Project RATEMA - one year’s experience
(Radiation Accident Telecommunication Medical Assistance System)

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Project Background
Since 1949 a large part of the South Ural population has been exposed to radiation due to 3 major accidents.
The Techa river population - in focus of RATEMA - is unique because there exists no other place in the world where residents (not workers) were exposed to a combined chronic external and internal irradiation over several years. This exposure resulted in health impairments - developing over 4 decades - involving several organ systems.

Project Aims
- Scientific analysis of pathophysiology of the ‘chronic radiation sickness’ (CRS)
- Improvement of medical care of radiation exposed persons
- Standardisation of diagnostic and therapeutic methods
- Evaluation and utilisation of multimedia patient data for further training of physicians in radiation medicine

Project Operationalisation
A direct satellite link (EUTELSAT II F4) between the University of Ulm and the URCRM in Chelyabinsk was used for media-conferences with 384 kb/s.
In 1998 15 hours satellite communication each month were used for medical and technical discussions.

Medical topics:
- Presenting live patients with acute health problems
- Discussing patient data of scientific interest
- Intensive use of microscopical images for diagnostic purposes
- Storage of all relevant patient information in the RATEMA multimedia record database (developed with ORACLE database management system)

Technical topics:
- Data exchange with 384 kb/s
- Data exchange with 64 kb/s parallel to the videoconference

Technical Evaluation
- Most of the conferences were performed without any technical problems
- Video quality with 384 kb/s was sufficient for the justisation of microscopical images and live video of e.g. patient’s skin. The good audio quality was essential for communication
- Digitising the different material (microscopical images, x-rays, ECG charts, video clips,...) and preparing it for insertion into the database was very time consuming
- In comparison to desktop videoconferencing systems the studio equipment with large display monitors allowed active discussions between all participants (several physicians on both sides) in a more realistic conference situation. Reactions and emotions could be felt as though the two parties were not in fact separated by a distance of about 4,000 km

Summary
- RATEMA involved co-operation between several medical disciplines (internal medicine, dermatology, radiology, pathology, etc.) in two different medical and hospital settings and traditions
- Telemedicine was at the beginning of the project - on both sides - not a routine procedure. From conference to conference these developed an increasing professionality in discussion of health consequences of radiation exposed patients
- It was decided to use English as the project language – the necessary translation between English and Russian was done by a URCRM team member in a highly professional manner.
- The experience that was gained in an international team with many different professions (medical and technical) is of great value for the planning of new projects with comparable tasks.

We thank the following for support: DeTellBerkom, 1994-1996 (project no 2081 of the Berkom Programme), The State Government of Baden-Württemberg and Deutsche Telekom, 1997-1998 (Initiative ‘Baden-Württemberg med®’, project no. 16), State Ministry of Health, Russian Federation 1994-1998
Project homepage: http://lomi.e-technik.uni-ulm.de