



## Promoting innovative eHealth services across the Northern Periphery

The aim of the Competitive Health Services is to develop health services for people in remote or rural communities where access to health services might be limited. We will do so by

- implementing innovative eHealth solutions and
- promoting transfer of the best practices in the Northern Periphery

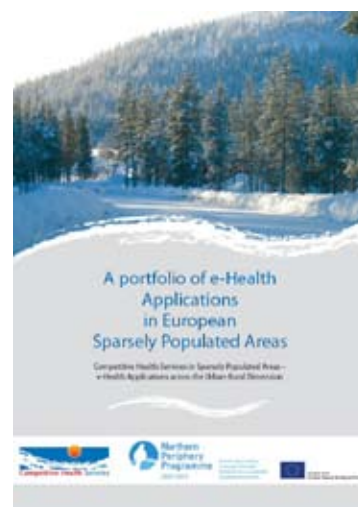
Particular focus will be on eHealth services for primary care, chronic conditions and remote specialist services.

### A portfolio of e-Health Applications

Before embarking on piloting new services, we have first identified best practices and mapped existing e-Health innovations and initiatives. The results have been summarized as a report, which describes the context and development of e-Health innovations in the northern parts of Finland, Scotland, Sweden and Norway. This report aims at identifying some of the most important aspects of health care sector infrastructure that influence the introduction of eHealth innovations.

This report entitled “ A Portfolio of e-Health Applications in European Sparsely Populated Areas” is available on-line from

<http://ehealthservices.eu/downloads>



# Piloting of new e-Health services

## FINLAND

### The Check-Up Bag - remote monitoring of biosignals

#### Technology Healthcare Center Oulu, Kaakkuri



Technology Healthcare Center Oulu offers a new kind of service concept for product testing. In this concept new products and ideas are tested in a real healthcare environment by citizens and healthcare professionals. The Product Testing Service is aimed at companies, universities and research institutes as well as hospital districts. Testing is always tailored based on product and customers needs. Testing can be composed of usability testing, user studies, interviews, questionnaires, brainstorming and pilot testing. Once the testing is done, customers receive a final report containing improvement ideas and recommendations on their product and an external evaluation of product's suitability and technological proof-of-concept.

The Technology Healthcare Center Oulu is the home for many new healthcare innovations. The Selfcare Service Platform, which offers customized and flexible electronic health services for citizens, was granted an award by the National Research and Development Centre for Welfare and Health. The Oulu Selfcare service was rolled out in 2008 and was expanded to cover the entire city in 2009.

The Selfcare Service offers citizens easy access to health-related information and services. Via the health portal, citizens can book appointments anytime, anywhere, they can receive laboratory test results and ask questions from healthcare professionals. The citizens also have access to their own web-based personal Health Card which includes personalized health information.

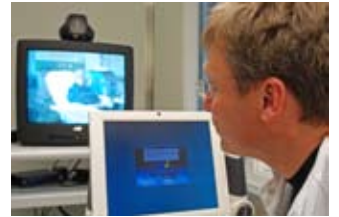
The Technology Health Care Center will pilot The Check-Up Care bag, which allows remote monitoring of biosignals such as ECG, pulse, pulse oximetry, spirometry, and blood pressure. This is a service originally developed in Sweden by Explizit. It consists of portable health monitoring equipment that measures physiological parameters. The measurement results can be viewed and evaluated immediately by a doctor at the health care site. The service package is easy to use and since it is portable the patients can take it home and take the measurements themselves or a package can be located at a healthcare centre where patients can come to and perform the measurements independently. This service solution fits well with the Oulu Self Care concept and should give healthcare personnel more time to care for patients.

web: [www.ouka.fi/sote/tkaakkuri](http://www.ouka.fi/sote/tkaakkuri)



## SCOTLAND

### Tele-dialysis pilot



The Scottish Project Team, in partnership with NHS Highland, is proposing to establish a pilot site for tele-dialysis, modelled on the service which operates successfully between the University Hospital of North Norway, Tromsø and satellite dialysis units at remote hospitals.

The selected pilot site is the renal unit at Caithness General Hospital in Wick, linked with the main renal unit at Raigmore Hospital, Inverness. The distance between the two sites is just over 100 miles (160 kilometers) by road.

An e-HIT assessment was carried out in February 2009 and compared with results from the Norwegian service, confirming the suitability of Wick as a remote pilot site, in conjunction with Raigmore Hospital. Among three satellite renal units managed from Raigmore, Wick has been identified as having the highest clinical priority for an eHealth solution, due to pressure of patient numbers. Sixteen patients receive dialysis three times per week, in shifts of four. Tele-dialysis could potentially avoid an increase in consultant travel to the remote site, with associated savings of time and costs. Communication between the units would be enhanced by brief daily video conferencing meetings. The proposal is supported by frontline healthcare professionals at the main and satellite sites.

There is an existing ISDN connection between the two hospital sites, which is already used by video conferencing traffic, and can accommodate the use of additional equipment sited in the renal units.

Another major eHealth project is due to be implemented in the renal service during the summer of 2009, which will include a new electronic patient record system. The facility to share patient records between sites will be valuable within the tele-dialysis project; however, the timing of a pilot will need to fit into the overall timescale for eHealth innovations in the service, to avoid introducing too much change concurrently.

### Speech therapy pilot

We are still investigating the possibility of establishing a pilot site for remote speech therapy, modelled on the service which operates successfully in Västerbotten, Sweden.

The pilot region is the North Highland Community Health Partnership (CHP), a subdivision of NHS Highland. A speech and language therapist with a strong interest in developing remote eHealth solutions in a rural area was identified before the Inverness conference in February 2009 and has since worked closely with the project team to establish the feasibility of a pilot.

The Speech and Language Therapy manager in Caithness and Sutherland works from a base at the community hospital in Golspie. Her own caseload covers both adult and child patients in the coastal district of North West Sutherland, in a number of remote settlements, including Kinlochbervie, Lochinver, Durness and Tongue. These are located 60-70 miles (96-112 kilometers) from Golspie, with a one way journey time of approximately two hours on narrow roads. Other therapists work from clinics in Wick and Thurso, and may also be involved in the pilot.



An e-HIT assessment was carried out in February 2009 and compared with results from the Swedish service, confirming the choice of North Highland as a pilot site. Key factors are the enthusiasm for innovative solutions among frontline healthcare professionals and managers and a clearly identified need to improve both quantity and quality of service by reducing time spent on staff travel.

This proposed pilot site presents certain technical challenges, as few video conferencing facilities are currently in place, in either the health or education services. Testing is continuing, to establish whether existing connections offer suitable quality of transmission for a speech therapy application. The potential to use the secure NHS N3 network for video conferencing is also being explored as a future development.



## NORWAY

### The Check-Up Bag - remote monitoring of biosignals and the Senjalegen project

In the Mid Troma County in North Norway it has been difficult to fill the positions for General Practitioners (GPs) in the small municipalities of Torsken, Tranøy and Berg for years. These municipalities all have less than 1500 inhabitants and one GP position each. For that reason, they have decided to collaborate with Lenvik municipality in the same area, which has 11000 inhabitants and 12 GPs. They will place all GPs in one center in Lenvik, and serve the small municipalities from there. The service is provided partly by having GPs at local offices once a week, and partly by bringing the patients to the larger center.

This area is an interesting site for implementing telemedicine services and was chosen as a pilot site in our project. The Check up-bag offers an alternative way of providing health services in the local offices, where nurses can take various measurements and transmit the biosignal data to the GP center at Lenvik. Instead of moving patients we are moving information about patients. The distance from Gryllefjord (Torsken) to Finnsnes (Lenvik) for example is 67 kilometers, so it can be of great advantage for the patients not having to travel for checkups that they have to do regularly.

The Check-up bag has been developed in Sweden, and some adjustments need to be made so that it will be most suitable for the Norwegian purposes.



*Gryllefjord*

### EyeMo - A Mobile Eye Unit for screening of diabetic retinopathy and follow-up of glaucoma Eye Clinic at Lycksele Hospital, Sweden



After evaluating the different e-Health services from the different project partners and possible pilot sites the local steering group decided to establish a pilot site for EyeMo at the Eye Clinic at Lycksele Hospital. EyeMo has been successfully implemented at the Ophthalmology Clinic at Oulu University Hospital.

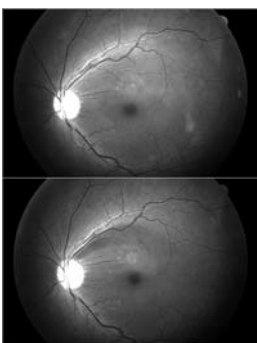
Today, e-health services are well established in the County Council of Västerbotten, and the relevant employees of the County Council are familiar with e-health technology and have a positive attitude towards trying new e-health services.

The Eye Clinic in Lycksele has a large service area in rural area inland Västerbotten. At the clinic the service targets diabetics (fundus imaging, screening of diabetic retinopathy and intraocular pressure) and glaucoma patients (Humphrey field analysis, fundus imaging and intraocular pressure). The service targets patients who are in need of follow-up and patients under care. The service is run by a nurse and an imaging technician. The nurse pre-screens the images and if they look normal, gives a screening timetable recommendation in accordance with local and national policies. If the imaging results are abnormal the images are forwarded to an ophthalmologist for a consultation and for assessing the need for additional examinations and treatment. The ophthalmologist also assesses the urgency of care and the follow-up schedule. The diabetic and retinopathy screenings at Lycksele eye clinic are performed by nurses who have received training in screening methods.

Lycksele eye clinic's current work processes connected to diabetic and retinopathy screening are in harmony with the methods used at the mobile eye unit (EyeMo). No major changes are needed in labour division or re-organizing work processes if EyeMo is implemented. The nurses have been performing initial image screenings for the past ten years at the clinic. Today all patients have to travel to the Clinic in Lycksele.

The major change that implementing EyeMo would have is that nurses would have better working conditions and increased access to equipment used to perform the screenings. The main beneficiaries for implementation are the patients; they would not need to travel to Lycksele to be examined and patients who have not been able to travel to the regional hospital for screening would be able to get the necessary examinations. The mobile eye unit has positive effects on screening volume and costs related to screenings and follow-ups.

<http://www.vll.se/default.aspx?id=2117&refid=1939>



## Health services in Norway

*Bente Christensen, The Norwegian Centre of Integrated Care and Telemedicine, Troms, Norway*

*Frank Larssen, The Norwegian Centre of Integrated Care and Telemedicine, Troms, Norway*



### The aim, organisation and population

The aim of the Norwegian health care system is to provide equal access to health care, regardless of income, social status and location. The system of health care provision in Norway is based on a decentralized model where the responsibility for secondary and primary care is divided between different governmental levels. The state has the responsibility for policy and overall capacity and quality of health care. The state is also responsible for hospital services through state ownership of regional health authorities. While the role of the state is to provide national health policy, to prepare and oversee legislation and to allocate funds, the main responsibility for the provision of health care services lies with the four health regions and the municipalities. The regional health authorities are responsible for specialised health care, while the municipalities are responsible for primary health care.

Norway covers 380 000 square kilometres (including the islands) and has 4.8 million inhabitants. The northern periphery is sparsely populated, with long distances and geographical obstacles; hence inhabitants may have long travelling time to medical services. The challenges in delivering services in the Northern periphery region are illustrated by the map. It states that even though 45% of the land area (included Spitsbergen) is within this region, only 10% of the habitants of Norway live here.



### Specialised health care – the Regional Health Authorities

In 2001, the system in Norway changed from a decentralized to semi-centralized NHS model. Before 2001, hospitals were owned by 19 counties. In 2001 the state took over the hospitals, but established the regional health authorities as enterprises that deliver specialised health services. This includes both somatic and mental health institutions, as well as other specialised medical services, such as laboratory, radiology and ambulatory services,

special care for persons with drug and alcohol addictions. The organization of the regional health authorities and the health enterprises is unique to Norway. The regions have two roles, the authority role and the enterprise role. In their principal role regions have a “care role” in providing the population with specialised health care services; the other is as a supplier and producer of specialised health care, since regions own the health enterprises. The enterprises enjoy an element of freedom similar to that seen in the private sector, although the state has built-in directing/steering and control mechanisms in the organization, in other words an “in between solution” .

Norway’s four regional health authorities are responsible for the provision of specialised care. There are at present 30 health enterprises under the four regional health authorities that comprise 4 regional and 70 local hospitals. The names of each region, together with the number of inhabitants, are as follows:

- Northern Norway Regional Health Authority (Helse-Nord), inhabitants: 463 000
- Central Norway Regional Health Authority (Helse-Midt), inhabitants: 649 000
- Western Norway Regional Health Authority (Helse-Vest), inhabitants: 956 000
- Southern/ Eastern Norway Regional Health Authority (Helse-Sør/Øst), inhabitants: 2 580 000

### **Primary health care**

The municipalities have responsibility for primary health care; including both preventive and curative treatment. The aim of primary care is to improve the general health of the population and to treat diseases and deal with health problems that do not require hospitalization. GPs work as “gate keepers” for the specialised health services. That is, if such services are needed, the GP has to send a referral to a hospital, or a contracted specialist.

Contracts between municipalities and private providers are a very important tool in guaranteeing good quality for service users, and also in securing good cooperation with other parts of the health system. The municipalities have a contractual relationship with the GPs, who are part of the national regular GP scheme.

There are 431 municipalities in Norway. In Northern Norway there are 463 000 inhabitant, living in 88 municipalities. Tromsø is the largest municipality with 65 000 inhabitants while there are many municipalities with less than 5000 inhabitants.

### **Challenges**

Within the limits of legislation and available economical resources, regional health authorities and the municipalities are formally free to plan and run public health services as they like. However, in practice, their freedom to act independently is limited by available resources.

This division into different governmental levels gives us challenges in delivering healthcare services to the inhabitants. Norway has very strong regulations on sharing sensitive information about patients. Together with economical issues, this has been an obstacle for co-ordinating healthcare between specialised and primary healthcare. The Norwegian Health Minister has therefore announced an “Integrated care-reform” which hopefully will give better health services to the people, especially those with chronic diseases.

