care services.
- Over the past years, there has been an explosion of interest in the use of E-health solutions in developing countries.



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# Who needs Telemedicine?

Patient does not have easy access

- o Distance
- o Preparation, transportation
- o Medical conditions
- o Emergency situations
- o Social conditions





# Why Telemedicine? (1)

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- Equitable access to quality health care services
- People at remote and rural areas will receive better treatment
- Better management of patient referrals
- Patient with rare disease will receive second-opinion consultation and more opportunity to get an efficient treatment



## Why Telemedicine? (2)

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- Increase access to continuing medical education and training
- Reduce professional isolation among doctors and other health care staff located remote and rural areas
- Provide an advanced medical services in emergencies



## Why Telemedicine? (3)

- Organization of epidemiological surveillance groups
- Creation of specialized Regional and National databases
- Multi-country training in public health



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## Developing countries

- Due to the poor quality of life, developing countries are facing the lack of proper health care and sanitation.
- In least developed countries only 54% of population has access to health services.



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## Developing countries

- The number of people per doctor in industrialized countries is 390 as against 6670 in developing countries and only 30% of births are attended by health personnel.
- The maternal mortality rate in developing countries is about 20 times higher than that in the developed world.



# Telemedicine and developing countries

- A big number of telemedicine projects are already implemented in developing countries.
- In most cases they are small by size and implemented with the support of different developed countries and international organizations.

# Telemedicine and developing countries

- Potential benefit of telemedicine is more visible in developing countries.
- However, it is quite common that in the same country there are several incompatible telemedicine solutions.



# Standards

- Under telemedicine, there is a wide range of technology and applications.
- This diversity poses a significant difficulty for the establishment of standards.





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# Standards

The Lack of standards has implications for:

- Telemedicine quality
- Safety
- Efficiency
- Privacy
- Investment
- Security



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## Standards

- o Many of the telemedicine projects are based on existing video-conferencing and desk-top computer systems, which were originally designed for purposes other than health care delivery.



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# Standards

- Although, system's individual components such as software, were designed for medical applications, the entire telemedicine system is not necessarily evaluated objectively for its ability to safely provide diagnostic information.



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# Standards

- o Does a cardiologist at an urban medical center, using an electronic stethoscope get the proper sound resolution to effectively make a proper diagnosis during a tele-consultation with a patient in a rural clinic?



## Telemedicine Report to US Congress - Standards

“The lack of technical, educational, and clinical standards, guidelines and protocols in telemedicine can affect the safety and efficacy of telemedicine provision and has been a handicap in developing cost-effective programs. Lack of technical standards can result in equipment that cannot communicate with one another or do not provide adequate images for clinical decision making.”



# Telemedicine and Telecare International Trade Fair

In close cooperation with private sector, ITU initiated Telemedicine and Telecare International Trade Fair.

We hope that this important exhibition will be organized every year.

The next event is scheduled for  
April 21-23, 2004

# Conclusions 1

- E-health is having and will continue to have a skyrocket growth in the near future.
- E-health solution is the fastest and the best cost-effective solution to fill the gap created by the lack of highly qualified experts in different fields of medicine in remote and rural areas.

## Conclusions 2

- Telemedicine holds great promise to improve the provision of health care to a wide range of patients, in particular in developing countries and in rural and remote areas.
- Telemedicine will be one of the main tools for trade in health care services.





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## Conclusion 3

- Based on successful cases, telemedicine has to be included in professional education programmes of medical schools in order to make it's use as natural as the use of telephones today.



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# Back-up slides

# WHO Annual Report

52 million of deaths

- o 17 mill - infection & parasitic diseases
- o 15 mill - circulatory diseases
- o 6 mill - cancer
- o 3 mill - respiratory diseases
- o 11 mill - others

Developing countries have 4-5 times more deaths than developed countries



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# Principles of health system

A health system is based on the principles of:

- Equity
- Efficiency
- Quality
- Affordability
- Sustainability
- Patient satisfaction

# Basic Healthcare Requirements

- o Quality of Service
- o Effective use of limited resources
- o Know-how sharing
- o Access to Medical/Healthcare information
- o Time management
- o Cost management



# Necessary infrastructure

- Electronic Medical Records
- Communication network and software
- Medical workstation
- Specialized Medical Equipment
- Telemedicine clinical guidelines

# Breast cancer

- Mammography is screening of woman's breast for early detection of tumors. Sometimes, it is necessary to have a second opinion, which is not easy to arrange.
- Telemedicine is the ideal solution for eliminating waste of time for diagnosis and the following treatment.



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## Breast cancer

- o The breast cancer life expectancy could be improved by 50 % thanks to the second opinion using E-health solutions.



# Failure of past telemedicine projects

- Expensive equipment and expensive operation and maintenance
- Poor image quality
- Wide band transmission had not been established
- Administrative and staff training issue



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# Role of Telemedicine in developing countries

The Symposium highlighted that Telemedicine can help to improve health care in 4 areas:

1. Administration - helping to execute the administrative tasks.
2. Reinforcing the infrastructure.
3. Education.
4. Quality and efficiency.



# Standards

The FCC Advisory Committee on Telecommunication and Health Care put a high priority on standard development saying:

“It is important that policies are in place to encourage interoperability among the various equipment providers...”



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