

Poster Presentations

The development of a software package for the automation of the Serology Laboratory

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A database application was developed for the special and particular needs of the laboratory. An electronic record is opened for each sample coming to the laboratory where all available information, from the clinic concerning the patient, the sample and the serological tests required, are recorded automatically or manually.

The results of the serological tests, performed for each sample, are entered in the electronic record of the patient. The ELISA tests are carried out using a fully automatic analyzer and the results of the tests, when obtained, are entered automatically by the analyzer to the electronic record of the patient. A search of a sample provides a list of patients with the matching criteria and the list of tests requested for each sample with the results obtained. An evaluation of the results, of the serological tests performed for the patient, is made and the diagnostic value of these results is written with the help of the program and is sent to the clinic electronically.

A statistical program has been developed, for the analysis of the results obtained by the Laboratory so they can be used in surveillance programs.

Evaluation of a tele-oncology service for rural hospitals

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A web-based telemedicine system was established in the Province of Trento (Italy) to provide rural hospitals with a telemedicine consultation service to support treatment plans and follow-up session for cancer patients. The system is based on a multimedia digital oncology patient record available throughout the network via a dedicated Web browser. Embedded applications are integrated to discuss the cases and to share clinical information in "virtual oncology meetings".

To evaluate the impact of the telemedicine system, a questionnaire was distributed to all health professionals involved in the project (26 clinicians, 31 nurses). The questionnaire, based on open and closed response questions, investigates the use of the system, users' attitudes towards the digital clinical record and teleconsultation, personal benefits perceived from the system, major problems encountered during the experimentation, system future use expectation, etc.

The quantitative and qualitative results reveal benefits in communication and information sharing and point out mainly organizational limits rather than usage or technical performances.

Tele-dermatology service based on an Integrated Electronic Patient Record (IEPR): Preliminary results

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We present the preliminary results of a tele-dermatology study that has been conducted in the Province of Trento (Italy) during the last year as a subtopic of a larger project on Tele-medicine in Oncology. Aim of the study was to evaluate the feasibility of a tele-dermatology service using a web-based Electronic Patient Record, integrated with communication services (IEPR)

The dermatologists involved in this study use the IEPR to collect information about pigmented skin lesions (PSL) and to acquire the digital images. Integrated communication services are used to share clinical information in two modalities: a synchronous mode, where different health care professionals in different hospitals can interact, discussing multimedia medical data in real time, and an asynchronous mode, where users can exchange clinical information by means of an integrated messaging tool. The latter one has been preferred because of its minor impact with respect to current practice.

We present the accuracy, the sensitivity and the specificity of the “digital diagnosis” with respect to the “live diagnosis” as an evaluation of a tele-dermatology service.

Effects of a major earthquake on phone calls to a psychiatric emergency help line

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Telephone crisis lines are increasingly providing a much needed service in the community. Crisis help lines in Greece exist since 1987 [1]. Currently an emergency psychiatric help line was established in Athens by the psychiatric clinic of the University of Athens based at Eginition Hospital. The crisis intervention telephone unit is a special interest line and covers a broad spectrum of psychiatric problems that can lead a person to a situation of crisis [2]. It is staffed by psychiatrist and psychiatric residents specially trained for crisis intervention.

The aim of the present study was to evaluate retrospectively the effect on calls, of the catastrophic earthquake that hit the city of Athens on September 7th 1999. The psychosocial consequences of the catastrophic earthquake including three phases, the early phase of the immediate post-catastrophic period, 3-10 days after the earthquake, the intermediate phase one month later and the post catastrophic period six months after the event [3].

The callers were assessed by a semistructured psychiatric interview. The descriptive characteristics of 189 callers seeking help by phone, in the immediate post-catastrophic period are the following: female 104 (55%), 140 (80%) young between 20 and 40 years old, 140 (80%) living with others. Calls from Athens increased in the next 5-10 days with 85% of calls between 5th and 15th day.

Comparison of calls seeking help for the psychological distress due to the earthquake and usual calls respect to social parameters and reasons of calling revealed the following differential characteristics: 92 (50%) calls was directly related to the earthquake with feelings of anxiety, fear of dying and sense of

threat, 25 (14%) calls were related to information for psychotropic medications from persons with history of anxiety disorders in order to reduce the psychological distress due to the earthquake

More callers were female 76%, 63% young up to 25 year old and 71% married . The usual caller was male, living alone, with psychotic symptoms 20 (11%). Our results have shown a significant increased of calls during the early phase of the immediate post-catastrophic period, 3-10 days after the disastrous event with intense feelings of anxiety, fear of dying and sense of threat.

Furthermore telephone listening services or special interest lines such as emergency psychiatric help line play an essential role in the crisis intervention to major disasters and this role may be reflective of the community acceptance of telecommunications in providing telehealth services.

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Availability of mental tele-healthcare in Greece: Prospects for the use of new technologies in everyday practice

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The Emergency Psychiatric Helpline of Athens cover the entire spectrum of psychological and emotional problems that could lead a person to a situation of crisis [1]. Nowadays, in Greece units of special interest provide help in situations related to AIDS, drug abuse etc . The development of new technologies promises to enhance access to healthcare for remote disadvantaged communities, since all citizens have equal rights to benefits pertaining to the healthcare system. Some successful, low cost telemedicine systems experiences in Greece. These efforts are mainly in Tele-cardiology, as well as on distant training in telemedicine through an Open Distance Learning System. ODLs was developed in terms of a Leonardo da Vinci project, which resulted in the creation of an initial training specialization, recognized by the Greek Government [2].

As far as Psychiatry is concerned little has been accomplished for the insular regions of the country. Data concerning the prefecture of Cyclades is available. Nineteen islands with a population of 110.000 people are serviced 3 psychiatrists, all occupied at the general hospital, on the island of Syros. The health center of the island of Andros reported that covering a population of about 10.000 people, mounting to about 20.000 during the summer months, and provide basic psychiatric follow up to about 60 outpatients every month. The medical staffs of the healthcenter deal with about 10 patients with acute or chronic psychopathological manifestations every month (3 to 4 patients with psychosis, 2 to 3 with depression and others with problems related to substance abuse, acute stress manifestations and dementia) and an equal number of patients are admitted in psychiatric hospitals in Athens for specialized psychiatric help.

For the past year Eginition Hospital has been providing, to the general population, an Emergency Telephone Helpline (METB). The main objective of METB is to provide immediate psychiatric consultation to people in need, routing them to proper psychiatric services or alleviating feelings of sorrow, loneliness or anxiety. The use of low cost technology as the telephone line has gained community acceptance. Currently there is a project for the use of tele-consultation for mental health problems via the telephone line with the health center on the island of Andros. Despite the fact that METB has been

receiving phone calls from all over Greece, its potential and purpose are limited and cannot provide full psychiatric coverage to all (mainly insular) under serviced communities. There is an ever growing need for the development of full scale tele-psychiatric services in order to cover existing gaps in the national healthcare system. At all events the implementation of tele-psychiatry is not solely bound either to therapy or tele-consultation. It equally applies to a major parameter of a national psychiatric healthcare system, the continuous tele-education of healthcare providers. However, the successful application of this new method in healthcare is greatly depending on a careful structural planning, so that its functional cost would not exceed the cost of the problem it is supposed to solve [3].

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Athens Emergency Psychiatric Help line: A report from the first year of service

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Over the years the development of telephone counseling and listening services has become widespread throughout the world [1]. The Emergency Psychiatric Help (METB) has covered its first full year of function (from May 1999 until May 2000). Its aim is to address a wide range of psychopathological situations such as psychotic disorders, affective disorders, anxiety disorders, adverse reactions to psychotropic drugs etc. METB is functioning under the support of the Department of Psychiatry of Athens University based at Eginition Hospital. METB is a crisis intervention line and acts as a bridge between the psychiatric services and the community. Furthermore offers information concerning mental disorders to the families of mentally ill and consultation to medical practitioners endeavoring liaison psychiatry. METB is staffed by psychiatrists and psychiatric residences.

During the first year of function METB accepted a total of 2055 phone calls. The descriptive characteristics of phone calls are the following: 917 (44%) were made during the first 6 months of its function (until December 1999) and 1138 (55%) were made from January 2000 to May 2000. 1711 (85%) calls were made by patients and 301 (15%) by family members. From the total amount of calls, 1097 (55%) were made by male users and 904 (45%) by female users. The average age of the users was 31 years of age. Furthermore 492 (30%) of the calls were made by persons who had employment and the majority of the callers, 1121 (71%), lived with family. Communication with the caller was adequate in 1661 (88%) of the total amount of phone calls and the users were delusional in 320 (18%).

In 68 cases (4%) suicidal ideation was expressed and a specific reason for calling was expressed in 1024 (75%) of the phone calls. The most common reason for calling the service, 389 (21%), was for obtaining information concerning the use of psychotropic medication (adverse reactions, reassurances concerning the effectiveness of the drugs, changes of daily dosage), followed by 211 (12%) calls made in order to relieve feelings of loneliness. 158 (5%) calls were made by family members of mentally ill, in order to seek advice on how to deal with acute behavioral disturbances. Finally, among the users of METB we can distinguish a group of "repeater" users [2]. The reasons for the calls made by this group were different from the usual users' of the line. Mostly they would call in order to relieve feelings of loneliness or to express delusional ideation.

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Web-based learning in occupational and environmental medicine

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Internet based learning in occupational and environmental medicine for medical students at Uppsala University was introduced during the spring term 1999. A homepage was constructed which contained schedule, handouts, message area and quality assessed links to medical resources of general, occupational and environmental interest. The written exam was omitted for Internet assignments. The Internet project was evaluated by a questionnaire. Sixty-six percent of the 113 students answered the questionnaire. The teaching stimulated students to reflect about possible relationships between the patients' symptoms and their occupations as well as the environment. The students also knew where to find information about such relationships. The Internet project had also made it easier for the students to control their time. The course had a positive effect upon student interest in the field and encouraged integrating earlier knowledge by using general tools rather than rote learning of details. Occupational and environmental medicine may be especially suitable for Internet based learning but it is likely that this kind of teaching would be useful even in other classes.

Interactive distance medical education program for Georgia

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PIMS's wireless high bandwidth network in Tbilisi since 2000 supports military and emergency medical services and medical informatics resources for civilian and military doctors. IMP in cooperation with NILC, CDEM and PfHF have developed content for distance medical education. Satellite dish directed to Eutelsat W3 and linked by T1 line through PIMS to IMP (Albany, N.Y.) provides 1 mbps connection for streaming video and Netmeeting. Videolectures are pre-downloaded to the NILC server to avoid transmission problems. Four programs - Acute Coronary Syndromes; Tuberculosis; Emergency Medicine; Radiation Hazards - have been developed by US experts in accordance to the priorities of the Georgian counterparts. Courses are carried out 3 consecutive days during 8-12AM EST (5-9PM - Tbilisi time) at NILC/CDEM auditorium, equipped by Dell videosever with loudspeakers and microphone, InFocus LP770 projector and remotely controlled Cannon VC-C3 videocamera. Word-by-word translation on Georgian accompanies the lecture on the screen. Each 10-15 min of lectures are followed by 5-15 min discussion using Netmeeting - moderator translates audience's questions. 1st day is dedicated to more theoretical subjects, 2nd - to procedural elements, and 3rd - interactive expert panel. In total 306 doctors - professors, researchers, clinicians, residents, and senior students - attended first 3 courses. >85% of them ranked program highly useful and innovative.

Health emergency training: current weakness and solutions proposed by the JUST product

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Decrease of skills in emergency practice is constant if not exercised or updated regularly. There is a strong and proved need for refresher courses.

Litterature identified needs to train:

- Mass populations in CPR, with public access defibrillation (guidelines from ILCOR).
- Specific sub-groups such as patients with chronic disease and relatives
- Health professionals not facing emergency situations in their every day practice.
- With a need of mass training with good instructors who provide quality, homogenous training.

The JUST European project addresses the domain of training of non-professional health emergency operators. It aims, through the use of advanced informatic technologies, validated content, and innovative Virtual Reality (VR) tools, to provide advanced support for continuous education and training.

JUST contributes to the creation of next generation tools dedicated to tele-education through the use of Web/CD and VR. The project's ultimate aim is to contribute to the creation of a "better" and "higher number" trained non-professional operators, which are an important element of the 'chain of survival' in case of health emergency situations.

Medical faculties and students perception on tele education sessions in the largest medical university in India

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The Telemedicine applications in Teleeducation activities in the Tamilnadu Dr.MGR Medical University potentially offered a remarkable opportunity to explore the sustainability of the new technology as perceived by the medical faculties and students in a developing country. It is essential to evaluate its role especially in the light of its high cost besides developing Telecommunication systems in India. A structured questionnaire was used to collect information from the faculty and participants who attended the Teleeducation sessions in the University. This paper discusses the experience of pleasant feelings, acceptability of the technology, willingness to use the services and other relevant factors, in more depth in Teleeducation sessions of overseas and local ventures. The study results provides the necessary baseline information and the general challenges for envisaging the Telemedicine activities in India in addition to providing feedback to clinicians and administrators, for additional guidance about improving practices that appear associated with negative response and sustain Teleeducation programs beyond this evaluation stage in near future.

Tele-education for doctors – Fact or fiction?

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Doctors have a professional responsibility to ensure that their knowledge base enables them to practice. Increasing demands from both the public and government, coupled with EU harmonisation, are major driving forces for educational change. The introduction of new technology has provided educators with the ability to address the educational needs of doctors. However in many instances the technology has not been content driven.

Tele-education projects for medical education have in general been ad hoc and often geographically based. In many instances, they have failed to understand the learning needs of their audience, resulting in a low uptake of utilisation. With the increasing penetration of the web, there exists an enormous potential resource, although the validity and reliability of the information is unclear. This paper will look at how an incremental process based upon content and not technology has been able to address the needs of medical practitioners throughout western and central Europe.

Diagnostics skills – a comparison between dental hygienists and dentist with different degree of specialization

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The objectives of the present study were to develop and evaluate a model for diagnostic support to dental hygienists working in preventive dental home care. Our hypothesis is that the risk of missing serious oral illness are reduced by facilitating the decision making by transmission of digital images to a higher competence level. The specific aim was to determine if dentists, with different experience in oral medicine, were more proficient in diagnosing oral mucosal lesions compared to dental hygienists. Twenty-five dental hygienists, 24 general dental practitioners, 25 hospital dentists, and 7 specialists in oral medicine participated. They received 32 photographs to examine along with a questionnaire. The photographs represented different mucosal lesions at different sites of the oral cavity. The participants were instructed to decide if the mucosa was healthy or not, and what measures was to be taken, ranging from, no measures at all, to transfer to a specialist. The study indicates that dentists with increased specialization show higher specificity and sensitivity in their decision making compared to dental hygienists. This indicates that visiting preventive dental care can benefit from teledentistry.

Auditing orthognathous surgery through telemedicine

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20 videoconferences have been held in patient care, 2 video conferences during the year 1999 and 18 video conferences during year 2000. During these video conferences 61 patient cases have been handled, 4 patients during 1999 and 57 cases during the year 2000.

Live digital broadcasting, with a speed of 2 Mbyte/sec from an operation in Vaasa was done on the 3 of October 2000 for approx. 3 hours. The Oral & Maxillofacial Surgery in Umeå broadcasted an operation to Vaasa on the 24 of October 2000 for approx. 3 hours. The quality of the picture was really high, and this gave the clinics an opportunity to audit and critically examine the operation methods. The most demanding goal was achieved and the broadcasting gave a new dimension to the future development of cooperation. Very important that medical engineers and dentists understand and recognise each others' demands and needs.

The final and total cost of the project came to 1 985 SEK. The total budget had been estimated at 1 970 000 SEK, the budget was therefore exceeded by 15 000 SEK. Vasa Central Hospital/Vasa Healthcare District (VSVD) used 53.7 % and the School of Dentistry in Umeå (THU) used 46.3 % of the project's total budget. In accordance with the Interreg II programme, EU support was applied for to cover 50 % of the project's total costs.

Budget total SEK:

- Internal personnel 910 390.26
- External personnel 49 922.00
- Premises rental costs 99 792.84
- Materials/expenses 422 395.53
- Investments 254 360.54
- Travel costs 102.186.98
- ADP costs 85 852.60
- Other costs 62 126.18
- Total 1 985 026.93

Telephone advice nursing – Callers' experience

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The aims of the study were to describe callers' experience of their contact with a medical call centre, and to analyse the nature of the evaluated experience of their consultation with nurses. A questionnaire was administered to 203 persons, completed by 144 (71%), of whom 81 (56%) voluntarily chose to comment on their experience. The statements were analysed with a qualitative approach. Sixty-nine percent described satisfactory experience, the statements emerging in two categories: practical and emotional aspects of their contact. The unsatisfactory comments mostly concerned access problems. The callers emphasised the importance of receiving adequate advice and being treated in a kindly manner. In addition, dimensions of security and insecurity were interwoven in nearly all the categories. These emphasise the importance of telephone nurse's communication skills and her ability to meet, assess and treat the callers singly to make them feel more secure. Subsequently, the selection, education and training of telephone nurses might place more emphasis on the nurse's supportive and communicative role.

The use of Internet for Public Health education in Lithuania

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A reform of the National Health Care system was started in 1991. The Public Health Surveillance Service was established within the Ministry of Health in 1994, to replace the former hygiene-oriented sanitary – epidemiological service. The lack of information and knowledge about the modern Public

Health, the lack of textbooks and teaching materials for training new and retraining old public health professionals were the main inducements for development of the project "Materials of education, research and events of Public Health on the World Wide Web". Kaunas University of Medicine and Vilnius University will perform this project with financial assistance of Open Society Fund, Lithuania. The aim of the project is to create a website which will spread educational information for the Public Health professionals via Internet. The website will consist of four fields: full texts of Public Health lectures, abstracts of conferences and seminars, master and doctor thesis, information about socio-economic inequalities in health and health care. The lectures will be put on the Website with the help of WebCT program package. All material will be placed under author's agreement. The councils of universities support legal project actions. In future this project will be used as a pillar for the distance learning as well as a source of information for everyone interested in the modern Public Health.

Interdisciplinary communication in web site construction

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Aim: To interview three programmers on their experiences in working with medical personnel.

Background: PCDAI (Paediatric Crohn's Disease Activity Index) measures the severity of Crohn's disease, but involves complicated computations and is therefore seldom used in clinical practice. We developed a web site (<http://www.orebroll.se/rso/barn/crohn/Home.asp>) to help calculate PCDAI.

Methods: Interviews and written documentation of the project.

Results: The programmers reported difficulties in use of Latin terms (interpreted as plural forms and therefore tagged with -ies, instead of -is (e.g. uveitis)), understanding of disease-specific terms (e.g. Erythema nodosum, Pyoderma gangrenosum), and flaws in the county council's firewall. Repeated miscalculations of indices were due to discrepancies in database interpretation of punctuations. Web site prototyping and engagement from the medical personnel in the testing phase was regarded as crucial for success.

Conclusion: Access to medical personnel, engagement of the medical personnel in the testing phase, and the development of prototypes is crucial for success in medical web site construction.

The development of telemedicine in Poland during the last decade (1991-2000)

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To the mid-1990s, there were practically neither research activities in telemedicine (TM) in Poland nor putting it into practice. Cardiology, pathology and radiology are among the areas that have been tested in the 1990s. Much of the work in TM, however, is still at experimental stage. At present TM is used mostly to monitor cardiac patients, to give professional advice of histopathological preparations (telepathology) and of images from CT or MR (teleradiology). A few pilot projects are aimed at tele homecare and distant learning (videoconferencing, image transmission, etc.).

In projects relating to TM and teleeducation the National Broad Band Scientific Network POL 34 (i.e. the Polish equivalent of the Internet 2) is being developed and also introduced, enabling to implement the latest technologies into practice (e.g. ECG transmission).

Due to the recent reorganization of the health care system, there will be an increasing need for creating a network database, and building up computer infrastructure in hospitals, medical universities and

primary care settings. Ultimately, the benefits of TM will include consistency of care, easy access to specialized consultants, higher responsiveness to patient needs, and lower overall health care costs.

Telemedicine for second opinion in orthopaedics

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Teleconsulting service was supported by the Istituti Ortopedici Rizzoli (IOR) between October 1998 and May 2000. The experimental service satisfied the request of second opinion in orthopaedics from 3 remote trauma units of the National Insurance for accidents at work (INAIL). A total of 64 consultations were provided by store-and-forward (51) and face-to-face (13) procedures. We analysed the most relevant parameters of the service from the clinical, technical and organisational point of view. Particular attention has been dedicated to the cost analysis in order to define a sustainable frame for the next deployment of the service. The investigated sample showed different trends between store-and-forward (S&F) and face-to-face consultations (FtoF). The amount of information sent for the second opinion was higher in S&F cases, mostly due to the large use of photos and/or short videos to support the description of the patients. On the other hand, the organisational impact and the overall time spent were higher in FtoF consultations. The deployment plan is now dedicated to arrange a network of 33 new remote trauma units to provide the service over the country.

Maccabi telemedicine center in Israel

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We present our experience with telemedicine as a consultation tool. Our center was opened in May 1997 in Maccabi Health Services in Holon in Israel as a means of consultation with MGH in Boston , U.S.A. The Maccabi Health Services is the second largest HMO in Israel. The center consists of a team including a family medicine specialist and an administrative assistant. The center in MGH provides services for countries around the world. Areas that qualify for consultation in our center include oncology, surgery, metabolic/endocrine disease and other areas. Consultation is by e-mail . Additional material is sent by courier, but will be sent by teleradiology in the near future. Most consultations are influential in the treatment process. We will present both the highlights and difficulties we have encountered in our four years of experience with telemedicine.

Problems of telemedicine and e-health reimbursement in South Korea

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The public health insurance system in South Korea can be characterised as a low contribution, high co-payment system that was set up to ensure universal coverage within a short period of time (11 years). The national Health Insurance Scheme covers 97% of the population while the remaining 3% are covered by the public assistance Medical Aid Scheme.

The system has been based on a heavy cost sharing formulae. In the case of inpatient treatment costs, the insured or their dependants are liable for a 20% co-payment. Cost sharing for outpatient treatment

varies widely according to the medical facilities and expenses incurred. However the insured in this case is liable for up to 55% of the total outpatient charges.

Notwithstanding the above, the South Korean law presently only permits reimbursement and provides malpractice insurance where medical services are provided on a "face-to-face" basis, with the exception of teleradiology. This paper examines the current barriers to reimbursement in South Korea and proposals for changing the regulatory environment.

Teleradiology in Norway

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We would like to present an overview of the situation of teleradiology in Norway. We have done close investigations of status to the radiological departments in Northern Norway, and their possibilities to exchange digital x-rays. This is done by Anne-Gerd Ekeland and me as a part of her report: "Teleradiologisk nettverk i helseregion V".

We have also gathered information from the rest of the country. This was done to present a description of the National situation of teleradiology on our homepage (www.telemed.no). On this basis I can present how the situation of teleradiology is in Norway. I have also gathered information about the needs and plans for teleradiology in the five health regions in Norway. On these foundations I would like to present which direction the Norwegian teleradiology will take.

We think that this presentation would be interesting to both Norwegian and foreign personel because: Teleradiology is the part of telemedicine that's largest when we count users and traffic.

Telesurgery : A successful business case in Europe

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The initial idea behind telemedicine was, and is, to overcome the barriers of time and distance. The advent of new computer technologies appears as a revolution of surgical teaching, as well as the planning and realization of surgical procedures. The development of telecommunication devices applied to medicine (tele-education, teletraining, telementoring, teleproctoring and tele-accreditation) constitutes the basis of cybersurgery or virtual reality allowing the merging of the concepts of telepresence and telemanipulation.

The European Institute of Telesurgery (EITS) has acquired an international renown for its surgical training in laparoscopy or Minimally Invasive Surgery (MIS), and has realized many impressive achievements in applied research in telesurgery, especially in 3-D reconstruction of the abdominal organs (virtual reality), virtual interaction or force feedback simulation, and telemanipulation using telerobotics. On September 30, 1999, Professor Jacques Marescaux M.D., head of the EITS, performed successfully the world's first laparoscopic cholecystectomy procedure by total telemanipulation using a robotic interface, on real patients at the EITS. The two surgeries, performed on female patients aged 37 and 57, respectively, were completed as part of a European study to assess the feasibility of using a computer-enhanced robotic surgical team in abdominal surgery.

Providing emergency medical care to offshore oil and gas platforms in the Gulf of Mexico using telemedicine, a pioneering experience at the University of Texas Medical Branch

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The University of Texas Medical Branch (UTMB) at Galveston, Texas (USA), is an international leader in providing telemedicine services and has been introduced to the Smithsonian institution's Permanent Research Collection of Information Technology. UTMB currently provides comprehensive health care services using a managed care model, for approximately 120,000 prison inmates extending over the eastern half of Texas, with over 30,000 telemedicine encounters. Other outstanding programs include those to provide pediatric rehabilitation services to children with special needs in rural and medically underserved areas, and to outreach to nursing home residents who are unable to travel for medical attention.

UTMB is developing with industrial partners the "24/7 telemedicine triage project" to provide emergency medical care to offshore oil and gas rigs and platforms in the Gulf of Mexico. The oil and gas industry is second only to the US department of defense in the number of employees stationed in remote areas. Providing medical care to such populations is logistically complex and expensive. In addition, emergency evacuation is often time-consuming and poses risks for both patients and medical crews. By utilizing high-resolution videoconferencing technology, through a satellite communication, patient visits will be conducted in real time and will provide more informed decisions about the need for more extensive treatment, thereby reducing unnecessary evacuations. In addition, patients who require evacuation will receive a higher standard of care while waiting for transport to a medical facility. UTMB physicians report that 39% of all patients from offshore facilities treated in the emergency department, could have been successfully treated through telemedicine without being evacuated to a hospital. The telemedicine project will employ standard procedures for medical triage, in which patients are directed to appropriate medical experts based on their symptoms or type of injury. The project has just completed the evaluation phase of telemedicine encounters' metrics.

The first mobile telemedical network in Russia

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In Russia the telemedicine network was created for improvement of cooperation between leading establishments of Russia and other countries. It allows us solve three problems. First telemedical consultation with foreign colleagues. Second communication between establishments in Russia. Third the system creates possibility to render assistance accident remote regions. The mobile telemedical network uses technology of GSM for transmission the textual and graphic information. Usually it is enough for realization consultation enough 1.5 b of the information. Use of technology GSM allows to use a complex in any point of a network and allows to speak about its economic profitability. It will be developed in tourist centres in North-West regions of Russia.

Telemedicine in disaster management

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The occurrence of natural disasters like the recent earthquake disaster at Bhuj, Gujarat, India offers an opportunity to provide health, education and rehabilitation services of a high quality to the affected victims and families. An attempt is being made to integrate holistic health services and Telemedicine to provide low cost effective services to the affected victims and their families. The paper will discuss the challenges presented and the networking and team effort required to make a project of this nature successful.

The Problem:

Physical Health

1. Trauma: fractures and fracture-dislocations, soft tissue injuries, surgical infections, post amputation rehabilitation.
2. Chronic malnutrition and susceptibility to other bacterial and viral infections, water and food borne diseases.

Mental Health

1. Post traumatic stress syndrome
2. Chronic anxiety and depression
3. Environmental shock and precipitation of psychosis and schizophrenia
4. Deprivation of continuing education and lack of security
5. Dislocation of family living and social isolation

The Solution: Holistic team effort comprising general physicians, specialist in Holistic Medicine, pediatricians, psychologists and counselors and homeopaths is essential to successful short term and long term rehabilitation. The Clinic for Holistic Healing will bring professional expertise to the endeavor and adopt a Total Quality Management approach to the project. The rehabilitation will initially comprise a concerted 12 months effort aimed to rectify clinical and psychological problems through the holistic approach. 4 teams each working for 3 months will carry out the stated tasks as per the project details. Dr Jayanth G Paraki, Director, Clinic for Holistic Healing will head the project.

The Systems and Processes: The system employed is organizational networking to enable profitable use of resources as well as provide all network partners an opportunity to serve the larger interests of the patient population. Telecommunication, computer hardware and software used in the project will be discussed in the main paper. The teams stationed at the project site will deliver the health care and support services as per the project directives. It will monitor tasks, gather relevant information and communicate with the center at Bangalore. The Clinic for Holistic Healing will build and train more teams and dispatch them to the site as and when necessary.

Expected outcome: A clear demonstration of the economic, clinical and technological benefits of the holistic approach is expected. The use of low cost effective homeopathic medicines is likely to be demonstrated, as the number of patients to be treated is considerable.

Future directions: Global replication of holistic health and education paradigm is practical, feasible and cost-effective. Further efforts are needed to define clear application models for specific individual countries based on their immediate and future needs. Concerning the community the focus will be on telemedicine as a tool to support a more equal distribution of health care all over the world. Thus, the program will illustrate the possibilities to distribute medicine and health care globally with the help of

telemedicine. Emphasis can then be given to projects that allow for practical, cost-effective telemedical solutions that are integrated into daily clinical routine and can be copied in large scales all over the world. Networking over Internet has the auspices of being a tool for supporting work against global problems such as AIDS, tuberculosis and other global health threats.

Effects of telemedicine support on a nurse-led health care unit in southern Lapland

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For the inhabitants living in the western area of the municipality of Dorotea in Southern Lapland, the health care service is largely provided through the local nurse-led Health Care Unit (HCU) located in Risbäck. The HCU serves 500 people in an area of 1 300 km². The closest general practitioner (GP) is to be found at the Primary Health Care Centre in Dorotea, located 70 km from the HCU. Specialist care is provided by the District Hospital in Lycksele, located 220 km from the HCU, and by the University Hospital in Umeå, located 290 km from the HCU. In 1999, a PC-based telemedicine system with endoscopic equipment for ear, nose and throat examinations was installed at the HCU. Through a communication link with high band-width, the district nurse has access to on- and off-line decision support from GPs and specialists, as well as to educational programs. The impact of the telemedicine support on the following issues has been evaluated: staff and patient satisfaction, quality of images and sound transmission, patient travelling, dissemination of professional knowledge, and speed within the health care process. The results will be presented at the conference.

Planning a low-unit-cost, high volume satellite tele consulting system

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We have planned a low unit cost, high volume national teleconsulting system. It envisages a central site manned by consultants from different specialties, with videoconferencing equipment's diagnostic equipment & appropriate peripherals. Satellite Medical Centers (SMC's) would be set up with videoconferencing link & diagnostic equipment, to provide patient examinations, Investigations and consultations. To meet the traffic requirements of the network, a dedicated satellite with 10-13 transponders would provide broadcast quality interactive videoconferencing at 2 Mbytes/s per link.

The financial plan assumes that 15,000 SMC would be set-up in the private sector on a franchise basis, each costing RS. 2,000,000-4,000,000 (RS. 1 is \$0.25, 0.02 Euro). Another 5000 specialised SMC would be set up in stages, attached to existing institution and hospitals. Six doctors would be required to provide 24-hours cover in each SMC, and doctors. Each doctor would pay US \$ 700 in instalment as a one-time life franchise.

At 2.5 patient/doctor/hour, 15, 000 SMC's could service 657 million patient visit per year. IF one represents a service covering approximately 13% of the population of India. Doctors at an SMC's would receive about RS. 9500/month (almost what they receive in the government jobs at present)

Consultant at the central site would receive RS. 118, 000/month. SMC franchisees would receive 22% profit after deducting all expenses. Each patient would pay a fixed charge of RS. 50 per visit, which would include cost of examination, investigations and teleconsultation. The contribution from the franchisees would cover the entire investment in the project. Since most of the expenses are fixed,

profitability increases steeply as patient visit increase. At five patient/doctor/hour, doctors earning would almost double. SMC owner would have a secure investment with regular lucrative income

Telemedicine in remote areas

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In medicine, distance can often be a barrier to medical care.

To break down this barrier, and improve the provision of care, hospitals and physicians throughout the UK employ sophisticated 'telemedicine' technology. Using computers and telephone lines, physicians can share X-rays, CAT scans, and electrocardiograms (ECGs) to make a wide range of medical diagnoses and treatment decisions. These technologies, in use for several years through the Central Oregon Hospital Network (CONeT), have helped to keep patients as close to home as possible for medical care.

Now, videoconferencing technology is expanding telemedicine even more. Using today's video technology, physicians can talk with each other face to face, compare medical information, meet and even examine patients in hospital and consult medical specialists anywhere in the world – all without leaving their local hospital.

Videoconferencing systems are also used for continuing medical education for physicians and hospital staff, administrative meetings, and even for meetings involving local and regional community groups and businesses.

Teleophthalmology – Cooperation between Sweden and Lithuania

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Teleophthalmology - is the topic of collaboration between St.Erik Eye Hospital in Stockholm and Eye Clinic of Kaunas University of Medicine. On 10.04.2000 agreement between the Lithuanian- Swedish Litmed project participants have been signed.

The purpose of the project is to create the teleophthalmology network between Eye Clinic of Kaunas University of Medicine, some rural areas in Lithuania and St.Erik Eye Hospital in Stockholm. Some areas will be covered are: teleconsultations, common research, distance education. Discussed main pathology for the project framework is: eye trauma, ophthalmic oncology, glaucoma, surgery from operation theatre in St.Erik.

The use of teleophthalmology may decrease professional isolation of rural doctors. System can be used for informal ophthalmology teaching with medical, primary care doctors, and nursing staff. Developing of telemedicine systems using experience and Swedish technologies create possibility for distance education of Swedish students from Lithuanian Center of Ophthalmology and Lithuanian specialists from Swedish clinics.

The project is supported by Swedish Government through the Baltic Sea IT-fund.

Aging in your place with IP based technology support

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Aging in Your Place is a concept that integrates continuing care service with the wider community. With the introduction of an innovative service delivery model that employs new networking technology, it enhances and supports families, friends and others who are involved in the care of an elderly person. This model recognizes and supports the individual's right to make informed choices about their place of residence and the types of health services they wish to receive which is consistent with the Broda Committee's vision for the future of Long Term Care;

- the first priority is for people to remain in their homes with the supports they need to remain independent as long as possible
- "Unbundling" health, housing and social services so that individuals can choose from a seamless network of services
- the importance of the informal care network and providing support for its integrity

One of the major challenges in implementing technology assisted homecare is the limited telecommunication infrastructure and technology and human interface. During this presentation, we will introduce new e-health technology.

Tele-classroom support for handicapped children

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Alberta Learning Ministry has a guideline for the inclusion and integration of special needs students into mainstream classroom environments. Caseloads for the consultants, and the services that the consultants provide, are greatly influenced by the expansive geographical region that has been assigned which will require travel to the various jurisdictions and school sites. Also, it has been extremely challenging to recruit consultants who have the expertise and range of experience and knowledge that is required to meet the demands of such a position. As the number of referrals increases, with limited number of available consultants, it is essential to maximize the number of consultation hours available so that schools' and students' needs are addressed thoroughly and in a timely manner. Technologically Enhanced Consulting Services (TECS) would reduce consulting time lost in travel by allowing observations and the exchange of information to occur without the consultants having to always be physically present at a school site. TECS would not eliminate the need for direct or on-site consultations, but would be an extremely valuable tool in terms of monitoring a student's progress, and in providing consistent or readily available follow-up from all the consultants involved in a case.

Telepalliative care using ISDN platform

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Early discharge plans; follow up services, and community-based health care have all increased the demand for homecare. With the aging of our population, there has been a corresponding escalation in the demand for homecare services. In order to support clients in our community, homecare professionals must spend time traveling and scheduling in addition to the actual providing of care. As the number of referrals increases, it is essential to optimize the use of available homecare professionals so that the quality of the care will not be compromised. One way to increase patient contact hours and reduce traveling time would be to consider utilization of technologies. The purpose of this field trial was to determine the feasibility of videotelephone use to augment access to homecare services by Palliative care in Edmonton. Throughout this project, we examined the opportunities, challenges and benefits of using the videotelephone in homecare. It has been a great challenge to provide immediate homecare service to clients.