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Medizinische Applikationen via Satellit in MEDASHIP und EMISPHER

Medical Applications over Satellite in MEDASHIP and EMISPHER

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Background and Aims

An increasing number of medical cases on-board of ships requires specialized medical knowledge. Normally the physician on-board has to decide in short time and in sole responsibility if e.g. the abdominal pain of a patient has an uncomplicated origin or is a serious illness. The limited medical equipment on-board and the limited possibility of discussions with colleagues normally only via radio make the decision difficult.
New developments in information and communication technologies (ICT) have enabled the transmission of medical images in sufficiently high quality to allow for a remote diagnosis. However, these explosive developments in ICT bear the risk of creating and amplifying a digital divide in the world. A solution to these problems has been developed with the WinVicos / WoTeSa system.

Materials and Methods

Tele-consultation and second opinion are supported by the high-end interactive video communication system WinVicos (Wavelet-based interactive Video communication system) which is operated on WoTeSa (Workstation for Telemedical applications via Satellite), a PC with standard hardware components (e.g. Osprey video capture boards) for direct connection of different medical equipment. For the telemedical communication satellite-based technology is used as satellite communication offers the required broad geographic coverage, high transmission capacity, mesh topology, etc.

Results and Discussion

The MEDASHIP (Medical Assistance for Ships, 2002-2003, co-funded by EU) project makes available a telemedical service (tele-consultation, tele-sonography, tele-cardiology) on-board of cruise ships and ferries improving the medical care of passengers and crew members.
The telemedical service was tested on three ships with the possibility to connect to three land-based hospitals. It shows that live ultrasound examinations can be transmitted at a bandwidth of 500-700 kbps. Thus an expert in a land-based hospital can be online involved in the examination and give a second opinion. A future development will be a master-slave tele-sonography system allowing the remote expert also to actually perform the investigation.
The EMISPHER (Euro-Mediterranean Internet-Satellite Platform for Health, medical Education and Research, 2002-2004, co-funded by EU) project aims at avoiding a digital divide by establishing an equal access for most of the countries of the Euro-Mediterranean area to real-time services for healthcare. Services that are offered are a Virtual Medical University, real-time telemedicine and medical assistance.