Telemedicine

Telemedicine is part of eHealth (electronic healthcare) and refers to the provision of medical services over long distances. Therefore, the synonym distance medicine is sometimes used. The World Health Organization defines telemedicine as an umbrella term for health activities, services and systems operated at a distance through information and communication technologies to promote global health, prevention and health care, as well as education, health management and health research.

The use of telemedicine in individual medical fields has common elements. Remote clinical care helps eliminate barriers and improves access to health services. It can thus be advantageously used in emergency and intensive care, as well as in the care of chronic patients. According to the way information is transmitted, telemedicine can be divided into four areas:

1. transfer of information;
2. remote monitoring;
3. distance therapy;
4. telemedicine education

Telemedicine transmission

Transfer of information

Asynchronous communication with transfer prevails , referred to in English as *store-and-forward* , i.e. store and forward, which is cheaper (e.g. email communication) and technically the easiest concept to implement. First the data is recorded and only then it is sent. The primitive form of such a predecessor of telemedicine was, for example, actually sending findings by post for consultation with a specialist. In connection with the boom of the Internet, this area experienced a stormy development. Electronic services make it possible to transfer image data very quickly and flexibly to remote locations, e.g. in the following fields

- teleradiology – transmission of radiodiagnostic images;
- humanitarian telemedicine and traumatology – transfer of images and videos of serious injuries for consultation;
- telepathology – transmission of histopathological images.

A big advantage of the rapid sharing of information is the easy availability of consultation with an expert who can solve difficult and unclear cases.

Synchronous consultations in real time are so organizationally and financially demanding that they are rarely used in the actual transfer of information.

In connection with the need to transfer and store a large amount of data (PACS – Picture Archiving and Communication System), a format and data frame for the transfer of DICOM biomedical images was developed .

Remote monitoring

Remote monitoring more often uses ***synchronous communication,*** when the measured data is evaluated in real time. The evaluation can be carried out by an expert, for example in the case of monitoring the state of health of a top athlete during performance. It is also possible to connect to a computer (or computer program – expert system) capable of capturing a risk pattern and, in the event of its capture, summon an expert and thus take care of an urgent solution to the situation. An example of such a concept is the attempt to combine a pacemaker with online heart action monitoring.

Distance therapy

Remote therapy is the most technically demanding concept of telemedicine. The essence is that the doctor and the patient are geographically distant from each other, and diagnostic and therapeutic procedures are mediated exclusively by technical means.

One of the possible applications is the contact of people living in remote areas with a doctor in case of relatively banal complications. The most well-known to the public is remote therapy with surgical robots, so-called remote surgery (telesurgery) or the currently developing telerehabilitation (i.e. rehabilitation services provided via telecommunications networks and the Internet), in which the intensity of the therapy is increased for the patient and the therapist's work is made easier at the same time , which can provide care to multiple clients at the same time. However, telemedicine therapy is also applied in psychiatry, remote rehabilitation (virtual reality), obesity, medical assistive technologies, etc.

Telemedicine e-learning

An intelligent data and communication environment is used, for example, to provide qualified support to workers in the healthcare sector and in the state administration. Telemedicine makes it possible to apply audio-visual interactive systems intended for the education of doctors and health professionals. There are a number of international and transcontinental educational telemedicine networks, e.g. Euro-African virtual education in the field of medicine, etc.

The field of telemedicine has been developing rapidly in the Czech Republic in recent years, and a number of new useful telemedicine projects have been developed.

Links

Related articles

- PACS
- DICOM
- Home blood pressure monitoring
- telerehabilitation
- Telemedicine projects in the Czech Republic

External links

- w:cs: Telemedicine on the Czech Wikipedia
- w:en: Telehealth at the English-language Wikipedia
- Seriál Zdravotnické noviny: eHealth a telemedicína (https://web.archive.org/web/20160331222721/http://zdravi.e15.cz/denni-zpravy/komentare/ehealth-a-telemedicina-2-dil-470656)
- Teleradiology (https://web.archive.org/web/20160331222721/http://zdravi.e15.cz/clanek/mlada-fronta-zdravotnicke-noviny-zdn/ehealth-a-telemedicina-teleradiologie-18-dil-473917) from the Health and Medicine cycle
- American Telemedicine Association (http://www.americantelemed.org/home)
- Telemedicína Brno.cz (http://www.telemedicina-brno.info/)
- Zdravotnické noviny series: Telemedicine (http://www.ceskatelevize.cz/porady/1095946610-diagnoza/206-telemedicina/)
- Přehled telemedicínských oborů (http://www.streda.cz/lekarska-fakulta-uk/ehealth-a-telemedicina-zdravotnictvi-medicina)

Source

- STŘEDA, Leoš, Doc. MUDr., Ph.D., PANÝREK Petr Ing. *eHealth a telemedicína*. 1. vyd. Praha: High Tech Park, 2011. 37 s. ISBN 978-80-254-9508-7 (http://toc.nkp.cz/NKC/201106/contents/nkc20112176912_1.pdf)
- ZIMA, Tomáš, Prof. MUDr. DrSc. MBA. *eHealth a telemedicína - úvod* [online]. Praha: 1. lékařská fakulta UK. 2013- [cit. 2015-02-01]. Dostupné z: https://web.archive.org/web/20160331222721/http://zdravi.e15.cz/clanek/mlada-fronta-zdravotnicke-noviny-zdn/ehealth-a-telemedicina-uvod-470440