



## Promoting innovative eHealth services across the Northern Periphery

The core idea behind the Competitive Health Services project is to develop health services for people in remote or rural communities where access to health services might be limited. We have done so by

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

We started out by mapping and identifying good practices across the partner countries and then set out to assess if the services could be transferred and implemented transnationally. We then chose the best service solutions for piloting. In this eNewsletter we describe what has happened after the initial pilot and testing period has been completed and how we have succeeded in creating sustainable services.

### Mapping results published

Our mapping results from work package 2 have been published in a peer reviewed US journal, **TELEMEDICINE and e-HEALTH**

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[Transnational Comparison: A Retrospective Study on e-Health in Sparsely Populated Areas of the Northern Periphery](#) Vol 16 No. 10 December 2010 DOI: 10.1089/tmj.2010.0075

### Final Conference in Oulu, Finland

The final project meeting and international conference was held in Oulu, Finland, on the 3rd-4th of November. It attracted close to 90 participants from Finland, Scotland, Norway, Sweden and Denmark.

Our keynote speakers included among others Professor Richard Wootton from Norway, who talked about adoption of telemedicine, and Dr. Jaakko Aarnio from the European Commission ICT for Health Unit. You may read more from our [website](#).





## Mobile eHealth clinic- increasing access to health care in the sparsely populated areas of Northern Periphery

*Ulla-Maija Pesola, PhD student and Eva Lindh Waterworth, PhD, Professor*



Over 150 patients living in the sparsely populated rural areas in Västerbotten, Sweden, were called to participate in screening of diabetic retinopathy at a mobile eye unit during last year. Instead of travelling to the main hospital to take part in the screening the patients were examined at the mobile eye unit borrowed from the Northern Ostrobothnia hospital district in Finland. The mobile eye unit is an on the road clinic for ophthalmology nurses which is fully equipped to do screenings of diabetic retinopathy. The medical professionals who examine patients at the unit have received special training in evaluating diabetic retinopathy, and are usually able to give patients the screening results on the spot.

The staff sees clear benefits in examining patients locally; not only does it decrease travel for the patients but it also leads to fewer cancelled appointments and increases access to specialist care in rural areas. Many of the elderly patients are not able to travel to the main hospital to receive the examination, making it vital for them to be offered the possibility to be screened for retinopathy locally. During the pilot period patients saved more than 33 000 kilometres in travel in often extreme weather conditions.

98% of the patients who have visited the mobile eye unit have been very satisfied with the trial, they would recommend the service to friends and family members and would like to be examined at the mobile unit in the future. Patients greatly appreciated the chance to receive specialist care in their own municipality and were pleased with receiving the results of the screening at once.

The number of people with diabetes is increasing and the County Council of Västerbotten is exploring new ways of providing health services in the rural areas. Since the population density is very low in the rural areas it is not possible to have specialist care units in every small village. Mobile care units are an approach where patients have the possibility to receive specialist health care services locally. Mobile units are able to cover vast geographical areas, bringing services closer to patients and making access to health care more equal between rural and urban areas.

Since the rural areas of Västerbotten are very sparsely populated the prevalence of diabetes is not enough to keep the mobile eye unit busy all year. Presently the County Council of Västerbotten is looking in to ways the unit could be utilised when it is not used for screening of diabetic retinopathy. One possibility is to add other patient groups with ophthalmology related conditions that could be examined at the unit; such as examining patients with glaucoma, providing visual field tests for people applying for commercial drivers licences in addition to performing screenings of diabetic retinopathy.

Another suggestion is to use the mobile unit for other specialities in addition to ophthalmology, such as diabetes related examinations. It could be possible to perform diabetic foot care there and allow access to consultations with medical professionals, such as General Practitioners and Dieticians. Specialist diabetes nurses and nutritionists services could also be provided at the mobile unit, in addition to retinopathy screenings. It is also possible to expand the services provided at the mobile unit to include other examinations on specialist care level, such as cardiac ultrasounds and other advanced examinations that are only provided at the main hospitals, but where portable equipment could be temporarily moved in to the mobile unit and utilized in sparsely populated areas.

Being part of the Competitive Health Services project has enabled the County Council of Västerbotten to take specialist health care services to sparsely populated areas of Västerbotten and gain essential information from the project partners on mobile eHealth services. The mobile eye unit has proven to be a valuable service that will be further developed and implemented, continuing to increase access to quality health care services for populations in remote rural areas.



## Wound consultations and speech therapy from afar

*Minna Mäkineniemi, PhD, Project coordinator*



In Northern Finland, medical services from University Hospital specialists have been offered to residents of a remote community at their local health care centre. A full-HD videolink was established between the out-patient clinics of dermatology and surgery in the Oulu University Hospital and Pudasjärvi health care centre. Due to the excellent image quality even the smallest details could be clearly seen on the screen. Through this videolink patients with complicated wounds or leg ulcers were able to receive consultations from a dermatologist or a plastic surgeon located 90 kilometers away. Specially trained wound nurses were also present at both sites. A videolink between the health care centre and patient's home was also established, allowing a home nurse to contact the health care centre and consult the wound nurse on how to treat a wound.



Photo: Pekka Fält

Patients were very satisfied with the service and all of them preferred a teleconsultation over a visit to the University Hospital. The medical and nursing professionals were also pleased with the service model, as it unified clinical practices across the Hospital District, promoted transfer of knowledge and offered opportunities for learning and education. In addition to saving travel costs, it also saved work time in the University Hospital as consultation times were reduced. According to our calculation, this service is cost-effective with approximately 200 consultations per year.

The full-HD videoconferencing (VC) equipment at the health care centre was also used for **remote speech therapy** sessions. The speech therapist was located at the health care centre, and a portable VC equipment was used in two remote schools. This allowed the children to receive therapy sessions at their schools and they no longer had to travel and interrupt their school day to see the therapist.



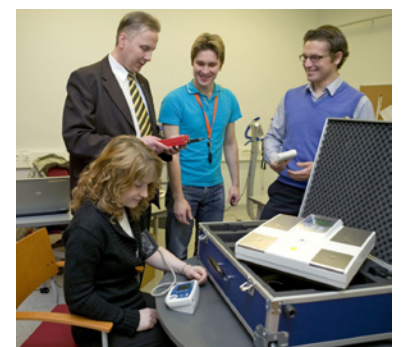
According to our survey, therapy sessions were successful and clear progress was made. Some children actually performed better in the remote sessions than in the conventional face-to-face therapy.

Encouraged by our positive experiences, we are currently planning on establishing a regional videoconferencing network that would span across the Northern Ostrobothnia. Tendering for a joint technical solution is in progress and once the network is established, it will enable a whole range of services to be provided remotely. This network could be expanded to include the entire Northern Finland in the near future.

## Remote monitoring of personal health data and cardiac patients

“Lose weight wirelessly!” That could have been the slogan to attract people to sign up for the remote monitoring pilot in the Technology Health Care Centre of Kaakkuri, city of Oulu, in Northern Finland. The pilot service was aimed at people who had to control their weight because of health reasons, such as diabetes or hypertension.

The pilot service consisted of wireless devices for measuring blood pressure, blood glucose, weight, fat percentage, PEF and FEV and VO<sub>2</sub> max values - all packed in one big suitcase which patients could also use at home. Measurement results were automatically recorded in a database, which could be accessed by both patients and the health care centre nurse.



This pilot service was well received by both the patients and the health care center staff. It supports patients' active role in their own health care and is well in line with the policy of the Technology Health Care Centre. A similar setup was also used for remote monitoring of cardiac patients. Patients suffering from heart arrhythmias could record their ECG at home and the analysis was done at the health care centre.

The rental bags were returned after the pilot period ended, but development for these type of services will continue, particularly in the Oulu Self Care platform, which offers citizens electronic access to a broad range of health information and services.



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The two eHealth services piloted in Scotland in partnership with NHS Highland – teledialysis from Norway and remote speech therapy from Sweden – are increasingly becoming part of normal service delivery.

### Teledialysis

Videoconferencing links were set up between the renal units at Raigmore Hospital, Inverness and Caithness General Hospital, Wick, in March 2010. VC equipment was installed on mobile stands to enable flexible use in limited spaces, including alongside patients undergoing haemodialysis.

In the first year of operation, ‘virtual ward rounds’ have taken place in alternate months, during which dialysis patients are reviewed over the link by a consultant in Inverness. Other members of the multi-disciplinary renal team, such as dieticians and pharmacists, are also directly involved with Wick patients in this way. Several unscheduled consultations have also taken place via VC, enabling specialist opinion to be sought from the main renal unit.

Nurses in Wick now regularly link in to the training programme delivered at Raigmore Hospital; they were not able to access this previously because of the travel factor.

Nursing staff at both renal units meet each week via VC, enabling better continuity of care for Wick patients on admission and discharge from Raigmore.

A key benefit is that consultants are now able to see more outpatients during their monthly Wick clinics, making use of the time saved by reviewing haemodialysis patients remotely, rather than in person at every visit. This means that most new patients are now able to attend their initial appointment locally instead of being asked to travel 165 km to Inverness. In 2010, out of 31 new referrals, all but two were seen at a Wick clinic, compared to 2009, when 32 out of 42 new referrals were sent to Inverness. Reduced travel led to a carbon emission saving of **2,445 kg CO<sub>2</sub>** in 2010.

Based on the positive experience of this pilot, teledialysis has been extended to a further satellite renal unit at Fort William. The potential for video links with the renal unit at Stornoway on the Western Isles is also being explored.





## Remote speech therapy

Use of videoconferencing in speech and language therapy in North Highland is now gathering pace. Broadband capacity across the region is improving, not least since NHS Highland made the switch from transmitting VC calls via ISDN phone lines to the NHS IT network during 2010. This has resulted in consistently higher quality of sound and image. In principle videoconferencing can now be used in more health service premises; speech therapists are investigating the option to move a small VC unit between health centres, in order to provide intensive therapy courses for individual patients as needed.

Following initial trials with one patient in spring 2010, an evaluation was conducted and lessons learned about how to adapt the planning and delivery of therapy to the video medium. The team has since identified further patients with treatment needs which are suitable for remote therapy.

Funding was obtained for new VC equipment at Golspie hospital, including document cameras for use at either end of a consultation.

The lead therapist and her team are keen to share the practical knowledge which they have developed during the pilot. There is scope for a broad range of allied health professionals to use videoconferencing in their practice, bringing specialist services within reach of more rural patients. Reducing travel by therapists frees up time for them to concentrate on patient care, generates considerable savings in time and travel costs and has a positive impact on the environment.

Overall, it has been a valuable experience working on the two successful projects implemented in Scotland as part of Competitive Health. NHS Highland were key partners – they provided staff time and support to the projects, and helped fund the purchase of necessary equipment. Our Local Expert Forum provided wise advice about which projects to select. The Scottish Government, the Scottish Centre for Telehealth, Professor Frances Mair and DanMedical (a Highland-based eHealth business) provided practical advice about the best approach. NHS staff were committed and enthusiastic about the innovations and accepted the change in their work patterns. Patients were accepting of the new technologies. In both cases transnational knowledge was exchanged and ongoing international networks established between the renal teams in Norway and Scotland and the speech therapists in Sweden and Scotland. For all these reasons the pilots have proved sustainable and are now becoming part of everyday practice in the two participating sites.

For further information on the Scottish pilots please view our video at

<http://www.ehealthservices.eu/project>



## The check-up bag (remote monitoring of clinical parameters)



*Frank Larsen, Chief Consultant*



The idea behind the check-up bag is to bring the health care services to the patients instead of having the patient travel to the primary health care centre. The check-up bag is a mobile solution that can be stationed in a patient's home or at a local health care centre. The service consists of standard medical equipments, most of them well known to the health care professionals. The instruments can be handled by the health care workers and some of them can be handled by patients. Every patient has their own identity card which is attached to the bag prior to the measurements. When the patients or the health care professionals use the equipments to measure clinical parameters, the data is sent to the bag via Bluetooth. The data is then sent to a server via the mobile net and can then be accessed by authorized health care personnel via a web site.

Health care professionals in the municipality of Torsken, Northern Norway, have been testing and using the services, both at the health care centre and at patient's home. The most used services were INR. The health care professionals found the idea behind the check-up bag useful as patients don't have to travel long distances. The experience from the pilot period shows that improvements are necessary in order to make the solution a viable tool for delivering health care services in a Norwegian context. During the pilot period the clinical parameters were not accessible within a reasonable amount of time, and the service should be integrated with the electronic patient record.

