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# Telemedicine and Oncology

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Combining the healthcare with modern communication and computer technologies emerges as a discipline of telemedicine that provides for such exotic applications as monitoring a patient over the distance of thousand kilometers, consultations of physicians that have never met, and accessing unimaginable volumes of health related information over the world wide web. Telemedicine has becoming a tool to improve access to and practice of health while maintaining quality and reducing cost.

The US Institute of Medicine defines the telemedicine as the use of electronic information and communications technologies to provide and support health care when distance separates the participants, [1]. It is the hope of the researchers and practitioners, that telemedicine will not only improve health care in rural and remote areas, but also improve the quality of health care, extend the way medical care is provided, and reduce health related expenses. The motivation for telemedicine is to make medical specialists and highly sophisticated and expensive medical equipment, located in the areas of concentrated population, available to the remote patients and health care professionals.

One of the first references to telemedicine appeared in an article describing the transmission of radiological images by telephone in Philadelphia, USA, in 1948, [1]. Since then, a variety of technologies and applications have been reported, ranging from patient care to education to research to administration. Examples include as simple applications as the use of telephone for consultations, but also complex telemedicine systems with applications in telesurgery. The distance involved can be as small as across a building or campus, but also across a country, and even across the globe.

Broadly speaking, the telemedicine encompasses both clinical and non-clinical applications. Non-clinical applications, such as medical education, administration, management, and dissemination of the health related content over the www, address no specific patient. On the other side, clinical telemedicine relates to the patient care and includes the processes such as teleconferencing, teleconsultation, telediagnosis, and telemonitoring, as well as specialty applications including teleradiology, telecardiology, telepsychiatry, teledermatology, and teleoncology.

Being a complex diagnostic and therapeutic discipline, oncology

is destined to practice a variety of telemedical applications. Teleoncology deals with delivering of oncology related services when there is a distance between the participants involved in the health care. For example, a teleoncology project in Kansas, USA, provides rural areas with oncology services such as patient evaluation, second opinion consults, and comprehensive supportive care of cancer patients including follow-up visits, pain management, interactive support groups, and patient education, [2]. Each teleoncology site uses a TV monitor, cameras, and a special electronic stethoscope to transmit patients' breath and cardiac sounds. The oncology professionals at the member hospitals of the Jefferson Cancer Network use telemedicine to consult on the diagnosis and management of cancer patients, [6]. The communication infrastructure is used to transfer the patient data, reports, radiographs, and pathology images.

Oncology is special in that the post-therapeutic procedures and palliative care aimed at improving the quality of life of the oncology patients take a long time, require trained personnel, and close interaction between the health care professionals and patients. An innovative approach to post-therapeutic care is based on interactive health communication, that is defined as the interaction of patients and/or professionals with or through an electronic device or communication technology to access or transmit health information, or to receive or provide guidance and support on a health related issue, [4]. The expectations are high that interactive health communications will enhance quality of life, minimize the burden of the oncology disease, and improve the relationships between the oncology patients and professionals, [5]. Another benefit for cancer specialists is the development of cancer expert systems that apply the vast amounts of cancer related expertise to the oncology problem solving process.

There are numerous reports on the use of the Internet services to help both professionals and patients to meet their needs for timely, critical, and high quality information on cancer disease. For example, the clinicians use the Internet to consult with oncology specialists, by sending the radiological images together with other diagnostic data in a form of images, tables, and graphs. The oncology patients already use the Internet to access health-related information and interact with oncology providers. There are many oncology websites with on-line databases, services, and publications on the Internet.

University of Western Ontario, Canada, helps breast cancer patients use the Internet to efficiently and almost effortlessly gain important information on their disease. A cancer center in Scotland is linked with rural district general hospitals for the pur-

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pose of complementing the outpatient services, providing oncological advices, and teleconsultations, [3].

The Institute of Oncology in Sremska Kamenica provides highly specialized oncology care to the entire population of the province of Vojvodina, scattered across the rural and urban areas. The Institute has initiated the telemedicine practice in radiology and laparoscopic procedures by transferring the images and using of remote video, respectively. The plans for future developments will offer an exciting new way to practicing oncology medicine over the region, by providing high quality and efficient oncology care to remote patients, on-the-spot triage of emergency patients and continuum of oncology services including remote post surgical monitoring, follow-up visits, assessment, pain management, and radiology consultations, and on-line help services.

Management and information technology professionals associated with the Institute initiated and pioneered the work on telemedicine in Vojvodina and Yugoslavia and provided initial momentum for the telemedicine practice and research, including this special meeting at the Academy of Studenica devoted to the telemedicine. I thank both the management and information technology personnel of the Institute of Oncology for their effort to make the Telemedicine meeting a reality.

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