

Global Future of Telemedicine over Satellite

G. Grasclew, T.A. Roelofs, S. Rakowsky, P. M. Schlag

*Surgical Research Unit OP 2000, Max-Delbrueck-Centrum for Molecular Medicine and
Robert-Roessle-Clinic, University Hospital Charité, University Medicine Berlin,
Lindenberger Weg 80, 13125 Berlin, Germany*

Phone: +49-30-9417-1630, Fax: +49-30-9406-3405, email: grasclew@mdc-berlin.de

In the current planning of the European Space Agency for the next years a vision of telemedicine has been defined because the future of telemedicine and eHealth is definitely satellite-based. Envisioned is a global satellite system (GHOS – Global Health over Satellite) with tools and services for health authorities and professionals as well as a personalized health system for patients and citizens. This system should address the demands of reliable high Quality of Service as a necessary condition, open standard solutions for interoperability with various information systems (e.g. HIS) and gateways to other satellite-based and terrestrial communication networks. Combination of satellite-based communication with remote control of various diagnostic modules is a powerful tool in cases of disaster emergencies where it can support the staff in a mobile field hospital and as part of an early warning system in endangered regions enhancing tediagnosis in centres equipped with sensory and communication systems. Current concepts of healthcare provision move more and more from patient care and disease management towards prophylactic services for healthy citizens which will be offered by telemedicine and eHealth systems. Increased emphasis must be put on mental, intellectual and educational e-services to preserve also physical health.

Problems to be solved are intelligent data mining tools and personal health monitoring systems. Collection of data is in itself insufficient to come to evidence-based medicine. Efforts in the field of bioinformatics need to result in new systems and architectures not only for data storage and archiving but also for intelligent data mining. Also the implementation of dedicated GRID technologies will become inevitable to allow for effective utilization of computing resources. Personal health monitoring in homecare is increasingly enabled by the use of modular systems containing various sensory elements capturing a set of vital parameters integrated with communication elements. Future integration of intelligent miniaturized acting modules is mandatory in order to not only know all about a person's condition but also to be able to improve his condition.

For successful uptake of telemedicine and eHealth services awareness of all end-users is crucial which can be raised by building international competence networks. Following effective creation of awareness elimination of language barriers, adequate legal basis and a catalogue of standardized services (Quality of Service, Class of Service) including prices will be crucial for consolidation of the demand. The GHOS system will connect a variety of subsystems (hospitals, ships, aircrafts, space ships, centres for first diagnosis, curative and prophylactic tourism centres, etc.) to allow a broad spectrum of services for a variety of situations.