

**WHO Collaborating Centre
for Telemedicine and e-
health**

Annual report 2005-2006

July 2005-December 2006

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Summary: This report gives a summary of the work performed by the Norwegian Centre for Telemedicine as a World Health Organization Collaborating Centre for Telemedicine and e-health from July 2005 through December 2006. The activities are based on the Terms of Reference between the centre and WHO.

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Preface

On 25 August 2006, the Norwegian Centre for Telemedicine (NST) was re-designated a WHO Collaborating Centre for Telemedicine, for another four years. It was then decided to shift the annual reports from July/August, till January. This report thus summarizes the work performed by the NST as a World Health Organization Collaborating Centre for Telemedicine and e-health from July 2005 through December 2006. The report is based on the activities described in the Terms of Reference.

In general, most activities are funded by internal means. A project-group of five people is allocated to WHO-Collaborating Centre issues in addition to a full-time co-ordinator. In addition, other human resources of the Norwegian Centre for Telemedicine are engaged in the WHO-Collaborating Centre activities based on the required field of expertise.

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1. Activities 2005-2006 – an overview

In 2006, the NST received two designations: In June the NST was appointed a Centre for Research-based Innovation, by the Norwegian Research Council, and in August, the NST was re-designated as a WHO Collaborating Centre for Telemedicine, for another four years. We see this as an acknowledgement of the work NST is doing, nationally and internationally.

The Centre for Research-based Innovation, Tromsø Telemedicine Laboratory (TTL), will become a world-leading centre for research and innovation in the field of advanced telemedicine and e-health systems for chronic, age, and lifestyle related diseases. The centre aims at supplying the healthcare industry with viable and sustainable technologies that will promote global health, wellness, and disease management by facilitating technological advances in the collection, processing, and sharing of medical information. These will generate new products and services within telemedicine and e-health. The foundation of the TTL strengthens NST's international collaboration and research which will again be valuable for its role as a WHO Collaborating Centre for Telemedicine.

In October 2006, the Norwegian Ministry of Foreign Affairs, decided to finance a project to support the rehabilitation centres in Palestine via telemedicine and e-health. This was based on recommendations by a pre-project conducted in 2004. The study revealed the challenges the rehabilitation sector is facing due to travel restrictions for patients and health care personnel and the increasing isolation the region is facing. The telemedicine network will link the four national rehabilitation centers in Palestine together and provide a connection to relevant rehabilitation centers abroad. The network will consist of dedicated broadband lines suitable for computer and video transmission, in addition to a computer network. Each hospital will be equipped with video conference units with necessary accessories. In parallel, there will be established and developed Internet based courses aimed at the different aspects of rehabilitation. During the project period there will be established routines ensuring a long term perspective, making the network operable also after the actual project period. The Norwegian Association of the Disabled (NAD), Sunnaas Hospital, and the Norwegian Centre for Telemedicine, Tandberg and Cisco are the Norwegian partners in this project.¹

The project 'WHO/European e-health consumer trends survey' (e-health Trends) is now half way in the three course project period. The first survey was conducted in October-November 2005 on a total of 8,000 Europeans. Seven countries participate in the study. The second survey is under preparations and will be conducted in April 2007. The survey provides a knowledge base for policy-makers and health care providers. For e-health, the picture seems to be undergoing rapid changes which should be reflected in policy making and research programmes.

During the last period the NST has continued working on e-health for HIV/AIDS, with strengthened collaboration with South Africa and the international organization, the Constellation for AIDS Competence. A pre-project in South Africa was conducted in autumn 2006, resulting in a scientific paper on the status of e-health for HIV/AIDS in South Africa as well as a needs assessment and technology readiness report.

¹ A web-site prototype has been developed, <http://www2.helseutdanning.no/palestina/>

The collaboration with WHO has been very good, with several meetings to discuss how e-health can improve the health systems in WHO's Member-states. NST assisted in an e-health Workshop for WHO Euro Technical Units Working in Countries at WHO-Euro's office in Copenhagen. NST is involved in the Global e-health Observatory as the national expert team for Norway and as member of the Advisory Group of Experts of the Global Observatory for e-health. WHO has asked NST to allocate a person to work for WHO in building up an e-health unit at WHO-EURO office in Copenhagen. Unfortunately, the request has not been met so far, as we have not been able to allocate any funding for the position.

The major activities conducted between, July 2005 through December 2006, are described in more detail in the following.

1.1 E-health Management for people living with HIV/AIDS

As a WHO collaborating centre for telemedicine, the NST has been requested to explore the potential for telemedicine² in health management for people living with HIV/AIDS in the developing world. In connection with the 46664 Arctic Concert in Tromsø³ in June 2005, the Collaborating Centre organized an international workshop on e-health support for HIV/AIDS. The workshop recommended areas where e-health can improve the quality of life for people living with HIV/AIDS. It was suggested that by implementing e-health services and distance training, HIV/AIDS management could be improved in the following areas; (i) better access to drugs, (ii) increase prevention, (iii) less exposure of health care professionals, (iv) improved follow-up of post-traumatic stress of the HIV-infection, (v) increase the knowledge of psycho-social behaviour towards health and (vi) increase the knowledge of how e-health is perceived and may be utilized in the cultural context of disadvantaged groups.⁴

As a response to the call for action, an initiative has been created to provide an e-health infrastructure for the management of HIV/AIDS in under-resourced settings. Based on the recommendation, a project proposal has been made with the title 'e-health Toolkit'; Developing Sustainable Public Health Technology for HIV/AIDS Management'. The initial phase of the project is a pre-study, a needs and technology readiness assessment at a selection of Anti-Retroviral Treatment-sites in Western Cape, South Africa. The study was conducted by the NST in collaboration with Cell Life / University of Cape Town and Medical Research Council from September through November 2006. The findings will be reported in a separate paper.

² Telemedicine or e-health is understood as the use of telecommunications to provide medical and health care at a distance. Telemedicine is usually assumed to mean curative practices. Telemedicine is playing an increasing role in health development: in education and training, in quality improvement and in improvement of efficiency of health care services.

³ <http://www.46664arctic.no/>

⁴ For the full report on recommendations and conclusions, please see www.telemet.no/who

Constellation for AIDS Competence – developing a blended learning programme

The Constellation for AIDS Competence⁵ is an organization working with fostering local knowledge and local response to the issue through their international network of coaches. In order to expand their successful approach, maintain the quality of the approach, and increase and improve the sharing of the results, the Constellation and the Norwegian Centre for Telemedicine have agreed to develop a blended learning program combining local training with a wide range of on-line tools for learning, communicating and collaborating. The NST has participated in an initial workshop in Chiang Mai, Thailand in March 2006, to observe the Constellation's work and initiate the development of a blended learning tool for coaches working within the Constellation.

The expected outcome is an increased capability to train coaches, making the Constellation able to reach more communities and communicate and coordinate the results more efficiently. The project period is planned for two years, where six online learning modules will be developed, and about 100 coaches will participate in the program. After evaluating the first stage, the modules will be made freely available to other interested parties. The courses will continue after the project period, facilitated by the Constellation.⁶

1.2 e-health trends: WHO/European survey on e-health Consumer Trends

The project 'WHO/European survey on e-health consumer trends' (e-health Trends) is half way in a three course project period. The NST is the co-ordinator of this EC-co-funded project, an international survey on European health consumers' use of, their attitudes to and their desires with regards to information and communication technology for health purposes, e-health. Seven countries participate in the project: Denmark, Germany, Greece, Latvia, Norway, Poland and Portugal.

The first survey was conducted in October-November 2005 on a total of 8,000 Europeans in the seven countries and is now being reported in scientific journals. The second survey is under preparations and will be conducted in April 2007. The survey provides a knowledge base for policy-makers and health care providers. For e-health, the picture seems to be undergoing rapid changes which should be reflected in policy making and research programmes, like:

- How can we ensure that e-health services are implemented with care, in order not to consolidate or create new inequalities in health care?
- How can we ensure that e-health services support citizens and patients and thus contribute to better health outcomes for individual patients?
- How can we prevent e-health services from fuelling unnecessary demand for health services?⁷

⁵ www.aidscompetence.org/ 15 March 2007

⁶ The estimated costs for this project are, NOK 2, 404,000 for a period of two years. The NST and Constellation are looking for the funding means.

⁷ Read more about the project at www.telemmed.no/ehealthTrends March 2007

This project was initially a joint NST-WHO initiative. In May 2004, WHO Regional office for Europe, WHO European Office for Integrated Health Care Services, hosted a workshop on the same topic in Barcelona. WHO is present in the Advisory Board of the project by Mr. Somnath Chatterji, WHO Geneva. Participation in the Interim Workshop of the project 'Next steps in developing Information Society Services in the New Member States', Budapest, Hungary, 21-24 June 2006, was of mutual benefit for both parties.

1.3 Participation in the Global Observatory for e-health - European perspectives

The NST provides support to the Global Observatory for e-health (GOe). The Observatory's mission is to improve health by providing Member States with strategic information and guidance on effective practices and standards in e-health.

The GOe Secretariat was established in 2005. The Secretariat is based at WHO headquarters in Geneva and works with active input and support of its regional counterparts in all six WHO regions. The NST participates in the annual SAGE- Strategic Advisory Group of Experts for the GOe and facilitates GOe activities when requested and appropriate for the European Region. Specifically, the NST facilitated the Norwegian GOe survey on e-health.

Vital to the long-term success of the GOe are the Thematic Working Groups (TWGs) and the National Observatory Groups (NOGs). TWGs are being established in strategically important areas such as e-health policy; effective e-health practices, security and citizen protection; equity of access and multilingualism; eLearning; and tele-health. These will change with time, and where possible, the GOe will collaborate with existing groups. Under the umbrella of the GOe, the NST is foreseen to be instrumental in the leadership of these groups in Europe in 2007-2008.

1.4 Facilitation of e-health and Telemedicine Capacity Building for WHO Euro Technical Units

At the request of WHO Euro, the NST carried out the e-health Workshop for WHO Euro Technical Units in Copenhagen on 1-2 October 2006. The objective of the workshop was to illustrate through applied e-health examples, the current and future opportunities for use of e-health in health system reform. The workshop will include practical examples of e-health tools already in use in countries.

The underlying goals were the following:

1. to illustrate through practical, proven practice the potential of e-health
2. to raise awareness internally of the uses of e-health for delivery of health services and for training health professionals
3. to provide a platform to illustrate the usefulness and/or appropriateness of e-health, especially in health reform strategies

The workshop was a success and considered to be highly valuable by attending WHO Euro technical officers and regional advisors. As a continuation of this activity, a similar e-health workshop is planned for the Division of Country Support annual retreat in June 2007.

1.5 Research support to the WHO European Repository on Health Systems

In collaboration with WHO Euro, the NST has undergone a number of preparations for performing feasibility and assessment studies for e-health readiness in European Member States. These studies are planned to be carried out in 2007 based on previous research on assessment methodologies for national eReadiness and Diffusion capabilities.

The results of these studies will contribute to the WHO European Repository on Health Systems and the on-going work of the e-health unit in European Member States.

1.6 Scientific review study on evaluation methods in telemedicine / e-health

'What is the science in Telemedicine?' was a research study undertaken by the NST in collaboration with Michigan State University, USA, based on an initial request from WHO. The study serves as a background to offer recommendations for future telemedicine research strategies and to further knowledge in the field. In 2006, the study ended and a paper of the result is in press at 'the Journal of Telemedicine and Telecare'. The data is a good basis for further research in the field. In 2006 a study on the use of theory in papers on telemedicine and e-health was initiated. Other follow-up papers are in progress.

1.7 Global Telemedicine Partnership

Over the last year, efforts have been made to establish a Global Telemedicine Partnership (GTP) with the aim to reduce the digital divide between the haves and have-nots within and between nations. The GTP was launched on 10 June 2005 during the first board meeting in Tromsø. The board supports the work of the GTP and advice the NST to focus on specific projects rather than taking a general programme approach. The board is a unique group of people who will serve as advisers and discussion partners for funding mechanisms on telemedicine and e-health initiatives in developing countries.

2. Recommendations

On 25 August 2006, the NST was re-designated a WHO Collaborating Centre for Telemedicine for another four years. The basis for collaboration is within the framework of the initial Terms of Reference. The only change made, was to combine no 4 and 6, which is treated as one item in the work plan.

The collaboration with WHO has been very good, with several meetings to discuss how e-health can improve the health systems in WHO's Member-states. NST assisted in an e-health Workshop for WHO Euro Technical Units Working in Countries at WHO-Euro's office in Copenhagen. NST has been (and is) involved in the Global e-health Observatory as national expert team for Norway and as member of the Advisory Group of Experts of the Global Observatory for e-health. WHO has asked NST to allocate a person to work for WHO in developing an e-health unit at WHO-EURO office in Copenhagen. Unfortunately, the

request has not been met so far, as we have not been able to allocate any funding for the position.

The WHO Collaborating Centre for Telemedicine and e-health would like to see some more specific actions within the collaboration with WHO as a priority area for 2007-2008. We are satisfied with the collaboration with WHO-Euro and other WHO-units and are looking forward to strengthen the collaboration in the future, especially in joint projects and programmes.

In general, the Norwegian Centre for Telemedicine is eager to undertake more activities as a WHO Collaborating Centre, in particular supporting practical telemedicine and e-health services in the Member states.

3. Related activities

Being a WHO Collaborating Centre, the NST receives several requests from developing countries and economically under-served regions, which we strive to meet. Among these requests are workshops and feasibility studies as well as requests for internships and visiting scholarship to NST. These activities are mostly funded by internal NST means. Below is a summary of these activities.

3.1 Net-based education for P&O's

With support from the Atlas Alliance⁸, the NST conducted a feasibility study on net-based education for orthopaedic engineers in Cambodia in 2004. The intention was to develop educational modules for orthopaedic engineers in the Third World. Cambodia is chosen as a case-country as it has a large number of people who have lost arms and legs in accidents due to landmines as well as road accidents. The educational modules will be developed according to the standards and requirements of the International Society of Prosthetics and Orthotics (ISPO). This is a joint collaboration between the NST, Norsk Dysmeliforening and Sophies Minde. The NST has applied to the Norwegian Ministry of Foreign Affairs to develop four educational modules to educate P&Os at university level, category 1 in the ISPO-system.

Baltic e-health

The NST is work-package leader in the EC/Interreg funded project Baltic e-health. The project's goal is to make cross-border e-health services possible, starting in the Baltic Sea Region. An important reason to do so is the expectation that cross-border e-health services will prevent out-migration of highly competent healthcare staff from rural areas in the region. In 2005 and 2006 NST coordinated the work that led to the reports 'Report on identified legal issues of the Baltic e-health Project' (June 2005) and 'Cross-border e-health in the Baltic Sea Region – What issues should be considered?' (June 2006).⁹The report dealing with e-health and out-migration from rural areas will be published in spring 2007 at the same

⁸ <http://www.atlas-alliansen.no/index.asp?id=26120> 15 March 2007

⁹ Both reports are freely available at <http://www.baltic-e-health.org/default.htm> 15 March 2007

website. The lessons learnt from the project will serve as a good knowledge base for other cross-national e-health projects.

CogKnow

The NST participates in the EC funded FP-6 project CogKnow, which aims at developing prosthetics that help people with light dementia to navigate through their day. The social objective of the project is to realize cognitive reinforcement. The project's research entails the needs of people with dementia, helping people to remember, maintain social contact, perform daily life activities and enhance their feelings of safety.¹⁰ The project started in September 2006 and will last till the summer of 2009. The outcome will be tools and methods which can ensure that people with dementia can be included in society. These tools can be disseminated and used on a global base.

3.2 Medical Peace Work

The Medical Peace Work project will develop a new European field of expertise that merges health- and peace work, in order to strengthen European physicians' competence in violence prevention and sustainable peace building. Strengthened competence will benefit citizens by improving their health and social wellbeing in conflict areas.

A resource network linking key teaching-institutions in Europe, NGOs and health institutions has been established. The lead partner is the Centre for International Health (SIH) in Norway. The project is running from 2005-2007 and ends with a conference in Tromsø, 14-15 June 2007.¹¹

3.3 Master of Science in telemedicine and e-health

In August 2005, the University of Tromsø commenced a two-year English-language Master programme in telemedicine and e-health. The programme admitted 20 students in the first year, and is intended for people who have a Bachelor's degree, Norwegian intermediate subject or equivalent in technology or health as their basic education. For 2006-2007 the programme has 19 students.

The Master programme has been developed in close cooperation between the University of Tromsø and the NST. The university is responsible for implementation of the programme, while the NST contributes to the development of the curriculum and providing teaching resources.

The Master programme is international with students from all continents. From 2008, a net-based module will be available. The programme plans to expand the international collaboration with universities and e-health centres in other countries.

Interest has been expressed by WHO Euro to develop a module specifically for e-health in developing countries and this will further be investigated in 2007.

¹⁰ The project's workshop is found at <http://www.cogknow.tid.es/> 15 March 2007

¹¹ <http://www.medicalpeacework.org/> 15 March 2007

3.4 Croatian Island Telemedicine System Project: Public Health and Technical Evaluation

The Ministry of Health and Social Affairs of the Republic of Croatia has embarked on a telemedicine project to improve access to specialized health services for the population residing permanently or temporarily on Croatian islands. The project consists of pilot implementation in 21 remote locations and four referral centres. The implementation took place in 2006. The NST's involvement in the project is to contribute with advice regarding legal and security-related issues, network bandwidth, integration, choice of telemedicine solutions and organizational challenges associated with implementation and operation of the services.

The project has major implications and importance for the Ministry of Health and Social Welfare of the Republic of Croatia which plans to expand telemedicine applications beyond the pilot phase. The project is funded by the World Bank, The Ministry of Health and Social Welfare of the Republic of Croatia and the Norwegian Royal Ministry of Foreign Affairs. The project will be finalized in Mars 2007.

3.5 Collaboration with Russia

Competence development in rehabilitation

Disability is a challenge in public health in the world. The NST is participating in collaboration between the University Hospital of Northern Norway and Russia (Arkhangelsk and St Petersburg). The aim is to establish a multi-disciplinary cooperation between health workers in Sweden, Russia and Norway. The expected results are increased knowledge, attitudes to and skills in the field of rehabilitation. The projects are funded over the Barents Health Programme, the Norwegian Ministry of Health.

eNOMAD

'e-health for Reindeer Herders in the Kola Peninsula' is a pilot study for the planned eNomad: a telemedicine project for reindeer herders and remote village dwellers in the Kola Peninsula. The aim is to gather specific information on technical infrastructure and recruitment/training of personnel, in order to define the scope and purpose of the eNomad project, a part of the larger Nomad project on nomadic lifestyles and conditions on the tundra.

4. Collaboration between the centre and WHO

4.1 Visits by WHO staff (headquarters and/or Regional Office) to the Norwegian Centre for Telemedicine

12-14 June 2006 Presentations given in support of the NST Annual Telemedicine Conference

Angela Dunbar, WHO Regional Office for Europe, Copenhagen, Denmark

Misha Kay, WHO Global Observatory for e-health, WHO, Geneva, Switzerland

Maryo Van Andel Olesen-Gratama, WHO Global Observatory for e-health, WHO, Geneva, Switzerland

4.2 Visits by the centre staff to WHO (headquarters and/or Regional Office)

13-14 October 2005, First Advisory Board meeting of the Global Observatory for e-health (GOe), WHO-Geneva

Tove Sørensen, WHO-CC for Telemedicine and e-health

31 January 2006, Strategic meeting on the re-designation of the collaborating centre and preparations for Health System Conference 2008., WHO Regional Office for Europe, Copenhagen, Denmark,

Gerard Schmets, WHO Regional Office for Europe, Copenhagen, Denmark

Niels Rossing, e-health consultant to WHO Regional Office for Europe, Copenhagen, Denmark

Tove Sørensen, WHO-Collaborating Centre for Telemedicine and e-health

6 April 2006, Strategic meeting preparing the work-plan for 2006-2007, WHO Regional Office for Europe, Copenhagen, Denmark,

Angela Dunbar, WHO Regional Office for Europe, Copenhagen, Denmark

Niels Rossing, e-health consultant to WHO Regional Office for Europe, Copenhagen, Denmark

Tove Sørensen, WHO-Collaborating Centre for Telemedicine and e-health

2 October 2006, e-health Workshop for WHO Euro Technical Units, WHO Regional Office for Europe, Copenhagen, Denmark

Steinar Pedersen, WHO Collaborating Centre for Telemedicine and e-health

Kirsten Eriksen, WHO Collaborating Centre for Telemedicine and e-health

In addition, several meetings have been conducted via video-conference and telephone.

Also, NST-WHO-meetings have been organized in connection with conferences and other international events, e.g. participation in the Interim Workshop of the project

'Next steps in developing Information Society Services in the New Member States,'

Budapest, Hungary, 21-24 June 2006 and at the ISfTeH-conference in Cape Town, South Africa, 27-29 November 2006.

4.3 Use of the centre staff by WHO

Assistance in collecting information for the Global Observatory for e-health (GOe), from Norway and Russia.

13-14 October 2005, First Advisory Board meeting of the Global Observatory for e-health (GOe), WHO-Geneva
Tove Sørensen

2 October 2006, e-health Workshop for WHO Euro Technical Units, WHO Regional Office for Europe, Copenhagen, Denmark
Steinar Pedersen
Kirsten Eriksen

General advice to WHO on different aspects of telemedicine and e-health.

4.4 Support provided by centre staff for courses co-sponsored or organized by WHO (headquarters and/or Regional Office)

2 October 2006, WHO Regional Office for Europe, Copenhagen, Denmark: Steinar Pedersen and Kirsten Eriksen, organized an e-health Workshop for WHO Euro Technical Units Working in Countries

A joint Norad-NST workshop, e-health in development: Policy meets Practice, was organized in connection with the TTeC 2006, on 15 June 2006¹²

4.5 WHO financial support to the centre through contractual or technical services agreement

WHO has financed the participation of Tove Sørensen in the Advisory Group of Experts of the Global Observatory for e-health. No other financial contribution has been made in the period.

4.6 Collaboration with other WHO collaborating centres

The NST collaborates with several WHO Collaborating Centres. The NST acknowledge the need for more collaboration in the field. Since we do not know which collaborating centres that would be most appropriate for collaboration, we would need input and suggestions from the WHO.

Professor Maurice Mittlemark, Research Centre for Health Promotion, University of Bergen, Norway (HEMIL-centre), is a member of the Advisory group for European e-health

¹² <http://www.telemed.no/index.php?id=324762>

Consumer trends survey. In addition the two centres (HEMIL and NST) are collaborating in research projects and exchange of information and meetings have been arranged.

A Memorandum of Understanding between the NST and the Medical Research Council, Telemedicine Lead Programme, in South Africa, was signed late in 2005. Under the collaboration agreement, NST-staff has been visiting South-Africa for five months in 2006 in connection with the e-health Initiative for HIV/AIDS.

4.7 Other

Every year the NST receives health-professionals, trainees and students from abroad who work or study at the centre for a shorter or longer period of time. In the last period two students have been on an internship at the NST, one from France and one from Denmark in 2006.

Over the last period, the NST has received delegations from Benin, Canada, Malawi, USA, Korea, the Netherlands and India, to mention a few. In addition, we have quite a few visitors from the industry, like IBM.

In 2006, an 'Agreement of intention' was signed between the NST and St Petersburg Scientific and Practical Centre of Medical and Social Expertise, Prosthetics and Rehabilitation of the Disabled.¹³ The main aim of the collaboration is to develop ICT-applications for rehabilitation, specifically focusing on the quality of life for people with disabilities in the Northern territories. To people from the centre visited NST in 2006 for meetings and a one week training program.

The NST participates in EUREGIOs project 'Cross-Border Activities – Good Practice for Better Health - evaluation of cross border health-related activities in the European Union'¹⁴. Europe has been engaged in quite a number of cross-border projects in the health care sector. The ambition of the 'EUREGIO' project is to give an overview of cross-border activities, identify good practice models and to encourage the exchange of experiences and information between health care actors. Recommendations to actors at European national and regional level will be given in May 2007. The NST's project was selected as one of 40 best health projects in Europe.

NST has been an active participant in the government's strategic work for the Northern regions. In addition to participating in the committee, a concept for Barents Virtual Hospital has been developed.

¹³ <http://www.reabin.sp.ru/Infoeng.htm> 15 March 2007

¹⁴ <http://www.euregio.nrw.de/> 15 March 2007

