



“The Rural eHealth Report - executive summary”

Ernst Kloosterman,
Norwegian Centre for Telemedicine

March 20th, 2007



Title: **The Rural eHealth Report – executive summary**

NST-report: 04-2007

Author: Ernst Kloosterman, Program Manager, Norwegian Centre for Telemedicine, Norway
Ernst.Kloosterman@telemed.no

ISBN: 978-82-92092-82-8

Date: 20.03.2007

Number of pages: 13

Summary: This executive summary report summarizes, elaborates and concludes on the findings of the Danish, Swedish and Norwegian country studies regarding the impact of eHealth on out-migration from rural areas, as part of the Baltic eHealth project. The three country studies and this executive summary make up the ‘Rural eHealth Report’, which is freely available at the Baltic eHealth project website www.baltic-ehealth.org.

Publisher: Norwegian Centre for Telemedicine
University Hospital of North Norway
P.O. Box 35
N-9038 Tromsø
Telephone: (+47) 77 75 40 00
E-mail: info@telemed.no
Web: www.telemed.no

This report may be freely distributed as long as the source is stated. The user is encouraged to state the name and number of the report, that it is published by the Norwegian Centre for Telemedicine, and also that the report in its entirety is available at www.telemed.no and www.baltic-ehealth.org

Contents

1.	INTRODUCTION.....	7
2.	SUMMARY	8
2.1	COUNTRY STUDIES	8
2.2	DISCUSSION	12
2.3	CONCLUSIONS	13

1. Introduction

The purpose of the 'Baltic eHealth' project is to promote the use of eHealth in the rural areas of the Baltic Sea Region by creating a large trans-national infrastructure for eHealth, the Baltic Health Network (BHN). The network is established by connecting existing national and regional healthcare networks in the participating countries. By doing so the project creates an infrastructure, which opens up for and facilitates cross-border eHealth services, potentially reaching out to all corners in the region.

The scientific objective of the Baltic eHealth project is to illustrate that eHealth is an effective means to enhance access to high quality healthcare services in rural areas and that the use of eHealth consequently contributes to counteracting rural out-migration. It is the latter issue, eHealth counteracting out-migration, which has been studied in the Rural Report project.

In the project three different methods were chosen to map the available knowledge, experience and people's attitude and expectations with respect to eHealth and migration in rural areas in three of the participating countries, one method for each country. This approach was chosen because the development of telemedicine and eHealth technologies and services is still in an early stage, thereby mainly nationally oriented. In addition it was expected that most of the available knowledge would deal with technological, medical and cost-benefit data, more than with impact on demographic issues like settlement and migration. By performing this three-country approach by three national groups it was expected that the study would be more effective (accessibility of data) and additionally would generate a broader view on eHealth factors that influence settlement and migration.

In Denmark, the Danish Institute of Rural Research and Development (CFUL) designed and performed a questionnaire survey in the Danish region Funen. Additionally they carried out semi-structured telephone interviews. Researchers of the institute based their study regarding the impact of the availability of health care services, particularly electronic healthcare services, on settlement on the data from this survey and interviews.

In Norway the Norwegian Centre for Telemedicine (NST), supported by the Norwegian Centre for Informatics in Health and Social Care (KITH) did a literature review focusing on whether eHealth solutions implemented in rural areas in Norway can supplement and possibly strengthen the distribution of healthcare services in rural areas, and how local inhabitants use and look upon the solutions.

For Sweden, and then particularly for the county of Västerbotten, demographic data were collected describing the situation with respect to migration, healthcare and healthcare services in rural areas compared to urban areas. Additionally a survey was performed among students in different healthcare educations (future healthcare workers) regarding their expectations of use of different ICT tools in their future healthcare jobs. The Swedish study is performed by the Council of Västerbotten and the Department of Public Health and Clinical Medicine, Family Medicine of the Umeå University.

The expectation that the amount of information on the impact of eHealth services on migration is limited was confirmed during the studies. In this sense, the Baltic eHealth Rural Report should be read as a status report, a first mapping, of factors possibly influencing out-migration from rural areas, more than a report on how eHealth services counteract out-migration from rural areas.

2. Summary

2.1 Country studies

Denmark: Access to health care services in remote rural areas; what impact does it have on settlement?

Jens F.L. Sørensen & Gunnar L.H. Svendsen, Danish Institute of Rural Research and Development, University of Southern Denmark

The Danish study was not limited to the impact of eHealth solutions on migration, but examined the importance of traditional healthcare services for settlement in rural areas, in the form of access to general practitioners and hospitals. Additionally, attitudes to the use of eHealth solutions from a citizen/patient perspective were examined.

Literature search revealed that there is little documentation concerning the significance of local healthcare services for in- and out-migration in remote areas. So it is highly unclear whether new eHealth services will be able to prevent further migration from rural areas. Thus, the research problem was formulated as follows:

To which extent can maintenance or improvement of local health care services, including introduction of electronic (eHealth) solutions, counteract rural out-migration?

The researchers designed a survey based on the following research questions:

- Compared with other localisation factors, to what extent does access to local health care services affect the decision of settling in a rural area?
- Are there certain groups to whom access to local health care services is more important as a localisation factor than other groups?
- To what extent will residents/patients be comfortable with receiving medical treatment based on eHealth technology?

The survey comprised two separate studies:

- A questionnaire study on reasons for (permanent) choice of residence among people, who either have lived in a chosen remote area (Ærø), or in a chosen urban area (Odense), for a longer period of time, i.e. minimum 3 years.
- A study of migration motives among people, who recently have moved between a chosen remote area in Denmark (Ærø) and two urban areas (Odense and Svendborg), based on telephone interviews made by one of the researchers.

The studies revealed that, when asked implicitly, only a few respondents mention access to public services as a reason for choice of settlement, and more particularly attached a low significance to having access to healthcare services. However, when asked explicitly,

access to healthcare services was of great importance for their choice of residence, being 73 % for the rural respondents and 48 % for the urban respondents.

Further investigation identified the socio-economic groups that find it most important to have access to healthcare services: women, elderly, persons suffering from long-term illness and people with primary school as the highest completed education.

The assessment of attitude to some eHealth services, as a possibly important factor for the success of delivering healthcare services, gave an undetermined result. Of importance may be that the abovementioned identified socio-economic groups are most sceptical to, or feeling least comfortable with, eHealth services. Interesting is that of the people that consider to out-migrate from rural areas if their hospital closes, 72 % is positive to eHealth solutions if that prevents the local hospital from closing.

The overall conclusion of the Danish study is that rural and urban settlement preferences reflect a choice between two different lifestyles.

With respect to what impact access to healthcare services has on settlement and migration, the evidence is more unclear. Based on expressed reasons for actual settlement and actual relocation, access to local health services seemed only to play a highly marginal role. However, when looked at assumed settlement preferences in case of reduction in the local healthcare supply, these services tend to be attributed much more importance by the rural residents.

Both rural and urban residents reveal relatively positive attitudes to the two (electronic) eHealth solutions examined, made feasible due to recent innovations within healthcare telematics. When also taking into consideration that a not insignificant number of Ærø residents would consider moving in case of reductions in local healthcare, this makes probable that efficient and well-implemented eHealth solutions to a certain extent would be able to counteract migration from remote, rural areas.

The Danish researchers point to a methodological weakness in their approach in that they deal with assumed and not actual behavior. Nevertheless, they conclude that, when asked explicitly, rural residents find local healthcare services very important.

Norway: *How can eHealth benefit rural areas - a literature overview from Norway*
Robert Myrvang, Norwegian Centre for Telemedicine & Thomas Rosenlund, Norwegian Centre for Informatics in Health and Social Care

The Norwegian team performed a literature review regarding how eHealth systems implemented in rural areas in Norway gave new opportunities for decentralised healthcare services delivery, while suggesting that successful solutions also may lead to such opportunities in Baltic rural areas. The Norwegian literature study aimed at getting answers to the following research questions:

- *If and how telemedicine can substitute, supplement and possibly strengthen the distribution of health care services in rural areas?*
- *How does local inhabitants use and look upon the solutions?*

- *How can eHealth counteract out-migration from rural areas?*

The literature overview is based on several desktop searches and relevant literature searches from reference lists. They included Norwegian results documented and published in the period 2000 through 2006.

With respect to the development of rural eHealth both in Norway and abroad the review revealed that eHealth, and more specifically telemedicine and telehealth, is a good means to improve the delivery of healthcare (services) to people in rural areas. In Norway eHealth/telemedicine has gotten a more explicit role in government strategies to improve access to healthcare services in rural areas, compared to other countries. However, use of eHealth/telemedicine is still to a large extent in pilot and implementation phases, which inhibits drawing of any solid conclusions on the impact of eHealth/telemedicine on rural migration patterns

In total 95 studies were found and evaluated with regard to the problems addressed in the Baltic eHealth project. After a systematic appraisal, 45 studies were included. In order to be included, the study had to address a problem and to describe the telemedicine service as an alternative to other. The different studies were then systematised according to 'Telemedicine Systems' and 'Electronic messages and Electronic Patient Records'.

The studies relate mainly to distant healthcare services and conclude mainly on benefits for patients and healthcare personnel with regard to travelling time and costs, economic benefits and quality of service. However, the results of the Norwegian studies show in general that rural areas benefit from telemedicine services and show that healthcare professionals feel more secure and comfortable with professional support, either in the form of second opinion or coaching. Also, the local residents seem to have a positive view on the use of eHealth systems.

The conclusion is that implementation and use of eHealth systems in rural areas both improve healthcare delivery to the residents and make working in rural healthcare more appealing. It seems therefore reasonable to assume that implementation of eHealth counteracts out-migration from rural areas of both citizens and professionals. However, there is no documented clear evidence to support this assumption.

There is obviously a demand for more evidence-based research on the benefits of telemedicine for rural areas.

Sweden: Rural ehealth Report - Sweden

Anita Kemlén, County Council of Västerbotten; Mats Nilsson & Göran Westman, Department of Public Health and Clinical Medicine, Family Medicine, Umeå University

The Swedish report consists of two parts. The first part gives a summary of demographic data showing that the rural areas of Sweden suffer from out-migration in the last decades, with the County of Västerbotten more specifically described, while the total population in

Sweden actually increased in the same period. The second part deals with a survey performed among healthcare students regarding their expectations of the use of ICT in healthcare once they are in job. The report does not conclude on any eHealth factors impacting migration patterns.

In the Swedish rural areas and specifically in Västerbotten, telecommunications and computer networks are well developed. Västerbotten is in the forefront of ICT developments, including telemedicine services. Swedish healthcare is highly decentralized and scores well in OECD perspective with respect to costs per capita, quality of care, medical outcomes and health effects. However, health strategies indicate that more attention must be given to develop the potentials of ICT, such as health information networks, electronic health records, telemedicine services, and wearable and portable monitoring systems, to further innovate the health and medical care system. Additionally, these eHealth systems will contribute to better healthcare delivery in rural areas where access to healthcare may be hindered due to distance and lack of healthcare professionals. In Sweden so far, the impact of the presence of eHealth systems on settlement in rural areas of healthcare personnel and residents has not been studied.

While there is substantial attention from the healthcare authorities for ICT in healthcare, the authors notice a 'varying degree' of attention for ICT in healthcare education. To explore the expectations of future healthcare workers regarding ICT support in their future professions, the Swedish team performed a survey among students of different healthcare educations. The survey comprised students studying to become nurses' aids, nurses, physical therapists, doctors, and occupational therapists at the end of their undergraduate studies. All students assumed that they would need a personal computer, but two out of five thought that access to the internet was not essential for their future work. They expected to have computer-based record keeping system and a telephone. However their expectations wrt needing a mobile telephone with camera and video conferencing system were not high. Interest in eHealth education in their studies was low, with a majority that had no opinion (neutral). There was no gender difference, but students who knew that they will work in rural healthcare had higher expectations of using eHealth systems in their future jobs. Younger students, under age 30, have lower expectations concerning the use of ICT tools than the older ones.

The authors do not draw any conclusions based on their survey. In their discussion of the results, however, they suggest some explanations for the results. One explanation is that younger people take the use of ICT as a fact, as a natural part of their life. But more relevant and important is the question whether there is too much focus on medical knowledge in the educational programs. This may blur the understanding of the interaction between different phases and actors in the treatment process. In a well-adapted work process all needed information should exist at hand when needed. This should be independent of whether the user is connected to the source or not. This could explain why students think they can manage without support from telemedicine.

2.2 Discussion

The teams behind the three country-reports approached the issue of eHealth in rural areas and its impact on migration quite differently.

The Danish team took the residents, the healthcare receivers, as focal point and wanted to find answers to the question whether better access to healthcare service, including eHealthcare service, in (Danish) rural areas can counteract rural out-migration.

The Norwegian team performed a literature review regarding the application of eHealth/telemedicine services in rural areas, with focus on the situation in Norway, and looked for information indicating that these eHealth applications prevent out-migration of both healthcare professionals and residents.

The Swedish team indicates in their description of demographics statistics in the County of Västerbotten that the stimulation of ICT in healthcare (eHealth solutions) is an important tool in Swedish healthcare policy to improve access to healthcare in rural areas. They questioned the status and importance of ICT in healthcare education programs and surveyed the expectations of students regarding the use of ICT and eHealth in (rural) healthcare.

The three teams found little documentation on eHealth and out-migration from rural areas, let alone on the impact of eHealth on out-migration. As a consequence the three teams have chosen for alternative approaches in the expectation that their approach could reveal information on this relation and possibly support any conclusion on this impact. What the teams actually found out in their different approaches is that eHealth and telemedicine are still in an emerging phase. Even in the healthcare system eHealth and telemedicine applications have often not gone beyond the pilot stage, testing their economic and quality benefits. The low position and status of eHealth and telemedicine in healthcare education programs is seen in this light symptomatic and worrisome; in any case not a good prerequisite for the development of eHealth and telemedicine in healthcare. Also, people from socio-economic groups that need healthcare services most are reported to have the most skeptic attitude towards eHealth solutions.

However, the Danish and Norwegian studies showed that access to healthcare is important for residents, and when asked explicitly an important factor for settlement. Additionally, the Norwegian study revealed that healthcare professionals in rural areas feel more secure and comfortable when supported by eHealth systems that facilitate second opinion and coaching from colleagues. Prudently, both teams conclude that there are positive indications that eHealth might counteract out-migration from rural areas, but they do not state that it actually does.

The Danish team is firm in their conclusion that choice of settlement, rural versus urban, is in the first place a choice of lifestyle, comprising more than one item. Other demographic data, as highlighted by the Swedish team, show that employment possibilities are important. Accessibility to healthcare is important in all situations. The three countries have a good ICT infrastructure, also in the rural areas, facilitating good access to healthcare. The Swedish data show that only a small percentage of the Västerbotten rural population have not so good access due to the distance to the first

healthcare post. If this ICT infrastructure was not present, and subsequently the eHealth infrastructure was lacking, and therefore some of the healthcare services were not available, would more people have left the rural areas in that case? And to what extent? This question has not been put and answered explicitly in the studies. Only the Danish survey revealed that in case of the closure of the rural Hospital on Ærø, people would consider to out-migrate to the urban areas. Substitution by some eHealth services could prevent them from going, however, this was only suggested.

It should be noticed that all three countries in these studies, i.e. Denmark, Norway and Sweden, practice a policy of equal access to healthcare, while investing more or less heavily in ICT infrastructure and ICT in healthcare. Norway practices an active rural policy in order to keep the rural areas inhabited, and healthcare delivery is a part of this policy. This might imply that eHealth applications already have an impact on out-migration from rural areas in the three countries without being noticed or explicitly identified.

2.3 Conclusions

The three country-studies show that access to healthcare is important for residents in rural areas. Access to healthcare is however not the first reason for choice of settlement.

The application of eHealth solutions helps to improve and maintain accessibility and quality of healthcare in rural areas.

Rural healthcare professionals are positive to support, like second opinion and coaching, from colleagues via eHealth solutions.

The application of eHealth solutions is beneficial for residents and healthcare professionals, despite skeptic attitudes of those socio-economic groups that need healthcare most.

The development and implementation of eHealth solutions is still in an emerging phase, many applications being in pilot evaluations and small scale services.

There is very little documentation on eHealth and migration available and more evidence-based research regarding this subject is needed.

So far, any proof that eHealth counteracts out-migration of residents and healthcare professionals from rural areas, is at best circumstantial.

A prudent conclusion is that eHealth is a relevant factor in counteracting out-migration from rural areas.

