Project report

Qualitative improvement of health services for indigenous people in remote areas in the Nenets Region

International Conference “Arctic telemedicine” and Project meetings in Nenets autonomous area, November 19th-24th 2014

Svetlana M. Bye
Oddvar Hagen
Stig Karoliussen
Elisabeth Sjaaeng
Title: Qualitative improvement of health services for indigenous people in remote areas in the Nenets Region

NST-report: 02-2015

Authors: Svetlana M. Bye
Oddvar Hagen
Stig Karoliussen
Elisabeth Sjaaeng


Date: 2015-03-27

Number of pages: 47

Keywords: Nenets, health services, indigenous people, telemedicine, quality

Summary: The conference in Naryan-Mar in November 2014 was an important milestone in the project. The health authorities, health workers in NAO and potential partners in Russia, especially in the North, informed the audience about the project. The conference was widely covered by the media, in order to inform the "man on the street" about what was going to happen about eHealth in NAO. The regional network in NAO continues being expanded and developed in cooperation with Norway/NST in terms of consulting and knowledge transfer. Our goal is qualitative improvement of health care to the population in remote regions and nomadic Nenets.

Publisher: Norwegian Centre for Integrated Care and Telemedicine
University Hospital of North Norway
P.O. Box 35
N-9038 Tromsø

Telephone: (+47) 07766
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 Integrated Care and Telemedicine, and also that the report in its entirety is available at www.telemed.no.

© 2015 Norwegian Centre for Integrated Care and Telemedicine
Preface

This project is following an inquiry from the Nenets autonomous okrug (NAO) to the Norwegian Centre for Integrated Care and Telemedicine (NST) in 2012. NAO was then on the initial stages to build the regional telecommunication medical networks and to improve health services to the population in remote areas, especially the nomads. The authorities of NAO realized that good quality service was more than just buying equipment. They wanted NST’s experience and knowledge in organizational issues, health economics and social aspects to build a network. NAO was willing to put a substantial contribution into the project.

The project is mainly based on the experience the NST has got under their previous projects in North-West Russia, e.g.:
1. "Telemedicine in North-West Russia" (1996-2001)

All these projects were funded by the Norwegian Barents Secretariat and were in compliance with the main guidelines of the Barents cooperation in the field of healthcare. The project group has participated in an earlier mission from the Norwegian Directorate for health in the Arkhangelsk region to examine options for using e-health solutions in emergency traffic accidents. Relevant project reports can be found on www.telemed.no

The project "Qualitative improvement of health services for indigenous people in remote areas in the Nenets Region" works over two years. This report describes important steps in the project. There has been a special focus on informing the population in NAO. Therefore, there were interviews in the media, such as TV, radio, newspapers and web-based media. An open website for the project has been created at www.telemed.no

The International Conference “Arctic telemedicine” and project meetings in Naryan-Mar in November 2014 were of great importance for the further development of the telemedical network in NAO. The conference and meetings gave insight and possibility to set up pros and cons of telemedicine and telemedical solutions in the rural areas. Another focus was criteria for successful use of the welfare technologies. Meeting attendees had the opportunity to discuss how to work together in the regional network. The Conference and the meetings in NAO were inspiring for the health workers, especially for those who came from distant health care facilities.

The NST would like to thank the contributor, The Norwegian Ministry of Health and Care service (HOD) for their goodwill and funding of this project. This will help NST to transfer skills and knowledge to the population in NAO, and support them in their efforts to improve health services in outlying and especially for the indigenous people who live a nomadic life.

The authors would like to thank the partners from NAO for necessary and valuable information and additional documents. A special thank goes to Vladimir Iljin, Natalya Lysak and Sergey Kungurtsev.

Thanks for the photos in this report, Oddvar Hagen, Adviser at NST, local photographs and the conference website.

This report is number 2 in this project. The first report and more about the project you can read on the site: http://telemed.no/index.php?cat=270237&find=nenets
# Table of contents

1 Introduction .............................................................................................................. 8  
1.1 Background .............................................................................................................. 8  
1.1.1 Equipment and communication ................................................................................ 9  
1.1.2 Working group ........................................................................................................ 10  

2 Purpose and objectives .......................................................................................... 11  

3 Work packages ...................................................................................................... 11  
3.1 WP1. Primary Health Care Service ........................................................................ 11  
3.1.1 WP1. Results ......................................................................................................... 11  
3.2 WP2. Training ........................................................................................................ 12  
3.2.1 WP2. Results ......................................................................................................... 13  
3.3 WP3. Legal, financial and organizational policy .................................................... 13  
3.3.1 WP3. Results ......................................................................................................... 13  
3.4 WP4. Technical support ......................................................................................... 13  
3.4.1 WP4. Results ......................................................................................................... 14  

4 Project meeting ...................................................................................................... 14  

5 International conference “Arctic telemedicine” ....................................................... 15  
5.1 Background ............................................................................................................ 15  
5.2 Purpose, objectives and topics of the Conference ................................................ 16  
5.3 Organization ........................................................................................................... 16  
5.4 Conference Proceedings........................................................................................ 17  
5.5 First Conference Day ............................................................................................ 17  
5.5.1 EHealth services and infrastructure ....................................................................... 19  
5.5.2 Welfare technology ............................................................................................... 21  
5.5.3 Cost-effectiveness of telemedicine ........................................................................ 22  
5.5.4 Flexible learning ..................................................................................................... 23  
5.5.5 Telemedicine and emergency medicine ................................................................ 25  
5.6 Second conference day ......................................................................................... 26  
5.6.1 Some aspect of using implantable technical devices in remote medicine .......... 26  

6 Remote settlements ............................................................................................... 29  
6.1 Pilots ....................................................................................................................... 29  
6.1.1 Karatayka ............................................................................................................... 29  
6.1.2 Bugrino ................................................................................................................... 30  
6.2 Equipment .............................................................................................................. 32  
6.3 Visiting Telviska. November 22, 2014 ................................................................. 34  

7 Information dissemination ...................................................................................... 38  

8 Summary ................................................................................................................ 38  

9 Appendix ................................................................................................................ 40  
9.1 Conference program .............................................................................................. 40  
9.2 Resolution .............................................................................................................. 43  
9.3 Project information in the media ............................................................................ 46
1 Introduction

The project B13349, funded by Barents Health Program, is a follow-up of a request from the Nenets Autonomous Okrug (NAO) health authorities and an initial joint workshop between NAO, Arkhangelsk Regional Hospital, the University Hospital of North Norway (UNN) and the Norwegian Centre for Integrated Care and Telemedicine (NST). This workshop took place on 10-11th April 2012 in Naryan-Mar, funded by the Barents-secretariat (project 127002 "Kompetanseutveksling og opplæring i telemedisin og e-helse") and by NAO administration.

NAO is characterized by vast and inaccessible regions, and problems with recruiting and maintaining qualified health professionals in the rural areas. Telemedicine has been, and still is, considered as an appropriate tool for providing health care services to people living in remote areas, connecting local health facilities to central hospitals. However, the challenge is to ensure adequate use of the technologies on a regular basis, to train and re-train health professionals and to develop a legal and financial framework for distance health services.

This project will support the federal program for monitoring pregnant women and infants using the Nenets Telemedicine network.


1.1 Background

The NAO has a population of more than 43,000 people, half of which is living in the city of Naryan-Mar. The total territory is 176,000 km2, which gives a population density of 0.2. Some settlements are located 500 km apart from their neighbors. There is no surface transport connection between Naryan-Mar and villages in the Nenets region.

The birth rate has been stable for many years, about 17/1000, with about 700 births per year. The two largest health care institutions in NAO are the Nenets regional hospital in Naryan-Mar (NOB) and the Central district polyclinic in Zapolyarnyj municipality. NOB is the only hospital in the region with specialized services (internal medicine, surgery, pediatrics, neonatology, intensive care unit, psychiatry, diagnostics unit), including responsibility for air ambulance to all settlements in NAO.

In addition, 7 small clinics, 8 health centers and 24 midwife stations provide services to people in remote settlements. Out of 15 remote locations, five were chosen as a "base" for people who work with reindeer and for their families.

The main mode of transport is by air, also for health purposes. Aviation is used for both emergency medical treatment and planned consultations (screening). In 2014, NAO spent NOK 14 million on evacuations by air, NOK ca. 4.5 million for patient travels. Weather conditions are not always permitting transport by air, which is a challenge for providing health services to the population.

The Nenets indigenous people are the largest group of indigenous people in Russia with 41,000 people according to the census of 2010. In NAO, the Nenets are a minority of the population with 17%. Due to their nomadic way of life and the long distances between
settlements, they have limited access to health care services and health education in general.

Telemedicine in NAO started in 2000 with the implementation of the Russian federal program ‘Children in the North’. Already during the first year, almost 50 tele-consultations were conducted between the hospital in Naryan-Mar and the Regional Hospital of Arkhangelsk. In the period 2000-2014, 4,127 telemedicine consultations took place, among these 1,361 for children. The cases vary from cytology, orthopedics, trauma, neurology, cardiology, and more.

1.1.1 Equipment and communication

This project differs from previous Norwegian-Russian projects, eg. “Telemedicine in North-West Russia”, 1996-2001 in the sense that equipment and communication via satellite is in place.

In 2000, a telemedicine unit consisting of a computer, a microscope with digital camera, a scanner and a printer, was established at the hospital in Naryan-Mar. Distant consultations used a store-and-forward system. On January 29, 2008, the first video conferencing session between the hospital in Naryan-Mar and the Regional Hospital in Arkhangelsk took place. In 2012, Naryan-Mar had approximately 350 remote consultations and 10-12 video-conference consultations with the Regional Telemedicine Centre in Arkhangelsk.

NAO has already made substantial investments in telemedicine. Basic telemedicine equipment is in place in all the places that are going to be linked in a common telemedicine network within the NAO. Communication between small hospitals / health centers and NOB will be done via satellite. Communication between NOB and hospitals in Arkhangelsk will continue in the same way as it has done since 2000.

Russian Communication Corporation "Rostelecom» (www.rostelecom.ru) is one of the largest telecom companies in Europe and Russia.

The main focus of “Rostelecom” in NAO will be the implementation of the state program to eliminate the "digital divide" with respect to remote settlements. A part of the program is to build a fiber-optic communication to the villages Labozhskoe, Kotkino, Telviska and Oksino. Furthermore, there will be established digital satellite communication channels with the installation of satellite ground stations in villages and Bugrino and Shoina.

"Planned deploying fiber to settlements north of the Arctic Circle, will give a significant boost to the development of telemedicine in NAO“, says the director of the Arkhangelsk branch of Rostelecom Nicholas Rodichev; “Improved access to and quality of health services provided remotely, is only possible with the development of the telecommunications infrastructure in the region“, he continues.

Since 2012 Rostelecom has implemented and maintained "medical information systems" NAO. Over two years the following medical services have been implemented: "Laboratory Information System", "Center archive medical images", "Additional drug coverage", "Electronic Registry."

"Medical Information System" is integrated with the federal e-registry and a single portal of public services. Because of this, County residents have the opportunity to sign up to the doctor not only through the focal point of Health NAO at www.doctor83.ru, but also through a single portal of public services www.gosuslugi.ru
In 2014, "Medical Information System" has been further developed. Rostelecom, together with Health Administration NAO, has introduced an additional module "Motherhood and Childhood", as well as upgraded module "Hospital Pharmacy", thereby creating a transparent system of movement of drugs and medical products from the supplier to the patient.

In 2014, Rostelecom modernized the network connection management of health in NAO, laid fiber-optic lines to the Nenets regional hospital and other health care facilities, as well as increased the capacity of communication channels to ensure system performance.

1.1.2 Working group

During the project, a working group has been established in NAO. Key persons meet regularly by videoconference between Tromsø and Naryan-Mar to update the project status and work.

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Position</th>
<th>Role in the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergej Kungurtsev</td>
<td>Dep. of international and interregional links, information and mass media NAO</td>
<td>Head of department</td>
<td>Administrative support, policy, contacts</td>
</tr>
<tr>
<td>Natalya Lysak</td>
<td>Dep. of international and interregional links, information and mass media NAO</td>
<td>Chief Consultant</td>
<td>Administrative support, policy, contacts</td>
</tr>
<tr>
<td>Leonid Zubov</td>
<td>Institute of Arctic medicine, NSMU Telemedicine unit at Arkhangelsk regional clinical hospital for children</td>
<td>Deputy head</td>
<td>Medical aspects</td>
</tr>
<tr>
<td>Anton Karpunov</td>
<td>Nenets Regional Hospital</td>
<td>Head</td>
<td>Adm. medicine</td>
</tr>
<tr>
<td>Vladimir Iljin</td>
<td>Nenets Regional Hospital</td>
<td>Head of telemedicine department</td>
<td>Telemedicine in practice</td>
</tr>
<tr>
<td>Aleksandr Kovjazin</td>
<td>Nenets Regional Hospital</td>
<td>Telemedicine consultant</td>
<td>Telemedicine in practice</td>
</tr>
<tr>
<td>Alla Muratova</td>
<td>Nenets Regional Hospital</td>
<td>Head of children policlinic</td>
<td>Mother-child program, organizational issues</td>
</tr>
<tr>
<td>Svetlana Pavlenko</td>
<td>Nenets Regional Hospital</td>
<td>Deputy chief physician /obstetrics</td>
<td>Mother-child program; organizational issues</td>
</tr>
</tbody>
</table>

Table 1. Working group in NAO
2 Purpose and objectives

The overall aim of the project is to improve health and social conditions for people living in the remote regions of Nenets, especially the nomad indigenous population. The objectives of the project are the following:

- To strengthen the primary health care service to the population of remote settlements and the indigenous people in the Nenets region.
- To support the program of health monitoring of pregnant women and infants in their first 12 months of their life.
- To develop and implement a telemedicine training program for health professionals at the 15 remote health facilities of the Nenets region.
- To develop a package for legal, financial and organizational policy and incentives for health professionals to support the use of telemedicine.
- To ensure that the technology in use at the health facilities is adapted and tested.
- To establish a professional international network on eHealth in inaccessible regions.

3 Work packages

The parties agreed to collaborate along several lines, as there are similar challenges and potential benefits in joining forces and learn from each other in this area. Several of the health facilities in NAO have telemedicine systems in place. However, to ensure the functioning of a health service, organization, regulations, motivation and training is crucial. The Norwegian part of the project will contribute with knowledge and expertise on the integration and sustainability of technologies in health service provision.

Work on the project is organized into four work packages (WP). All packages are complementary and are in accordance with the purpose. See more the project description [http://telemed.no/kvalitativ-forbedring-av-helsetjenester-til-befolkningen-saerlig-nomadefolk-i-fjemtliggende-stroek-i-nenets-autonome-omraade-NAO.5403070-247950.html](http://telemed.no/kvalitativ-forbedring-av-helsetjenester-til-befolkningen-saerlig-nomadefolk-i-fjemtliggende-stroek-i-nenets-autonome-omraade-NAO.5403070-247950.html).

3.1 WP1. Primary Health Care Service

The aim of this work-package is to improve the accessibility and quality of primary healthcare services to people living in remote settlements and the nomad indigenous population. Furthermore, the WP will support the federal program for monitoring pregnant women and infants using the Nenets Telemedicine network.

Preventive medicine and early detection of diseases can be provided through arranging medical monitoring of reindeer herders at times when they stay near the villages.

The monitoring program of pregnant women includes history taking (including obstetrics), physical examination and assessment of prenatal risk factors.

3.1.1 WP1. Results

For the period from July 1 2013 to December 31 2014, health of pregnant women and children under one year living in the settlements of the region was monitored. 408...
consultations were carried out, 241 pregnant women from 14 settlements and 34 children from 3 settlements were consulted.

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Number of pregnant women consulted</th>
<th>Number of consultations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>97</td>
<td>144</td>
</tr>
<tr>
<td>Nes’</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>N-Pesha</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Karatayka</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Oma</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Nel’min-Nos</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Ust’-Kara</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Bugrino</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Khorey-Ver</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Oksino</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Kharutka</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Viska</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Krasnoye</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Indiga</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Tel’viska</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Amderma</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2. Monitoring of pregnant women

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Number of infants consulted</th>
<th>Number of consultations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bugrino</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Karatayka</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Nes’</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>56</td>
</tr>
</tbody>
</table>

Table 3. Monitoring of infants

3.2 WP2. Training

The aim of this work-package is to develop and implement a remote consultation training program for health professionals in NAO. The training is based on user needs, which will vary according to the users’ background and previous experience with technologies for health provision.
3.2.1 WP2. Results

To train health care professionals working in the region to provide telemedicine consultations, the following activities were implemented:

- a start-up seminar in Naryan-Mar,
- three training seminars for health workers from rural health facilities,
- internship for the health specialists of the NAO at the University Hospital of North Norway,
- International Scientific and Practical Conference “Arctic Telemedicine”.

Totally 17 professionals from 14 health facilities of NAO which have telemedicine stations were trained. Vladimir Iljin, responsible for telemedicine in the NAO, has made a lot of written material as teaching and reference material for health professionals in remote villages. This is visual material with detailed illustrations:

- How to work with the ACDSee program
- Instructions for telemedicine consultations
- Instructions for telemedicine consultations in emergency cases
- The planning system for telemedicine consultations - the instruction of the attending physician
- The planning system for telemedicine consultations - the instruction of the consultant.

3.3 WP3. Legal, financial and organizational policy

The aim of this work-package is to develop a set of incentives and a structural framework to secure the use of telemedicine in NAO. The framework should be specifically developed for the special situation in NAO, but with a generic part (checklist) that may be used by other health care systems.

3.3.1 WP3. Results

The working group developed a draft “Procedure on telemedicine services in the Nenets Autonomous Okrug”.

3.4 WP4. Technical support

The aim of this work-package is to ensure that the existing hard- and software at the institutions involved in the project are able to communicate, and that the services can be of optimal use. In this project, we will focus on further developing the existing ways and methods for interaction between NAO and specialized centers in Arkhangelsk and Russia in general.
3.4.1 WP4. Results

In order to provide advice to the medical staff of health facilities of the region, the Department of Telemedicine of the Nenets Regional Hospital held remote consultations (by phone) at the request of specialists from the settlements on the following issues:

- problems with the computer (no sound, the speaker off, no picture on the monitor) – 31 requests;
- problems connecting to videoconference – 9 requests;
- new equipment installed within the project - 15 requests;
- problems with work in the TM consultations planning system (attaching files to a consultation, printing the consultation response, difficulty in choosing a consultant) – 16 requests.

During the period from 01.07.2013 to 31.12.2014 participants of the project held 38 working meetings via videoconference.

4 Project meeting

Project partners in NAO organized the conference, project meetings and a visit to the remote settlement Telviska. On November 19, 2014 Norwegian and Russian workgroups had a common project meeting. We discussed mainly issues of health economy and practical telemedicine in NAO.

It is important to develop standards/descriptions on what telemedicine services are, and to describe what is included, in order to make tariff rates for services rendered.

In Russia, the following financial arrangement is used (the so-called DRG system):

- Outpatient: per visit in 2015, former per capita in region. There is a negative effect on quiet periods of the year; e.g. on summertime.
- Hospital: after the end of treatment.
- Ambulance services: per capita in the area covered by ambulance.

Telemedicine services are not yet included in the rates. Travel expenses are covered, but where should the line costs be charged when VC is used? Costs for this are not part of the budget for health care services.

Everyone is interested in lower expenditures, but politically it is “big words” like “everything must be accessible”, “close to the patient”, etc. that counts. The large sums are allocated and it becomes visible “see here, how much we have invested,” but how to motivate health personnel to take it into use. The politicians’ motto is “to spend more on social issues”.

Regions must be motivated to use telemedicine. Through telemedicine and e-health they achieve better qualifications. Use of telemedicine must be a part of the daily routines.

The NAO services experience the same issues as in Norway: Patients must have a local physician present. Videoconferencing (VC) consultation does not get paid for the consultation because it is the specialist on the other side of VC equipment that gets it.

What is the overall goal of the regional hospital regarding the use of telemedicine in their area? The impact area of the regional hospital in Naryan-Mar includes 15 different places where it is invested in equipment. Nevertheless, for many years, it has been- and it still is -
easy to contact air ambulance. This shows that it is not just about education, but about changing perception of who will do what.

Higher status entails higher responsibility. Local health workers are in the process of preparing descriptions of diagnoses where telemedicine should be used. However, as mentioned, it is easier to do as you always have done: Call the helicopter.

Elin Breivik, Adviser and Social Economist at NST gave the following suggestions:

- Start an evaluation study in which one follows a group of patients that are being consulted through video conferencing. One should define specific measurement parameters for the evaluation:
  - Health status
  - Travel costs
  - Social benefits
  - Social drawbacks

Telemedicine equipment is widely available but there are some difficulties to get the local doctors to use this. It is necessary to work on changing health workers mind-set. One solutions/recommendation could be to perform low-risk exercises without patients.

Many factors are interrelated to achieve a social understanding that also includes politicians. In Northern Norway 25% improvement in thrombolytic therapy has been achieved, compared to 6% globally.

It is necessary to include telemedicine solutions at early levels of education. Maybe at Medical College in Naryan-Mar?

## 5 International conference “Arctic telemedicine”

### 5.1 Background

The international conference “Arctic Telemedicine” was held within the framework of the Russian-Norwegian project “Qualitative improvement of health services for indigenous people in remote areas in the Nenets Region”. Owing to this project, the system of telemedicine in NAO is gaining momentum. Telemedicine enables patients to receive equal medical services irrespective of their place of residence. In addition, it removes the issues of professional isolation of doctors from upcountry and helps to improve their professional skills.

The conference addressed the following tasks:

- Analysis of the current state of implementation of the regional program of telemedicine development in NAO;
- Exchange of research findings and practical expertise in the area of telecommunication technologies in medicine;
- Assessment of potential use of telecommunication technologies in medicine;
- Identification and search of ways to remove hurdles and barriers to use telemedicine in remote territories;
- Assistance to primary health care organizations in hard to reach and remote Northern regions in the practical use of telemedicine;
- Creation of a common information space in the area of use of medical information technologies;
- Establishing professional contacts of medical professionals working in Northern regions.

5.2 Purpose, objectives and topics of the Conference

**Purpose:** to discuss improvement of the accessibility and quality of health care by the organization of health services for the population of remote northern territories through use of information technology.

**Objectives:**
- to exchange experience in health care organization applying information technologies in remote areas;
- to overview the practice of telemedicine use in remote Northern regions and to elaborate program activities for the development of e-health in the Arctic;
- to consolidate efforts of the expert community, medical institutions and authorities to ensure the availability and quality of health care in the far north;
- to create an expert platform in NAO to discuss the development of e-health in arctic conditions.

**Topics of the Conference:**
- Analysis of current state and development prospects of eHealth;
- Practical experience with use of telemedicine solutions and services;
- Health monitoring of population in hard-to-reach and remote areas and promotion of healthy lifestyle;
- Distance education and training.

5.3 Organization

This conference was planned from the very beginning of the project. Most of the financial and preparatory work was done by NAO. Short information about the conference was published in the form of a postcard in two languages, which were distributed to all appropriate fora, including during a big international conference Arctic Frontiers 2014, in Tromsø.

The organizers of the Conference were Administration of NAO, University Hospital of Northern Norway, Norwegian Centre for Integrated Care and Telemedicine, Nenets Regional Hospital at support of the Ministry of Health Care of the Russian Federation and the Ministry of Health and Social Welfare of Norway/ Barents health program. The conference was also supported by the Barentssekretariatet and Russian Communication Corporation “Rostelecom”.

Conference Secretariat: NAO Directorate of Regional Politics and Information.

A website of the Conference was established [http://arctelemed.ru/](http://arctelemed.ru/) which is still in operation.

Participation at the Conference was free. The participants covered travel and accommodation costs. Lunches, coffee breaks for all the participants and one dinner were covered by the Administration of NAO.
Norwegian participants were chosen according to their competence and specified topics. The representatives were telemedicine consultant Oddvar Hagen, biomedical technical advisor Elisabeth Sjaaeng, video conferencing consultant Stig Karoliussen, project leader Svetlana M. Bye, health economy advisor Elin Breivik and distance education advisor Torbjørg Lindquist.

13 presentations were made by people from NST. Information material on the relevant topics were translated into Russian and were handed out at the conference. Leif Erik Nohr, Thomas Schopf and Eva Skipenes, all from NST, were prevented from travelling, and contributed with their presentations in the conference proceedings.

The conference was held in “Arctica” Culture and Business Center in Naryan-Mar on November 20-21. The total number of participants were 196. The participants were from the Northern and central regions of Russia, Norway and Scotland. All of them have experience either in practical application of telemedicine, or in software, or in creating telemedicine networks.

The conference was organized in NAO. There was simultaneous Russian-English translation during the conference. To do this, professional simultaneous interpreters from Moscow were invited. Thus, all participants, regardless of the level of language proficiency, constantly followed the reports and actively participated in the discussions.

5.4 Conference Proceedings

The compendium contains proceedings of the International Scientific and Practical Conference “Arctic Telemedicine”. The articles of Russian and Norwegian specialists discuss ways of improving of accessibility and quality of health care by the organization of health services for the population of Northern territories, using telecommunication technology. The topics of works include the analysis of the current state and prospects of development of e-Health, practical use of telemedicine, monitoring of health of population in hard to reach and remote territories, promotion of healthy lifestyle, distant education and training.

The compendium is intended for researchers and medical professionals specializing in improvement and maintenance of people’s health in circumpolar regions.

Responsible for the publication were professors at Northern State Medical University in Arkhangelsk. The project manager participated in the editorial work on collection of articles and abstracts for the conference. Norwegian participants, employees of NST, published articles and abstracts on relevant topics. All materials were published in two languages, Russian and English.

5.5 First Conference Day

The first day, the plenary session and the main presentations were in the large conference hall of the “Arctic” Culture and Business Centre.
1. Anton Karpunov, director at NOB in Naryan-Mar, holds presentation

After the welcome speeches from the Administration of NAO and the Regional Deputies Assembly, Andrey Apitsyn, Head of NAO Directorate for Health Care, made a presentation «Development of telemedicine in the Nenets Autonomous Okrug». He started presentation with quoting the Health Minister of Russia: "The development of telemedicine is necessary. This is one of the most important conditions for quality care in remote areas". In NAO, in addition to 15 remote stations and a station at NOB, the search and rescue service is included in the telemedicine network. Doing remote consultations only on temporary disability saves large sums of transport costs due to the lack of need to come from remote settlements to Naryan-Mar. Totally, in November 2014, 79 consultations were held. Total savings: 383300 Rubles = 54.575 NOK.

It is more difficult to evaluate the effect on health in this case. However, since talking about the chronic patients and people with chronic diseases who were able to avoid many hours travelling to consultation place, it is safe to say that this improved their quality of life.

The presentations were divided into the following thematic sections:
- Organizational and legal issues of telemedicine and eHealth,
- Distance education
- Practical experience of telemedicine in regional health care systems.

Most of the reports were devoted to the Northern territories and features to assist the child population in remote locations.

According to medical check-ups of children over the period from 2005 to 2012 accumulated in the Center for Monitoring Medical Check-ups of the Moscow Institute of Pediatrics and Pediatric Surgery, incidences of Northern children’s illnesses are considerably more frequent than in the Russian Federation in general. This relates to diseases of the digestive system, of the eye and adnexa, the genitourinary system, nerve and endocrine systems, and congenital abnormalities [birth defects]. The problem of staffing with specialized doctors, which is one of the reasons for the current situation with Northern children's health, can be partially solved by active implementation of telemedicine that is a form of cooperation among doctors of healthcare facilities of Northern territories and large specialized pediatric centers.

In general, one can state that telemedicine consultations of children residing in the regions of the Far North, Siberia and the Far East, tend to develop. In a vast majority of cases (about 80%) patients continue receiving treatment at their places of residence, and telemedicine consultations secure continuity among doctors of the Institute and attending doctors at children’s places of residence in case of repeated hospitalization of chronic patients.
In the long run, one can expect that the implementation of the electronic healthcare currently performed by Russia within the State Health Information System, will promote a wide use of telecommunication systems, particularly video conferences, by various healthcare facilities.

In NAO, reindeer breeding is the traditional agricultural area; it employs about 1,100 people (2.5% of the population of NAO). Two thirds of them are nomadic. Dozens of preschool-age children nomadize on the tundra together with their families, due to which medical staff cannot regularly check them up. The number of nomadic children considerably increases in summer when schoolchildren come to their families from boarding schools for vacations.

One of the top priorities of healthcare authorities is ensuring the accessibility of medical aid for all residents of NAO, regardless of their places of residence and lifestyle. When needed, reindeer-breeders can contact the rural administration on the radio and call an air ambulance. However, such flights cannot help in maintaining and improving the health of each nomadic person. Methodical efforts are needed to assess the health quality and to prevent diseases among reindeer-breeders and members of their families.

Medical check-ups of the tundra population shall be not one-time (often even this is not performed), but a regular system. Often, the main and sometimes the only, way to engage the population in medical check-ups, laboratory, fluorographic or any other examination, sanation, primary and secondary prevention, is currently the celebration of the Reindeer Breeder Day when the tundra population arrives to one place.

There remain problems related to the compliance with the vaccination schedule, medical check-ups, prenatal nursing, infant monitoring, and out-of-hospital childbirth. The identity of the lifestyle of the indigenous minorities of the North, climate and geographic specifics of NAO require creation and development of mobile forms for providing scheduled diagnostic and medical, consulting and preventive aid.

5.5.1 EHealth services and infrastructure

Nenets mainly use satellite communications. To increase volume bandwidth must increase. It is necessary to provide proper consultations or one ends up in a bad circle; low bandwidth gives few consultations, and it is necessary with many consultations to document gains of good telemedicine services.

NST emphasized the importance of including existing communication network quality and capacity when planning eHealth services. The different types of communication network has
different characteristics. The communication network standards dictates what eHealth services is possible to implement.

3. Common network services and their placement in a communication networks quality/capacity chart.

A key point is that high quality videoconferencing is the most demanding service to implement on a computer network. The least demanding type of data is a small amount that is stored and then forwarded.

4. Different types of eHealth services in a communication networks quality/capacity chart

Some recommendations are:

- Check the infrastructure at the same time as planning the e-health services.
- Start an e-health service with the easy data formats. These are the services which generates small amount of data that you can store and then forward.
- Transmitting of high quality video is technically challenging and needs very good infrastructure.

5.5.2 Welfare technology

Elisabeth Sjaaeng from NST presented the possibilities of telemedicine for the care of chronic diseases. In these cases, the question of life and death is less relevant, and aspects of quality of life for these people are dominant.

5. Elisabeth Sjaaeng during her presentation

Here is a selection of the slide shows different types of welfare technology, and COPD resolution for rehabilitation in-patients home and some new robots that are available for use in healthcare.

Velferdsteknologi

1. Trygghets- og sikkerhetsteknologi
2. Kompensasjons- og velværeteksteknologi
3. Teknologi for sosial kontakt
4. Teknologi for behandling og pleie
Elin Breivik gave an overview of the economic implications of implementation of videoconference-based telemedicine services in the Norwegian health service. She focused on the basic principles of performing economic evaluations in the health service and on general examination of costs and benefits of videoconferences services in North Norway.

The result of the economic evaluation of telemedicine services is often formulated as a break-even point, which shows the annual number of consultations where the cost of the telemedicine service is the same as the costs of the traditional consultations. If the number of consultations are lower, patient travel is less expensive. If the number of patients are higher, telemedicine is the least expensive.
7. Break-even point

A videoconference-based service for patients with dermatological problems was established in a small town in Norway 900 kilometers from the specialist hospital. The patients avoided travels for diagnostics as well as long stays at the hospital for phototherapy and baths. Although the investments were high, an annual number of 375 consultations made the service cost-efficient compared to the alternative. The telemedicine service was the least costly alternative for workloads over 195 patients per year.

8. Tele-dermatology

5.5.4 Flexible learning

One of topics at Conference was distance education and training. Torbjørg Lindquist from NST presented experiences from Norway with net-based/distance learning, its possibilities and benefits, especially for health workers from remote territories. This theme becomes more and more relevant for NAO.
Flexible Learning – possibilities

- Study independent of time and place
- No travel costs
- Increased availability
- Combine studies with family or leisure
- Shearing and re-use of learning resources
- Expands the sense of community
- Exchange of experience and professional reflection

How to develop e-learning

- It is not just «a book on internet»
- The content must suit the media: PC, mobile, tablet
- Write for net; to the point, clearly and crisply, close to practice
- Prepare for discussion – forum
- Quiz's and written assignment – examination and course diploma

Summary / conclusion

Distance education – net based learning – e-learning is:
- Effective
- Costs reducing
- More employees can participate
- Strengthen the multidisciplinary community
- The organization has opportunity to upgrade competence collectively
- Increases the sense of security

9. Examples from presentation.
5.5.5 Telemedicine and emergency medicine

Oddvar Hagen from NST presented experience with VEMI – “videoconference in emergency medicine” in Northern Norway, and how VEMI can improve health care. He also focused on how telemedicine solutions practice can help employees in the oil and gas industry.

**VEMI in the Northern Health Region**

- Focus: Use the best and nearest competence to improve patient trajectories
  - STEMI (myocardial infarction)
  - Stroke (model Tele-Stroke)
  - Trauma (VEMI)
  - Infections (life threatening)
  - Psychiatry

How can we improve care taking through shared data:

Ultra sound + video conferencing

- Guiding to the adequate examination
- Interpretation of examination data real time → quick and quality assured answers

10. Examples from presentation
5.6 Second conference day

The second conference day was held at the official receptions hall of the “Arctic” Culture and Business centre. The main issues were, hardware and software solutions in telemedicine and discussions on the results of the conference and the resolution.

5.6.1 Some aspect of using implantable technical devices in remote medicine

Marina Nurbina from the NRC “Kurchatov Institute” NGO ANEK, a leading research center in Russia, Moscow, made a presentation on some aspects of using implantable technical devices in remote medicine.

11. Mr. Mikhail Natenzon from National Telemedicine Agency, Moscow, and Mrs. Marina Nurbina from Kurchatov Institute

The project has a focus on how to do preventive measurements and give medical aid using the existing telecommunication capabilities. The goal is to diagnose potential hazard states of the patient’s body. The speech gave some very interesting examples on how to provide medical aid to people living in remote areas.

Different types of people would need different kinds of measurement. Mrs. Nurbina presented seven different people groups that could use different kinds of telemedicine equipment, the so-called Remote Patient Monitoring systems (RPMS).

Examples in the area of application are high-risk patients, use after surgery, use in natural disasters, on healthy people as preventive medicine, to keep stability of health, as remote monitoring from clinics, and on smart wear.

Products that can be used are for example smart watches, under the skin implantable card, microchip, monitor vest with 12 lead ECG integrated - among other RPMS. By using this
technology, it can be possible to organize treatment and preventive examination, consultations and supervisions. However, it is also important to consider the availability and peculiarities of the people living in this area.

Ms. Nurbina also pointed out that there is a need to define technical standards and to find out what people need and want.

Her presentation varied from what we focus on within telemedicine solutions and we therefore found it interesting that taking implantable devices is considered to be part of telemedicine solutions.

During the video conferencing with one of the remote villages of NAO, Velokovischnoe, medical workers spoke about possibilities and advantages of this type of communication.
The Conference participants acknowledged that:

- telemedicine is an innovative and high-demand trend in medical and technological development contributing to the improving of health care and health sector management;
- when it comes to the Arctic region and its remote and hard-to-reach areas, telemedicine is an efficient tool to improve quality and accessibility of health care for the population;
- both in Russia and abroad, vast practical experience in applying telemedicine has been accumulated;
- the results of the joint Russian-Norwegian project implemented by the University Hospital of Northern Norway, Norwegian Centre of Integrated Care and Telemedicine, Directorate of Regional Policy and Information of NAO and the Nenets Regional Hospital may be helpful in organizing telemedicine care to the population of remote and hard-to-reach areas;
- the need to expand the range of telemedicine services and to use medical equipment in telemedicine is growing among medical workers and population.

At the same time, the Conference participants noted that the development of telemedicine is constrained by the lack of:

- legislation in the sphere of telemedicine both on the state and regional levels;
- financing of telemedicine services in the compulsory health insurance system;
- motivation mechanisms for the medical institutions’ staff to use telemedicine in daily practice.

A number of agreements on further cooperation were entered, especially between the Northern regions of Russia.

Participants noted good preparation and holding of the Conference and expressed interest in holding such conferences on a regular basis with the meeting place in Naryan-Mar.

More about Resolution – see Chapter 9.2.
6 Remote settlements

NST experience shows that interest among remote users and their active use of remote consultations are the most important in practical telemedicine. Besides, as in every project, selecting right project partners is essential. The most important human aspects in use of telemedicine are creation of a "telemedicine" stereotype in the daily activities of a doctor; informing medical workers about the possibilities of telemedicine; motivating rural physicians to use it efficiently.

6.1 Pilots

In this project, Russian working group selected three pilot locations, far to the west, far to the east and extreme north, on the Kolguev island. Locations/settlements were chosen according to the size of the indigenous population, closeness to herding routes, interest and computer knowledge among physicians/health care workers there. Not the least was that the only alternative for remote consultations is air ambulance.

It was not possible for us to visit some of these places in November 2014 due to the weather conditions and flights once per week.

6.1.1 Karatayka

15. Map of NAO. Line between Naryan-Mar and Karataika
16. Karataika and its inhabitants

Karatayka is situated 370 km apart from Naryan-Mar. Medical Centre serves population of the village, which numbers 636 persons, 361 of them - indigenous people (Nenets). There are 204 children, of which 158 - indigenous population, and nomadic population as well.

There is air connection with Naryan-Mar only once a week. Cargo transports by sea during navigation period, two months summertime, and tracked vehicles from Vorkuta in wintertime.

The name of the village comes from the river Korotaiha, in the Nenets language - "winding river". The village has a secondary school, a boarding school, a clinic, a kindergarten, a cultural center, cafes, shops, a post office, a central boiler and power plant.

Medical centre in Karatayka is also responsible for medical care/aid for inhabitants in the village Varnek on the Vaygach island in the Arctic Ocean. The population of Varnek is 58 people, 56 of them are Nenets and 12 children.

Every Thursday routine inspection of children is carried out, preventive vaccinations is carried out according to the national immunization schedule.

6.1.2 Bugrino

Bugrino is situated on the Kolguev island, 200 km apart from Naryan-Mar. There are 333 inhabitants, incl. 315 Nenets’. 21 persons of them are nomadic herders. There are 81 children, 74 elderly people. There is a helicopter only twice a month from Naryan-Mar. In acute and emergency cases, air ambulance is used.
17. Bugrino from the air

The main diseases are lung diseases, musculoskeletal disorders and injuries. Challenges of sending patients to specialists are financial expenditures, family challenges, accommodation in Naryan-Mar; helicopter flights are only twice a month. In some cases, lack of understanding of importance and need for medical care.

18. Health centre in Bugrino
6.2 Equipment

NST emphasized the importance of testing equipment on site. Equipment used in this project, was borrowed, placed on site and tested according to specifications. The purpose was to find out if it works according to specification and if it can be useful for patient and doctors.

The ARMIS equipment was tested and it was found out that it did not provide clinical measurement necessary to provide healthcare to patients.

There were discussions between NST and NAO on the selection of equipment. After consideration of what equipment is the most appropriate to use for remote consultations, based on health needs and prevalence-rendering diseases, cardiovascular medical devices were chosen. Tele-cardiology equipment was purchased for these three remote locations, north, west and east of the Nenets region. At the regional hospital (NOB) in Naryan-Mar, the distributor from Arkhangelsk made a demonstration and taught medical personnel to use this equipment. The personnel from NOB and remote pilots had practical education to use the equipment; after the training was completed, the delivery approval was signed.

Clinical equipment:

- ECG recorder from Schiller Cardiovit AT 102 with SEMA-200 light
- CoaguCheck XS Plus Measuring INR
20. Equipment – demonstration and learning

21. Doctor Galina Dmitrieva from Bugrino/Kolguev learns to use SEMA, software for Schiller Cardiovit

It shows that there is great profitability compared to traditional arrangements. Socio-economic, the use of telemedicine solutions is positive. The equipment sends the clinical measurement together with patient’s ID to the cardiologist in Naryan-Mar hospital/NOB.

22. ECG transferred from remote place before and now. Left: using printer, scanner and fax. Right: using internet and software
23. Doctor Galina Rocheva from Karataika is pleased with the new equipment

By the time of the Conference, the equipment had been used for a month. 28 remote consultations on cardiovascular diseases were made with the use of this equipment. There is a positive assessment from the employers because they feel more confident when treating patients and they also achieve more professional knowledge.

The Cardiologist in NOB gets better understanding of the patient's condition when this equipment is used and there is a better overview of the situation with cardiovascular diseases in remote settlements. When they share the same clinical measurements, they can agree upon patient treatment together.

This contributes to the professional security of the chief cardiologist in NAO.


Saturday morning we went to Telviska - a small community with 600 people, a new health center and a fantastic Cultural Center. Our trip to Telviska started with a short bus trip from our hotel to the Pechora riverbank. The transportation over the river was with hovercraft. Telviska is situated 5 km up the river from Naryan-Mar.

At the riverbank, the major of Telviska met us. He told us about the society of Telviska and walked us to the Health Centre. He told us that there are 600 people living in Telviska. The main income is from reindeer and cattle breeding. There is an optical fiber – a backbone cable just outside Telviska – coming from the South and going the North to the Kara Sea. There are plans to establish permanent cable connection so they could have access to the Internet and other services (for example, health services) with speed up to 100 Mbit/s.
At the Health Center, a chief-nurse met us. Health Center is usually closed during weekends, so there was no staff working that day. The general manager was on vacation and was therefore not available that Saturday.

We had a guided tour inside the Health Center. The building is new and the equipment was brought in 2011 within the regional program.

We had a good look at the premises that included:

- Dentist's office
- Vaccination room (incl. against rabbit fever)
- Midwife office for pregnancy monitoring
- General manager’s office with videoconference and telemedicine
- Isolation ward including disinfection and storage
- Laboratory which centrifugal, serum diagnostics and incubator.

There were 11 toilets, a laundry, an ironing room, a disinfection room, a pharmacy, a policlinic for minor operations and 5 beds for day treatments.

Among the personnel working here, there are nurses/"feltskjær", physiotherapist, engineer, administration and doctors.
25. Picture of the health center with some new housing under construction (by the society).

26. Pharmacy at health center Telviska

Other things we learned:

- The patients do not need to book a “doctor’s” appointment before they show up at the Health Center. Everyone who arrives at the Health Center will be taken care of.
- No one could tell us who was in charge of support and maintenance of equipment and communication lines. We got the impression that they were working on looking for a service provider.
After leaving the health house, we walked to the Culture Center for a late lunch. We were met at the doorstep by traditional Russian choir. They were singing, dancing, and offering us bread. It was a very warm welcome for us all.

27. Singing and dancing outside the culture house in Telviska

After this, we were invited inside to experience a show made by the Center. One of the performances were young boys playing with wooden spoons to make rhythm and music.

We left Telviska in the evening after having a wonderful day at their Health and Culture Centers.
7 Information dissemination

A poster/roll-up about telemedicine in NAO will be prepared to the meeting of Federation Council in Moscow in April 2015. This meeting’s agenda is the economic and social situation in the Nenets Autonomous Area.

Information sheet about the project was used in various relevant forums.

The project was presented by the Russian partners at some conferences:

- Health conference in Arkhangelsk, September 2014
- Presentation for the Ministry of Health in Moscow, January 2015.

The project leader has presented this project and its results at:

- II Conference “Communication in the Russian North” in Moscow, September 2014 http://www.xn--80adblbaj2c5ace3kob.xn--p1ai/archive/2014/obzor.html
- HOD Prosjecktlederkonferanse, Lillestrom, September 2014 http://www.regjeringen.no/nb/aktuelt/Helsesamarbeid-med-Russland/id2000214/

Project information is regularly published and updated on the NST’s site www.telemed.no.

Also, project information is published on the UNN’s site www.unn.no and on the Helse Nord site www.helse-nord-no.


Before, during and after the conference all kinds of media in Russia, both regional and nationwide, published information, interviews, TV and radio reports, Facebook etc. The publications of information in other regions of Russia show interest to both telemedicine in the North and cooperation in telemedicine between the Northern regions.

More information is available in the appendix 9.3.

Med-e-Tel 2015

Med-e-Tel is an event of the International Society for Telemedicine & eHealth (ISfTeH), the international federation of national associations who represent their country’s Telemedicine and eHealth stakeholders.

During our stay in NAO, project leader and Russian partners started writing four abstracts for the international conference Med-e-Tel 2015 in Luxemburg, the annual conference for IT&Health. Partners from NAO will attend the event. Now, all of the four abstracts are approved, and presentations are being prepared.

http://www.medetel.eu/index.php?rub=educational_program&page=program

8 Summary

The conference in Naryan-Mar in November 2014 was an important milestone in the project. The health authorities, health workers in NAO and potential partners in Russia, especially in
the North, informed the audience about the project. The conference was widely covered by the media, in order to inform the "man on the street" about what was going to happen about eHealth in NAO. The regional network in NAO continues being expanded and developed in cooperation with Norway/NST in terms of consulting and knowledge transfer. Our goal is qualitative improvement of health care to the population in remote regions and nomadic Nenets.
9 Appendix

9.1 Conference program

<table>
<thead>
<tr>
<th>Time</th>
<th>Thursday, November 20, 2014</th>
<th>Big conference hall of “Arctic” culture and business Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 – 09:00</td>
<td>Registration of participants</td>
<td></td>
</tr>
<tr>
<td>Plenary session</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:00 – 09:20</td>
<td>Welcome speech, Administration of the Nenets Autonomous Okrug</td>
<td>Welcome speech, Regional Deputies Assembly</td>
</tr>
<tr>
<td>09:20 – 09:40</td>
<td>Andrey A. Apitsyn, Directorate of Health Care of the Nenets Autonomous Okrug</td>
<td>&quot;Development of telemedicine in the Nenets Autonomous Okrug&quot;</td>
</tr>
<tr>
<td>09:40 – 10:00</td>
<td>Mikhail Ya. Natzenzon, National Telemedicine Agency, Moscow</td>
<td>&quot;Integrated telemedicine system for health and social services to people living and working in the Far North and the Arctic&quot;</td>
</tr>
<tr>
<td>10:00 – 10:20</td>
<td>Natalia A. Bogdanova, P.G. Vyzhletsov Archangelsk Children Clinical Hospital, Archangelsk</td>
<td>&quot;Opportunities of telemedicine in health care in the Arctic&quot;</td>
</tr>
<tr>
<td>10:20 – 10:40</td>
<td>Svetlana E. Manankova Bye, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>&quot;Specifics of cooperation within Russian-Norwegian telemedicine projects. Experience of work within project “Qualitative improvement of health services for indigenous people in remote areas in the Nenets region”</td>
</tr>
<tr>
<td>10:40 – 11:00</td>
<td>Yana V. Voropaeva, N.I. Pirogov Russian National Research Medical University, Moscow</td>
<td>&quot;Teleconsulting of Russian northern territories on pediatrics issues&quot;</td>
</tr>
<tr>
<td>11:00 – 11:30</td>
<td>Coffee-break</td>
<td></td>
</tr>
<tr>
<td>11:30 – 11:50</td>
<td>Tatyana V. Zarubina, N.I. Pirogov Russian National Research Medical University, Moscow</td>
<td>&quot;Strategy for eHealth in Russia&quot;</td>
</tr>
<tr>
<td>11:50 – 12:10</td>
<td>Elin Breivik, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>&quot;Cost effectiveness of telemedicine&quot;</td>
</tr>
<tr>
<td>12:10 – 12:30</td>
<td>Olga Shirlaw, Campbell Shirlaw, Edinburgh University, Scotland</td>
<td>&quot;007-teledicine&quot;</td>
</tr>
<tr>
<td>12:30 – 12:45</td>
<td>Torbjørg Lindquist, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>&quot;Distance education – how to succeed&quot;</td>
</tr>
<tr>
<td>Time</td>
<td>Speaker</td>
<td>Institution</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>12:45 – 13:00</td>
<td>Torbjørg Lindquist, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>«Use of videoconference and e-learning»</td>
</tr>
<tr>
<td>13:00 – 14:00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Session 1. Organizational and legal issues of telemedicine and eHealth.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00 – 14:15</td>
<td>Mikhail Ya. Natenzon, National Telemedicine Agency, Moscow</td>
<td>«National Telemedicine System - effective means of improving the level of health services to the population of the Russian Federation»</td>
</tr>
<tr>
<td>14:15 – 14:30</td>
<td>Stig Karoliussen, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>«EHealth services and infrastructure»</td>
</tr>
<tr>
<td>14:40 – 14:55</td>
<td>Leonid A. Zubov, Northern State Medical University, Archangelsk</td>
<td>«Role of a medical adviser in the telemedicine system of the North»</td>
</tr>
<tr>
<td>14:55 – 15:10</td>
<td>Oddvar Hagen, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>«Telemedicine in oil and gas sector»</td>
</tr>
<tr>
<td>15:25 – 15:40</td>
<td>Elisabeth Ellefsen Sjaangen, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>«Telemedicine solutions and welfare technologies»</td>
</tr>
<tr>
<td>15:40 – 15:55</td>
<td>Lyudmila E. Khaimina, M.V. Lomonosov North (Arctic) Federal University, Archangelsk</td>
<td>«On the preparation of IT-specialists within the network of international master's program»</td>
</tr>
<tr>
<td>15:55 – 16:15</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Session 2. Practical experience of telemedicine in regional health care systems.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:15 – 16:30</td>
<td>Anton A. Karpunov, Nenets Regional Hospital, Naryan-Mar</td>
<td>«Telemedicine in the Nenets Autonomous Okrug» (to be confirmed)</td>
</tr>
<tr>
<td>16:30 – 16:45</td>
<td>Aleksey S. Tretyakov, Archangelsk Regional Clinical Hospital</td>
<td>«Telemedicine in Archangelsk region. Prospects for development»</td>
</tr>
<tr>
<td>16:45 – 17:00</td>
<td>Aleksandre L. Tsaregorodtsev, Ugra Research Institute of Information Technologies, Khanty-Mansiysk</td>
<td>«Asynchronous telemedicine system of the Khanty-mansi autonomous okrug - Ugra»</td>
</tr>
<tr>
<td>17:00 – 17:15</td>
<td>Galina S. Rocheva, Clinic of Karatayka settlement, NAO</td>
<td>«Experience of introducing telemedicine equipment in remote northern areas»</td>
</tr>
<tr>
<td>17:15 – 17:30</td>
<td>Dmitry B. Egorov, Scientific and Production Innovative Company “Tyumen Institute of Medical Informatics”, Tyumen</td>
<td>«Experience in organizing the cabinet of telemedicine in Tyumen region»</td>
</tr>
</tbody>
</table>
### Session 3. Hardware and software solutions in telemedicine

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Institution/University</th>
<th>Presentation Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 – 09:15</td>
<td>Marina V. Nurbina, Nonprofit Partnership for Scientific Expertise Development and Consulting, Moscow</td>
<td>«Some aspects of using implantable technical devices in remote medicine»</td>
<td></td>
</tr>
<tr>
<td>09:15 – 09:30</td>
<td>Peter A. Okladnikov, Nenets Telecommunications Company, Naryan-Mar</td>
<td>«Regional network of telemedicine on the example of the Nenets Autonomous Okrug»</td>
<td></td>
</tr>
<tr>
<td>09:30 – 09:45</td>
<td>Aleksandre V. Noskov, ZAO Uztech, Moscow</td>
<td>«The system of telemedicine consultations planning»</td>
<td></td>
</tr>
<tr>
<td>09:45 – 10:00</td>
<td>Nikita V. Ilyin, OOO “Technomarket”, Voronezh</td>
<td>«System of diagnostic images processing and exchange and its integration into the regional telemedicine network»</td>
<td></td>
</tr>
<tr>
<td>10:00 – 10:15</td>
<td>Alexandre I. Popov, M.V. Lomonosov North (Arctic) Federal University, Archangelsk</td>
<td>«Potential of using electrogastroenterography within telemedicine systems»</td>
<td></td>
</tr>
<tr>
<td>10:15 – 10:30</td>
<td>Andrey V. Scraglenko, OOO “Technomarket”, Voronezh</td>
<td>«System for remotecardioteletesting»</td>
<td></td>
</tr>
<tr>
<td>10:30 – 10:50</td>
<td>Coffee-break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:50 – 11:05</td>
<td>Oddvar Hagen, Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway</td>
<td>«VEMI-videobased emergency medical interaction»</td>
<td></td>
</tr>
<tr>
<td>11:05 – 11:20</td>
<td>Maksim I. Sosnovsky, ZAO AMTEL-SVYAZ, Moscow</td>
<td>«VSAT technologies – for the solution of Arctic Telemedicine problems»</td>
<td></td>
</tr>
<tr>
<td>11:20 – 13:30</td>
<td>Discussions on the results of the conference and the resolution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9.2 Resolution

RESOLUTION
of the International Scientific and Practical Conference
“Arctic Telemedicine”

Representatives of the Nenets Autonomous Okrug, the Khanty-Mansi Autonomous Okrug, the Tyumen and Arkhangelsk Regions, the Republic of Sakha (Yakutiya), the Chelyabinsk Region, Norway and Scotland took part in the International Scientific and Practical Conference “Arctic Telemedicine”. The number of participants totaled 192. The participants noted the scientific and practical importance of the Conference.

In the course of discussions, participants addressed the following issues:

- experience in telemedicine application in the Russian regions, Norway and Scotland;
- prospects for telemedicine development;
- legal aspects of telemedicine in Russia and Norway;
- using of Russian and foreign medical equipment in telemedicine.

The Conference participants acknowledge that:

- telemedicine is an innovative and high-demand trend in medical and technological development contributing to the improving of health care and health sector management;
- when it comes to the Arctic region, remote and hard-to-reach areas, telemedicine is an efficient tool to improve quality and accessibility of health care for the population;
- both in Russia and abroad vast practical experience in applying telemedicine has been accumulated;
- the results of the joint Russian-Norwegian project implemented by the University Hospital of Northern Norway, Norwegian Centre of Telemedicine, Directorate of Regional Policy and Information of NAO and the Nenets Regional Hospital may be helpful in organizing telemedicine care to the population of remote and hard-to-reach areas;
- the need to expand the range of telemedicine services and to use medical equipment in telemedicine is growing among medical workers and population.

At the same time, the Conference participants note that the development of telemedicine is constrained by the lack of:

- legislation in the sphere of telemedicine both on the state and regional levels;
- financing of telemedicine services in the compulsory health insurance system;
- motivation mechanisms for the medical institutions’ staff to use telemedicine in daily practice.

The Conference participants decided:

1. To recommend the partners on the joint Russian-Norwegian project “Qualitative improvement of health services for indigenous people in remote areas in the Nenets region” to continue cooperation on expanding application of telemedicine in providing medical care in remote northern territories;

2. To recommend the Administration of the Nenets Autonomous Okrug:

   a) to apply the best practice of the joint project “Qualitative improvement of health services for indigenous people in remote areas in the Nenets region” in the development of regional telemedicine network;
b) to initiate the development of regional regulatory and legal documents in the field of telemedicine;

c) to draft an integrated compatible regional telemedicine system of the Nenets Autonomous Okrug;

d) to develop a general organization plan of the telemedicine system and a “road map” of existing telemedicine system of NAO;

e) to elaborate procedures applying telemedicine technologies for providing medical assistance to the population of remote areas in case of the acute coronary syndrome describing necessary conditions at all stages of health care;

f) to propose the territorial office of the Federal Compulsory Medical Insurance Fund to adopt a compulsory medical insurance tariff for providing a telemedical service;

g) to submit a proposal to the RF Ministry of Health Care and the National Telemedicine Agency with the initiative to establish a working group on the development of regional telemedicine systems as parts of the Unified State Health Information System of the RF and their connection to other regional and federal telemedicine systems;

h) to provide compulsory pre-testing of new medical equipment planned for introduction in the Far North;

3. To recommend the Ministry of Health Care of the RF:

a) to draft a law “On telemedicine services in the Russian Federation” based on the model law adopted by the CIS Interparliamentary Assembly and submit it to the State Duma of the Russian Federation;

b) to develop a telemedicine services classifier and include them into the Nomenclature of the medical services;

c) to elaborate regulations on telemedicine services in the RF healthcare system;

d) to amend the standards and procedures of providing medical services by including the application of telemedicine services;

e) to work out requirements to the standard regional telemedicine systems taking into account the issues of compatibility and distance hardware capabilities;

f) to identify document base, terms and conditions under which the telemedicine system will be developed;

g) to amend the requirements to the Unified State Health Information System of the RF regarding integration with regional MIS;

h) to develop a model standardized set of portable equipment to be used in telemedicine purposes in the Arctic regions;

i) to implement a pilot project on integrated telemedicine system of NAO based on the existing in the region experience;

4. To recommend the Conference organizers:

a) to send resolution of the Conference to the state bodies and organizations concerned:

• the State Duma of the Russian Federation;
• the Federation Council of the Russian Federation;
• the Ministry of Health Care of the Russian Federation;
• the Federal Compulsory Medical Insurance Fund;
• the Ministry of Communications and Mass Media of the Russian Federation;
• the Ministry of Health Care of the Arkhangelsk Region;
• the Administration of the Nenets Autonomous Okrug;

b) to consider publishing the report about the Conference and the resolution in the international journal "Journal of Circumpolar Health";

c) to consider the possibility of holding the conference "Arctic telemedicine" on a regular basis.
9.3 Project information in the media

In Norwegian:

http://telemed.no/telemedisin-til-nenetsfolket.5348588.html
http://www.unn.no/nasjonalt-senter-for-samhandling-og-telemedisin/nts-besoek-til-nenets-i-russland-article95309-8966.html
http://www.unn.no/aktuelt/laerer-telemedisin-i-tromsoe-article113120-10106.html
http://intranett.unn.no/forsiden/unn-i-helsesamarbeid-med-russland-telekommunikasjon-som-nyttig-verktøy-article126140-8693.html

In Russian:

Website of Assembly of the Nenets Autonomous Okrug:


Newspaper «Natyana Vynder»:


Nenets Broadcasting Company:

http://www.trksever.ru/Glavnoe_na_Severe/Arkticheskaya_telemeditsina/
https://mhealthrussian.wordpress.com/2014/04/25 (20.11.2014)

news.rambler.ru:

http://news.rambler.ru/24782757/
ITAR TASS – Russian information agency:

Russia online – Russia news:
http://www.russia-on.ru/82646

Moscow:

St. Petersburg:
http://spbit.ru/news/n112478/ (27.11.2014)

Other regions:
http://yamal-region.tv/news/13262/
http://www.1sn.ru/122251.html
http://regions.ru/news/2509174/