

Номер на договора: 2011 - ERA - IP - 3



Education and Culture DG

Lifelong Learning Programme



ЦЕНТЪР
ЗА РАЗВИТИЕ
НА ЧОВЕШКИТЕ
РЕСУРСИ

New Bulgarian University

**INTENSIVE PROGRAMME: SPECIAL ABILITIES AND
TALENTS - PATTERNS OF COGNITIVE PROCESSES
IN PEOPLE WITH DISABILITIES**



НОВ БЪЛГАРСКИ УНИВЕРСИТЕТ
NEW BULGARIAN UNIVERSITY

The role of telemedicine in assessment and therapy in developmental disorder

**Polina Mihova, PhD, Iliya Pendzhurov, PhD New
Bulgarian University, Sofia, Bulgaria**
pmihova@nbu.bg, penjurov@nbu.bg

Telemedicine

“A journey of a thousand miles begins with one step”

Definition

- Telemedicine is composed of the Greek word *τελε* (tele) meaning 'far', and medicine. Telemedicine usually means transmission of information followed immediately by medical care. Image acquisition, storage, display, processing, and transfer represent the basis of telemedicine
- Telemedicine is defined by the *Telemedicine Information Exchange* (1997) as *"the use of electronic signals to transfer medical data from one site to another via the Internet, Intranets, PCs, satellites, or videoconferencing telephone equipment in order to improve access to health care"*.
- In 1996 Jim Reid defined telemedicine in his book *"A Telemedicine Primer: Understanding the Issues"* as *"the use of advanced telecommunication technologies to health information exchange and health services delivery across geographical, time, social and cultural boundaries"*.
- According to the *Telemedicine Report to Congress* (1997), *"telemedicine can mean access to health care where little had been available before. In emergency cases, this access can mean the difference between life and death. In particular, in those cases where fast medical response time and specialty care are needed, telemedicine availability can be critical. For example, a specialist at a North Carolina University Hospital was able to diagnose a rural patient's hairline spinal fracture at a distance, using telemedicine video imaging. The patient's life was saved because treatment was done on-site without physically transporting the patient to the specialist who was located a great distance away"*.
- The report added, *"Telemedicine also has the potential to improve the delivery of health care in America by bringing a wider range of services such as radiology, mental health services, and dermatology to underserved communities and individuals in both urban and rural areas"*.
- In the near future telemedicine might thoroughly change the execution of medicine and how health care is organised. The government should on one hand change the rules so that new technologies can be usefully used, and even encouraged. On the other hand it must make sure that the changes would benefit the people and take measures to protect the population against possible problems.

What is Telemedicine

Telemedicine is the use of advanced technology to exchange health information (audio , visual , text)



and provide health care services (diagnosis, consultation, treatment, education) across geographic, time, social and cultural barriers

What is the aim of Telemedicine

A Telemedicine project is successful, when it achieves to

Save time



Save money



Improve the quality of healthcare



HOW TELEMEDICINE WORKS



LOS ANGELES

1. WEBCAM

A WEBCAM AND MICROPHONE CONNECTED TO THE COMPUTER ALLOWS YOUR DOCTOR TO SEE YOU ON THE OTHER SIDE. YOUR SESSION WORKS JUST LIKE A NORMAL DOCTOR VISIT.



2. INTERNET

A HIGH-SPEED INTERNET CONNECTION ALLOWS THE VIDEO SESSION TO OCCUR IN REAL TIME FROM YOUR COMPUTER.

3. FEATURES

TELEMEDICINE GIVES YOU THE ABILITY TO SECURELY UPLOAD A PICTURE OF YOUR PROBLEM AREA TO YOUR ONLINE PATIENT FILE. ONCE UPLOADED, THE DOCTOR CAN VIEW THE IMAGE FROM A COMPUTER.



CELL PHONE CAMERA



PHOTO



SAN FRANCISCO



4. EMR

A SECURE THIRD-PARTY ELECTRONIC MEDICAL RECORDS SYSTEM STORES YOUR INFORMATION AND ALL RELEVANT DATA COLLECTED FROM YOUR TELEMEDICINE SESSION. ALL APPOINTMENT SCHEDULING, PATIENT FILES AND BILLING ARE CONTROLLED HERE.

5. PRESCRIPTIONS

AFTER THE DOCTOR HAS EVALUATED YOU AND PROVIDED TREATMENT RECOMMENDATIONS, A PRESCRIPTION CAN BE ELECTRONICALLY SUBMITTED TO THE PHARMACY FOR ANY NECESSARY MEDICATION.



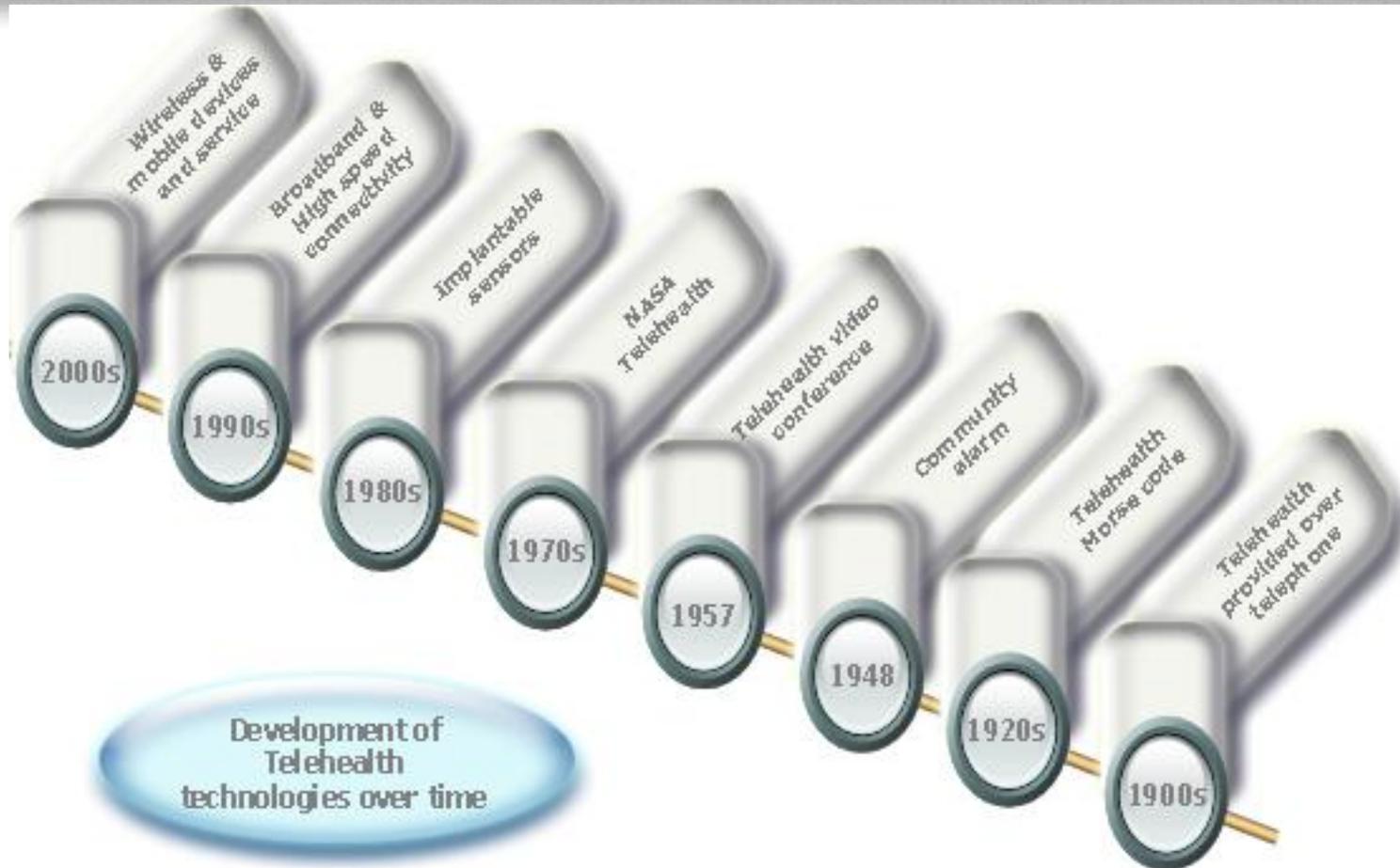
5



Timeline - since 1844

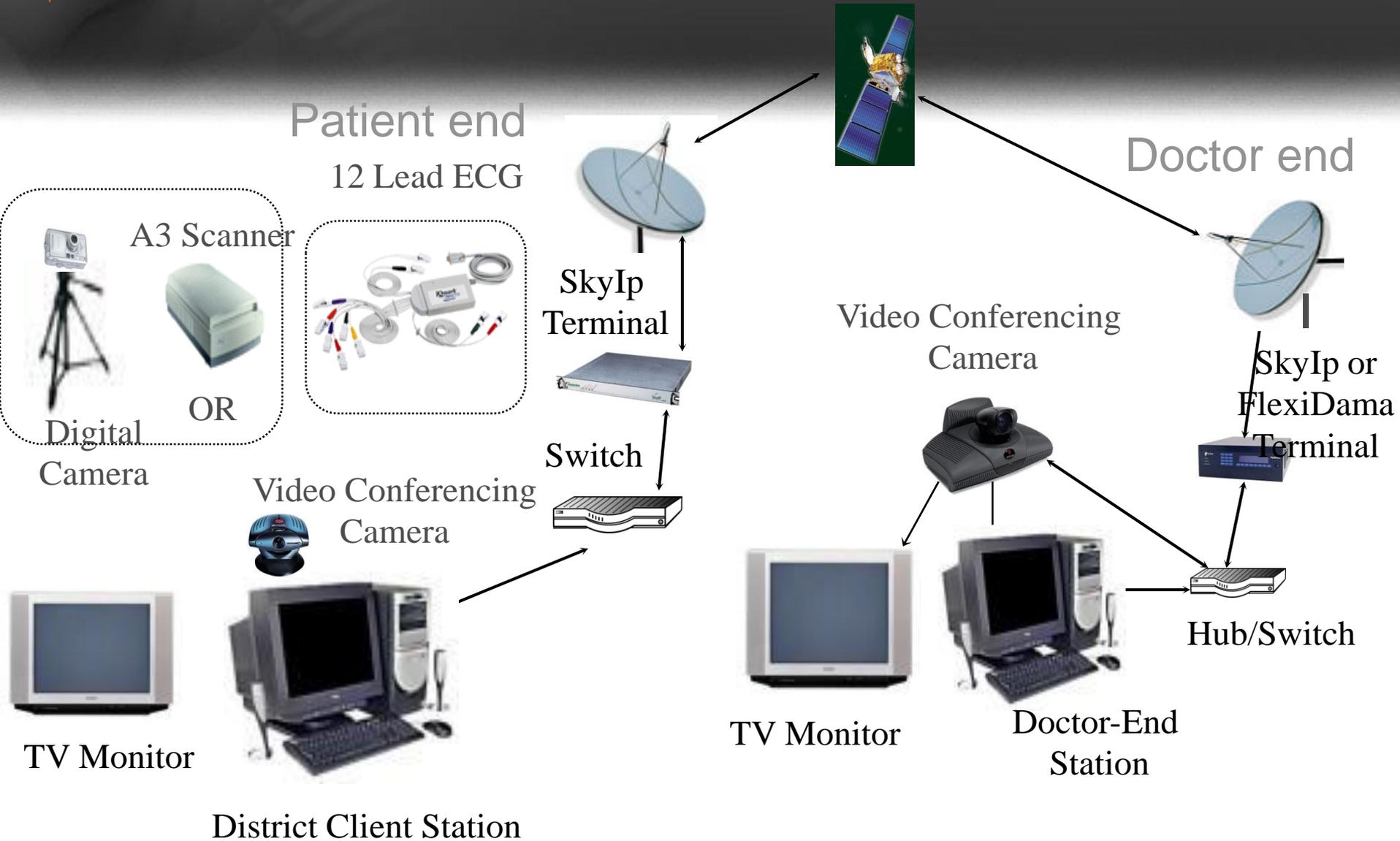
- Primitive forms of telemedicine have already been used hundreds of years ago. One example is the use of bells by lepers, to warn others to stay away from them. In the Middle Ages information about the bubonic plague was sent throughout Europe by bonfires. During those days some wealthy families even sent urine samples to their doctor for a diagnosis.
- First message sent in 1844 using the electric telegraph invented by Samuel Morse (1791-1872).

For details – see the paper Version of the Lecture “**The role of telemedicine in assessment and therapy in developmental disorder**”

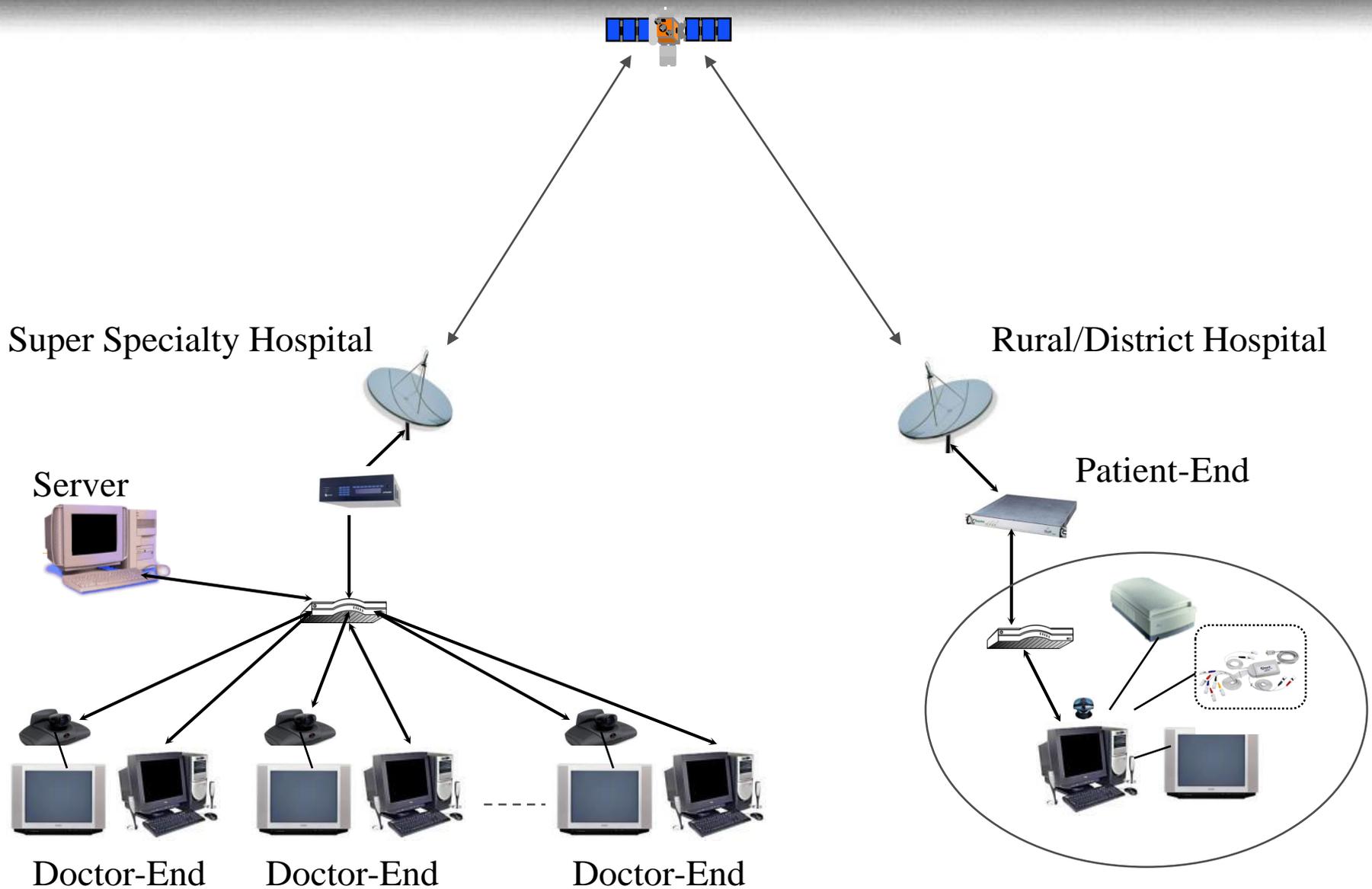


Source: Frost & Sullivan

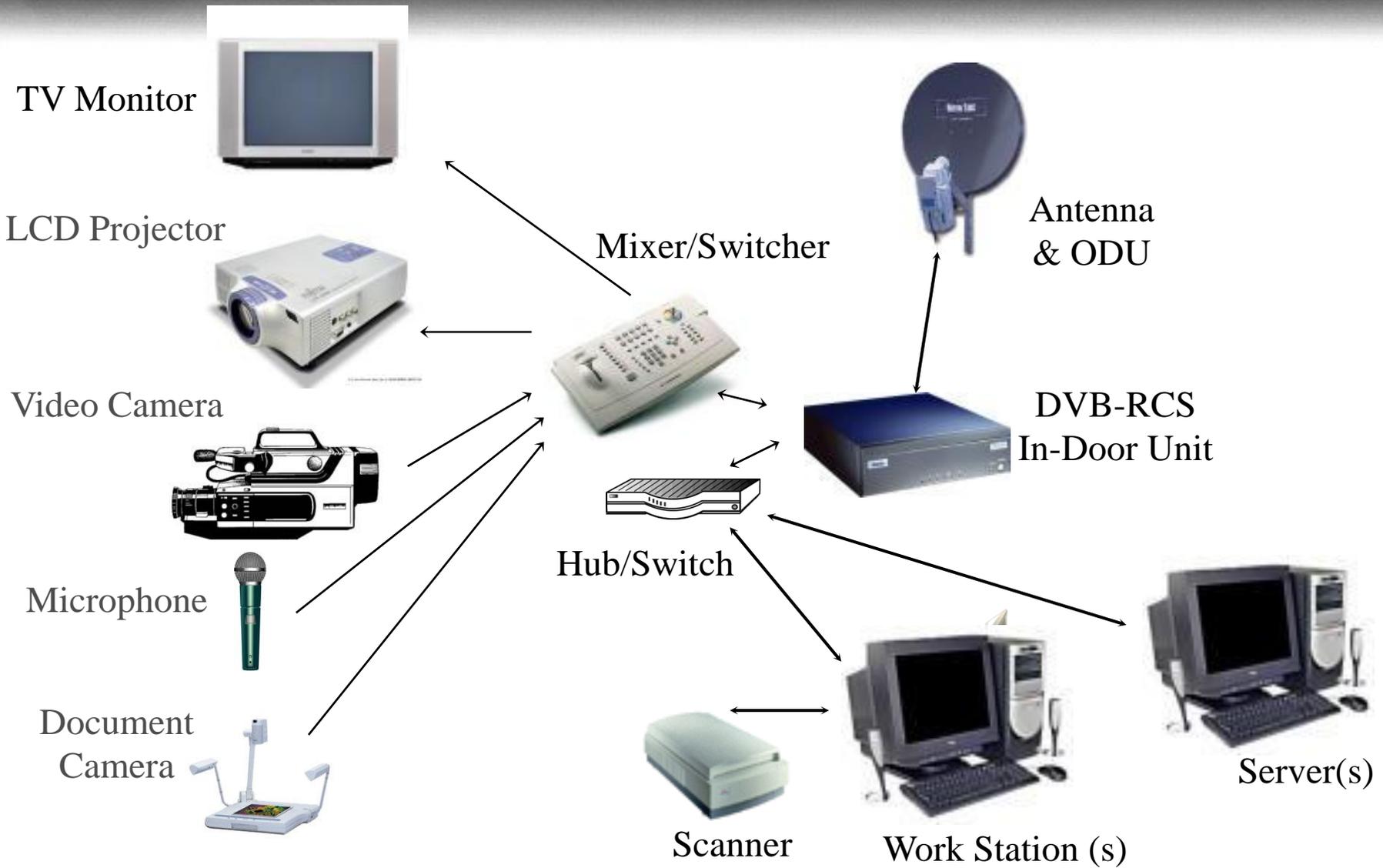
Model of Point to point System



Point-to-Multipoint System Configuration



Continuing Medical Education (CME) Configuration



Telemedicine and children`s health

- Telemedicine is used to screen, diagnose, treat, and monitor a wide range of pediatric health conditions from common childhood illnesses, such as strep throat and asthma, to conditions requiring specialty care in such fields as dermatology, endocrinology, emergency and critical care, neurology, gastroenterology, obesity, radiology, pathology, oral health, and psychiatry.
- Telemedicine and telehealth applications help providers and patients manage the patient`s health, reducing the need for more complex and costly hospital visits and health treatments later.

- For example, UC Davis Children's Hospital in Sacramento, California has used telemedicine to facilitate the availability of emergency and critical care consultations to a rural hospital in Northern California 24 hours a day, 7 days a week by installing telemedicine equipment at UC Davis' pediatric intensive care unit and in the homes of its pediatric critical care physicians.

Telemedical solution for children with disorders



Mother finds a
problem with her
child



She visits a
specialists for
a consultation



The
diagnosis



Personal assistant
contacts remote
site and requires
consult

Local
physician's
assistant
schedules time
& date for
consult

Inform
consultant
site about
new patient



Consultant
reviews
patient record

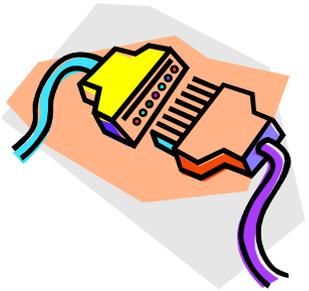


Consultant notifies
mother and
assists child



Videoconferencing
Introduction with
patient

- Clarifies details of
record with
physician

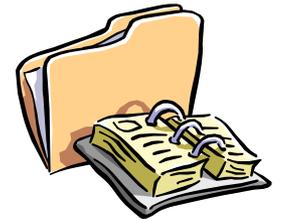


Consultation
ends

Consultant gives
orders
immediately

Consultant reviews
patient's electronic
record and sends
orders later

Diagnosis &
Treatment plan



a. Home monitoring



3 times daily :
exercises



Once a day :
fill in form with
difficulties and
complaints



If necessary:
Type in
questions or
request
teleconference
with consultant



Send data
through the
internet



Consultant's
assistant
reviews new
data on a daily
basis



Urgent

Notify Consultant
immediately

Not certain

Notify consultant
the same day

Normal

Consultant reviews data
once a week



Consultant
reviews new
data



Normal



Assistant sends email once a week for reassessment

Pathological

Urgent

Call patient, give order for hospitalization



Adjustments needed

Send instructions over internet



Notify local physician

Notify patient

Physician's assistant schedules appointment with patient and notifies consultant's assistant



Answers patient's questions, if asked for, schedules teleconference appointment



c. Visit to Local practice



Patient arrives at remote site

➤ Every 3 weeks

➤ On Consultant's request



Physician

Reviews patient record

Examines patient

Enters new data into record

Assistant

Notifies consultant site

Turns on videoconferencing equipment

Sets up linkage



When ready, assistant notifies consultant site

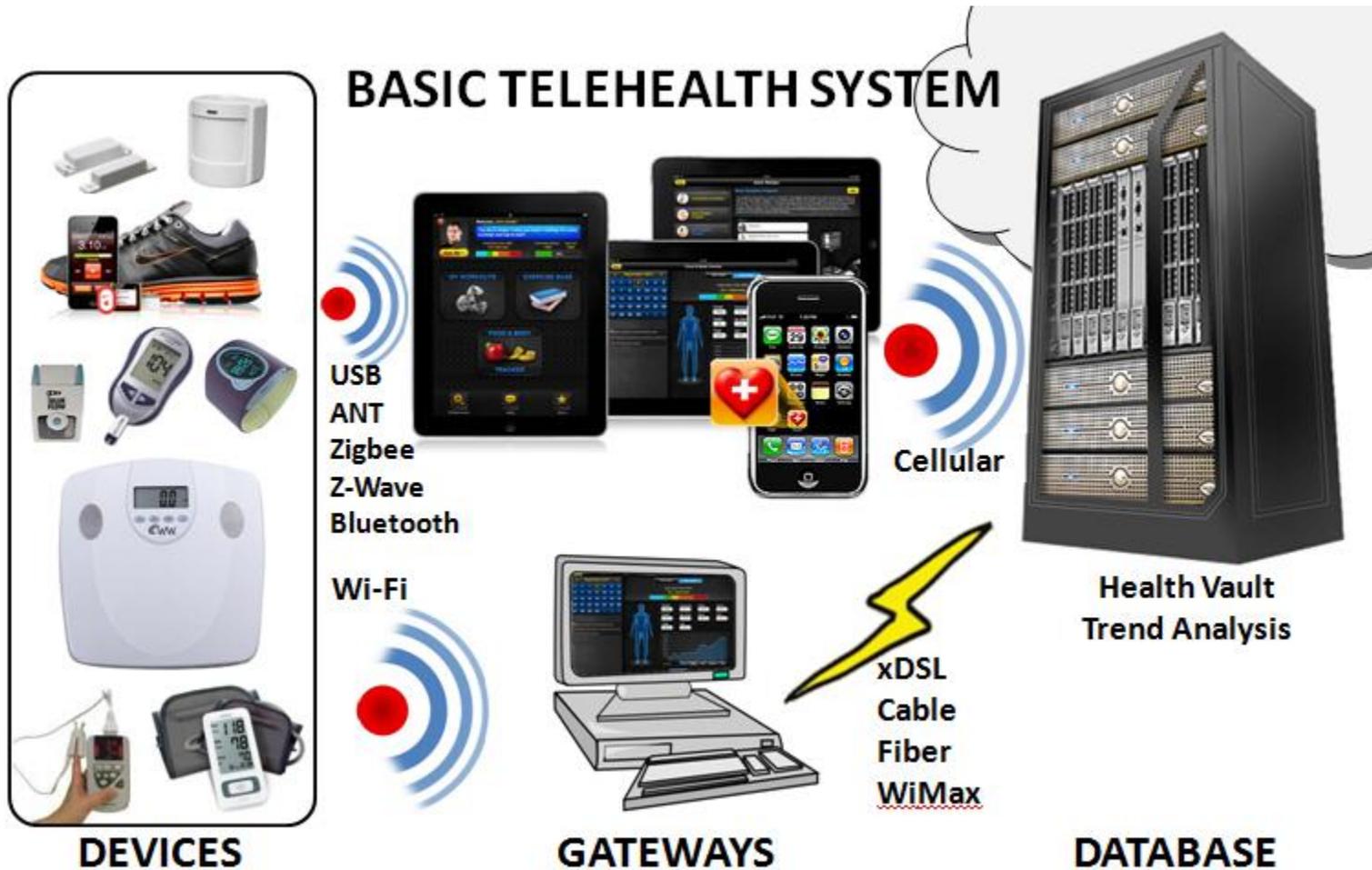
Other applications

- *Emergency and Critical Care.*
- *Oral Health*
- *Children and Youth with Special Health Care Needs*
- *Vision Screening*
- *Mental Health*
- *Telepharmacy*
- *Children with Special Health Care Needs*
- *Home Health Care*
- *Child Abuse Evaluations*
- *Educating Families*
- *Supporting Families*
- *Disease Management*
- *Language Translation*
- *Supporting Rural Providers and Providing Medical Education*
- *Caring for Children Where They Are Located*

Good practice example

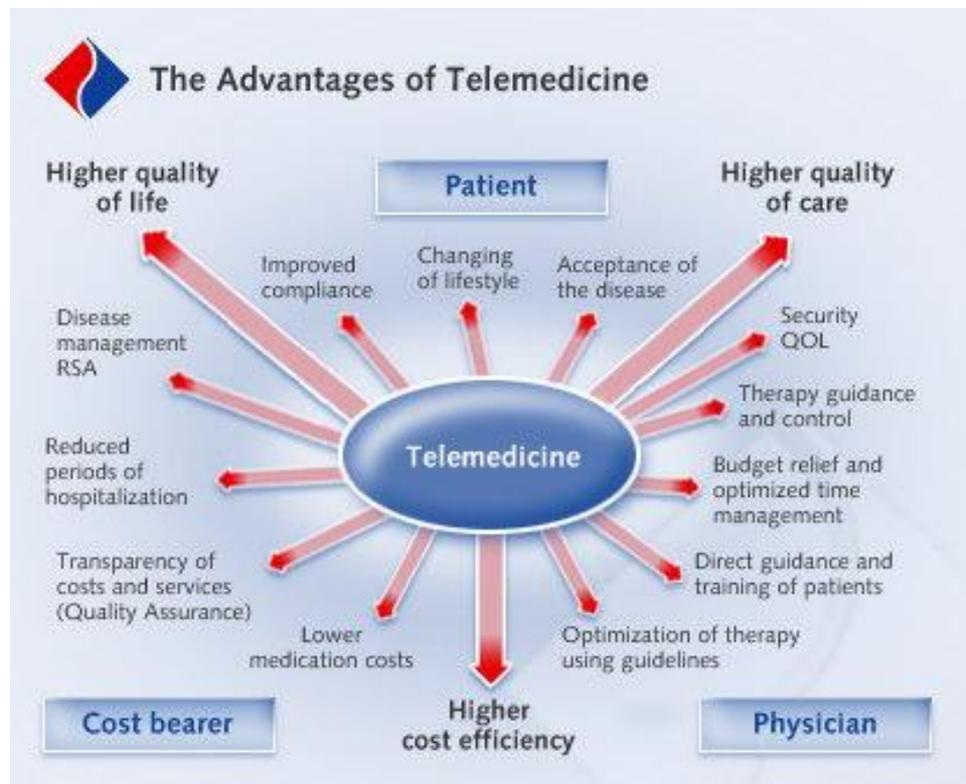
- Kern Regional Center uses telemedicine to connect children with developmental disabilities in Kern, Inyo and Mono Counties—very remote areas in California—to pediatric psychiatrists, neurologists, and other sub specialists at major medical centers throughout the state. Through approximately 2,000 telemedicine consults a year, Kern Regional Center has helped children get the care they need while reducing their absences from school and their parents' absences from work. Kern Regional Center has also used telemedicine to coordinate children's care by simultaneously connecting the members of a child's care management team, such as the pediatrician, teacher, sub specialist, and the regional center staff.

One basic telehealth system



The benefits of telemedicine

- Improved access to healthcare, e.g., obtaining second opinions;
- Improved continuity of care;
- Improved patient education, and timely treatment;
- Continuous monitoring of chronically ill patients;
- Reduced travel time for physicians, other healthcare providers, and patients;
- Better access for patients in underserved areas;
- Improved access to medical records and information,
- Promoting self-help by increasing the online availability of medical information;
- Knowledge-based self-diagnosis programs;
- Distance learning programs; and medical research data/information;
- Improved continuing medical education.



Telemedical potential risks

- collected and transmitted information may not be sufficient to allow appropriate medical decision making by the physician and consultant(s);
- medical, technical or other limitations in obtaining, processing, presenting and/or understanding patient data may result in inappropriate decisions);
- delayed evaluation of patient's condition due to failures or deficiencies of equipment may influence the quality of telemedical service;
- prearranged consultants' time schedules and availability may influence time-to-response and decision making;
- patient's condition may vary in time necessary for teleconsultation and relevant (tele)medical procedures;
- in rare instances, telemedical practice algorithms, security protocols and integrity of medical data could be affected or damaged by changes in services,
- in rare cases, lack of access to complete medical records.

Before	After
<i>Transfer to the hospital</i>	<i>Instant consultation</i>
<i>Only one expert</i>	<i>More experts</i>
<i>Paper archive</i>	<i>Digital Data base+ Paper archive</i>
<i>Lost in transferring papers</i>	<i>Digital record at 2 places</i>
<i>More expenses for patients/relatives</i>	<i>Least expenses for patients/relatives</i>
<i>Multitude visits</i>	<i>Reduction of visits</i>
<i>Experts time expenses</i>	<i>Only when necessary</i>
<i>Healthcare in hospital</i>	<i>Healthcare at home</i>
<i>Isolation of experts</i>	<i>Improvement of relationships in professional sphere</i>
<i>Expenses of the hospital for:</i>	<i>Only when necessary</i>
<i>- specialists</i>	<i>Only when necessary</i>
<i>- transfers and ambulances</i>	<i>Only when necessary</i>
<i>- time</i>	<i>Only when necessary</i>
<i>- technology</i>	<i>Single but with permanent reimbursement</i>
<i>Lost of time for the patients</i>	<i>Only when necessary</i>
<i>Limited disease prevention</i>	<i>Unlimited</i>
<i>Patients access to specialists to the local place</i>	<i>Patients access to specialists to a national level</i>
<i>Need for personal direct contact with a specialist from national level</i>	<i>Immediate distant consultation</i>
<i>Limited free time for experts</i>	<i>Augmentation of creative work</i>

Standard medical practice		Telemedicine	
Pros	Cons	Pros	Cons
traditions of medical work - it changes with years and it is the main component of work methodics		simultaneous work of more organizations	equipment expencies
Tested through its development fixed and routine		standard simple process	knowledge for electronic data bases and PC literacy
The paper doesn` t require technologies	information lost	improvement of health services	new public way of work
face-to-face contact	financial and time expencies for patients family	care at any time, any point, anywhere, to anybody	problems with conviniece and reliability
Subjectice	mistakes	transfer of various data and examination results	acceptance from the personal to work with the system
Legislation and law have the evidence power and validates the doctor in front of every administrative and accounting issue	speculation with information	different diagnostic schemes and methods at the same time	requirements for more competencies in the specialty
Personal written responsibility - official documentation	time delay	consultations with more than one specialist	competiveness
Ancient rituals in communication with patient	old archives	homecare 24 hours	pressure of work
		long life and home education	who fixes the prices
		interaction human-PC	PC education
		objective opinions	ethical issues
		reduce professional isolation	political will
		reducement of permannet travelling and incresement of professional satisfaction	INSTITUTIONAL will
		ensuring the best specialists	cautiosness from patients
		new standards of work - faster, precise and cheaper	lack of legal issues
		team work principles	

Thank You for attention!

Q & A



**Everyone's Unique
&
Th-Th-That's Good Folks!**

