



# **Project Telemedicine in North-West Russia**

## **Subsidiary project *DISTANCE LEARNING***

**Author: Svetlana Manankova Bye**

**Appended reports written by:**

**Bodil Bach  
Irene Lund  
Stine Skorpen  
Torill D. Nilsen  
Trine U. Sørensen**

**17 September 2001**

# TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b><u>I. DESCRIPTION</u></b> .....  | <b>3</b>  |
| <u>1.1. BACKGROUND</u> .....  | 3         |
| <u>1.2. OBJECTIVES</u> .....  | 3         |
| <u>1.2.1. Overall aim</u> .....   | 3         |
| <u>1.2.2. Goals</u> .....   | 3         |
| <u>1.3. PARTNERS IN RUSSIA</u> .....  | 3         |
| <u>1.4. ORGANIZATION</u> .....  | 4         |
| <u>1.5. PROFESSIONAL BACKGROUND</u> .....   | 5         |
| <u>1.6. TIMESCALE</u> .....   | 5         |
| <u>1.7. FUNDING FROM INTER-REG AND OTHER SOURCES</u> .....  | 6         |
| <u>1.8. RESULTS</u> .....   | 6         |
| <b><u>II. EVALUATION</u></b> .....  | <b>7</b>  |
| <u>2.1. IMPLEMENTATION</u> .....  | 7         |
| <u>2.2. RESULTS</u> .....   | 14        |
| <u>2.3. RESULTS COMPARED TO THE ORIGINAL PROPOSAL</u> .....   | 15        |
| <u>2.4. FACTORS UNDERESTIMATED</u> .....  | 16        |
| <u>2.5. HOW COULD THE RESULTS HAVE BEEN IMPROVED?</u> .....   | 16        |
| <u>2.6. TAKING THE PROJECT FURTHER</u> .....  | 16        |
| <b><u>III. APPENDIXES:</u></b> .....  | <b>18</b> |
| <u>3.1. REPORT ON DISTANCE LEARNING BETWEEN TROMSØ AND ARKHANGELSK, 1996-2001</u> .....   | 19        |
| <u>3.2. TELEMEDICINE COLLABORATION BETWEEN ARKHANGELSK AND TROMSØ</u> .....   | 23        |
| <u>3.3. REPORT ON JOINT DISTANCE LEARNING PROGRAMME IN PATHOLOGY), 1999-2001</u> .....  | 25        |
| <u>3.4. THE OCCUPATIONAL THERAPY UNIT AT THE UNIVERSITY HOSPITAL OF TROMSØ (UHT) AND THE VIDEO CONFERENCE COLLABORATION WITH ARKHANGELSK, 1999-2001</u> ..... | 27        |

# **I. DESCRIPTION**

## **1.1. Background**

Initial discussions of collaboration in distance learning between Norway and Russia began as early as 1995. The Barents Region encouraged collaboration in many fields, and health was one of the most important areas. In the course of several friendship and “getting-to-know-you” visits to Arkhangelsk by staff from the University Hospital of Tromsø (UHT), health care workers agreed that telemedicine and distance learning were areas in which they wished to collaborate. Many joint projects were started between UHT and health institutions in Arkhangelsk. One of these early projects was a distance learning programme for Russian and Norwegian nurses, which provided a way of continuing to work together beyond the physical meeting venues.

In 1997, the National Centre of Telemedicine (NCT)<sup>1</sup> received its first funding from the Barents Secretariat for the project “Telemedicine in North-West Russia”. The foundations of the distance learning project had, however, been laid as early as 1994, when an exchange of information was begun and professional contacts and networks established between nurses on both sides of the border. We saw the beginning of network-building, small-scale testing of equipment and software, and communication within Arkhangelsk Oblast. Thus, the project “Telemedicine in North-West Russia” got off to a good start.

## **1.2. Objectives**

### **1.2.1. Overall aim**

The overall aim of the project was to develop and strengthen collaboration between health care personnel in Arkhangelsk Oblast and Northern Norway.

### **1.2.2. Goals**

The main objective of the project was to examine and improve communication and mutual exchange of information between health care personnel in Norway and Russia and within Arkhangelsk Oblast, in order to:

- Contribute to greater sharing of competence and knowledge between health workers in Arkhangelsk Oblast and Northern Norway.
- Establish a distance learning programme for Russian and Norwegian health care personnel as a normal service.

## **1.3. Partners in Russia**

- The Health Department of Arkhangelsk Regional Administration.
- College of further and continuing education for nurses, midwives and nursing practitioners.

---

<sup>1</sup> Formerly Department of Telemedicine

- The Regional Hospital of Arkhangelsk (RHA), the Regional Children’s Hospital and other regional health care institutions.
- Health institutions in the three largest cities in the oblast: Arkhangelsk, Severodvinsk and Novodvinsk.
- Arkhangelsk Medical College (which provides lower degrees in health care).
- Northern State Medical University.

### 1.4. Organization

The management of NCT and UHT administration has directed the project. The project was organized according to the matrix principle: people employed in other fields at NCT have been involved in the project as experts and advisors in their particular specialties. Various types of health care personnel at UHT – nurses, medical laboratory technicians (MLTs), occupational therapists, doctors, and pharmacists – have played active roles in the project. Academic staff of the University of Tromsø and Tromsø University College has also contributed to the lectures, as have health personnel from Tromsø Municipality.

The project was organized as a joint venture between the two countries, and responsibilities and authority were divided along clear lines.

The table below shows the division of responsibilities and authority between the two parties in the project in Arkhangelsk and Norway.

|               | <b>Responsibilities</b>  | <b>Authority</b>  |
|---------------|--|---|
| <b>Norway</b> | <ul style="list-style-type: none"> <li>• delivering/purchasing/borrowing equipment for the distance learning programme: PCMCIA card, modem, monitor, lens, and camera</li> <li>• purchasing equipment for the video conference link</li> <li>• providing knowledge and expertise</li> <li>• informing Norwegian health care personnel</li> </ul> | <ul style="list-style-type: none"> <li>• selection of collaborators and lecturers</li> <li>• approving plans for the distance learning activities from Russia to Norway</li> </ul>  |
| <b>Russia</b> | <ul style="list-style-type: none"> <li>• purchasing computers</li> <li>• installing the equipment</li> <li>• training personnel</li> <li>• renting and running premises for distance learning</li> <li>• paying personnel involved in the project</li> <li>• documenting the results of distance learning programmes</li> </ul>                  | <ul style="list-style-type: none"> <li>• selecting topics for distance learning programmes</li> <li>• running video conference equipment</li> <li>• making suggestions for distance learning activities from Arkhangelsk to Norway</li> <li>• approving plans for distance learning activities from Norway to Russia</li> </ul> |

Table 1. Division of responsibilities/authority in the project between Norway and Russia.

## **1.5. Professional background**

A high degree of professional expertise on both Russian and Norwegian sides of the border has been of fundamental importance for the implementation of the project. Without in-depth knowledge of the organization of health care services, technical competence and local knowledge, it would not have been possible to carry out this project.

Both nationally and internationally, NCT is at the leading edge in the field of research on and development of telemedicine and telemedicine services. UHT has had many joint projects with health institutions in Northwest Russia. Through these projects, the hospital has acquired a better knowledge of the health sector and the professional qualifications of health care personnel in Arkhangelsk Oblast. This expertise has proved useful for the implementation of the distance learning programme.

Our Russian partners have participated in working meetings at NCT and in Arkhangelsk. These meetings were used to work out the details of technical specifications and training programmes. In addition to other activities, training was given in the use of videoconference equipment and DORIS. We have also seen it as important that project participants should take part in seminars and conferences in Russia and other countries in order to broaden their knowledge and expertise in distance learning.

## **1.6. Timescale**

Six-month plans were drawn up for the implementation of the project. During the course of the project, the schedules were continually revised in accordance with the wishes of our Russian partners and in collaboration with the Norwegian health personnel involved in the distance learning programme. Many of the other activities in the project “Telemedicine in North-West Russia” have contributed to the distance learning programme.

### Distances learning for Russian and Norwegian health care personnel:

- Throughout the project period.
- Still-image-based distance learning using a telephone with built-in loudspeaker, 1996-1999.
- Distance learning by videoconference link, 1999 to present.

### Setting up a digital two-way sound-image (video conference) link between Norway and Arkhangelsk:

- Evaluation of technical requirements, 1998.
- Testing line and equipment, 1998.
- Purchasing and installing videoconference unit, 1998.
- Establishing videoconference link Tromsø-Arkhangelsk, 1999.

### Russian version of DORIS software and adaptation to local conditions in Northwest Russia:

- Adapting and testing telemedicine via the Internet, 1999.
- Installing and adapting equipment for DORIS, 1999.
- Course in DORIS, 1999 and 2000.

- Testing newer versions of DORIS, 1999-2001.

### **1.7. Funding from INTER-REG and other sources**

Funding is described in the final report, Telemedicine in North-West Russia.

### **1.8. Results**

With reference to the project proposal, we expected the following results:

- An increase in medical and technical expertise in both Norway and Russia.
- Communication between Northern Norway and Northwest Russia would increase and intensify.

## II. EVALUATION

### 2.1. Implementation

The implementation of the project has largely been as expected, thanks to the goodwill of the health authorities and the enormous contributions of the health care personnel at the health institutions involved in Arkhangelsk Oblast.

The implementation and results of the projects have been presented in articles and at conferences in several countries. Detailed annual reports on the project have been written, and these have been distributed to the funding agencies and other interested parties.<sup>2</sup>

Competence development and distance learning between the regional hospitals in Arkhangelsk and Tromsø have been very important. Distance learning has been a regular feature since 1996. 1999 was an important year for the distance learning programme, because we made the transition from using the VIDA still-image system and loud speaking telephones, to direct transmission of sound and image (videoconferencing). This has increased activity levels and also the need for training lecturers.

Supplying distance learning activities to Russia has gradually become a regular part of the distance learning programme at UHT<sup>3</sup>. Table 2 shows the number of transmissions and participants from 1996 to May 2001.

|                       | 1996     | 1997     | 1998      | 1999      | 2000      | 2001<br>(to<br>May) | <b>Total</b> |
|-----------------------|----------|----------|-----------|-----------|-----------|---------------------|--------------|
| From Norway to Russia | 5        | 6        | 13        | 15        | 16        | 12                  | <b>67</b>    |
| From Russia to Norway | 1        | 1        | 4         | 5         | 5         | 2                   | <b>16</b>    |
| <b>Total</b>          | <b>6</b> | <b>7</b> | <b>17</b> | <b>20</b> | <b>21</b> | <b>14</b>           | <b>83</b>    |

Table 2. Number of transmissions between Tromsø and Arkhangelsk in the period 1996 – May 2001.

Figure 1 illustrates the development as a graph.

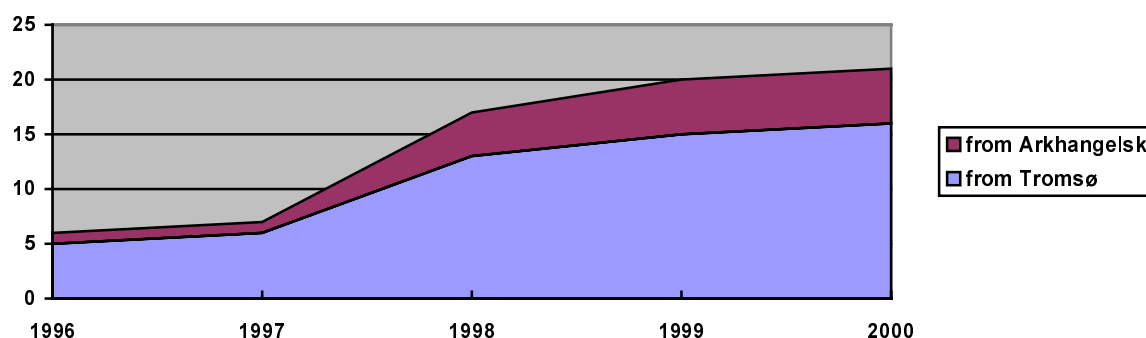


Figure 1. Numbers of lectures for health care personnel between Tromsø and Arkhangelsk.

<sup>2</sup> Documentation of the project can be found at [www.telemed.no](http://www.telemed.no) \*(in Norwegian)

<sup>3</sup> Cf. catalogue for distance learning programme at [www.telemed.no](http://www.telemed.no)

There have been more transmissions from Norway than from Russia. This is because Russian health care personnel are more positive toward and interested in getting to know the Norwegian health care system. The Russian side offered more lectures, but it was difficult to find an audience on the Norwegian side.

Table 3 shows the number of participants from 1996 to May 2001.

|                | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | <b>Total</b> |
|----------------|------|------|------|------|------|------|--------------|
| In Arkhangelsk | 120  | 131  | 183  | 416  | 627  | 200  | <b>1677</b>  |
| In Tromsø      | 52   | 45   | 104  | 75   | 87   | 19   | <b>382</b>   |

Table 3. Number of participants in distance learning programmes 1996 – May 2001.

Figure 2 illustrates this development.

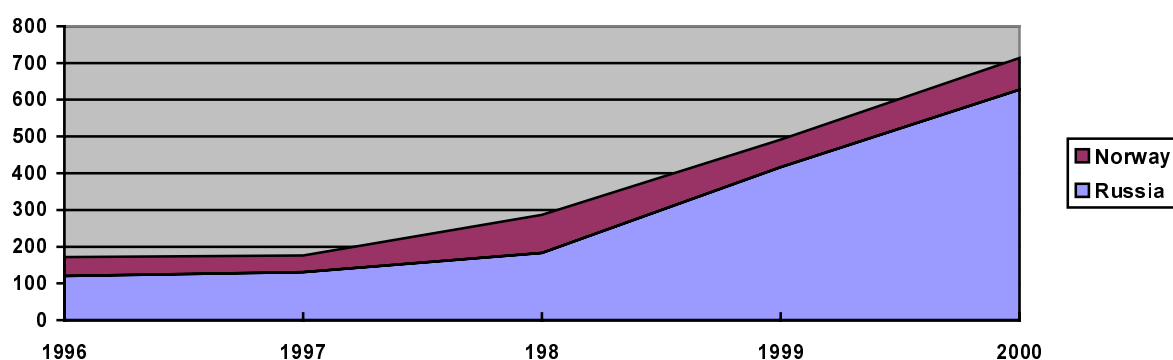


Figure 2. Number of participants in distance learning programmes, 1996-2000.

Since 1999, the number of participants has increased dramatically. This is because we have started using a new video-conference connection between Tromsø and Arkhangelsk from our new premises at RHA. The video-conference connection has made the distance learning activities more attractive and the new premises hold a larger number of participants. Figure 2 shows the same problem: Russians participate, while Norwegian health care personnel do so much less.

In 1999, the distance learning programme was expanded to also include other health institutions in the oblast. A small "telephone exchange" was purchased, which makes it possible to extend distance learning to local hospitals connected to the telemedicine network. In addition to distance learning, the "exchange" can also be used for diagnostic work, so that several specialists can discuss difficult cases.



Table 4 lists the lectures given in the period 1996-2000.

|      | <b>From Arkhangelsk to Tromsø</b>  | <b>From Tromsø to Arkhangelsk</b>   |
|------|--|---|
| 1996 | <ul style="list-style-type: none"> <li>• Diphtheria – the situation in Arkhangelsk Oblast</li> </ul>   | <ul style="list-style-type: none"> <li>• Principles of hygiene at UHT</li> <li>• The Anaesthesia Unit at UHT</li> <li>• The Emergency Services Unit at UHT</li> <li>• Employing nurses at UHT</li> <li>• Norwegian Nurses' Association</li> </ul>   |
| 1997 | <ul style="list-style-type: none"> <li>• Diphtheria – post mortem diagnosis</li> </ul>   | <ul style="list-style-type: none"> <li>• Contraception guidance for young people</li> <li>• Pre-natal examinations</li> <li>• Pre-operative care of surgical patients</li> <li>• Childbirth</li> <li>• Maternity ward</li> <li>• Neonatal ward</li> </ul>   |
| 1998 | <ul style="list-style-type: none"> <li>• Morphological kidney changes in thrombosis pathology of the capillaries</li> <li>• Hepatitis – the situation in Arkhangelsk Oblast</li> <li>• Nursing in Russia in a historical perspective</li> <li>• Basic training of nurses in Russia</li> </ul>                                      | <ul style="list-style-type: none"> <li>• Presentation of the Paediatric Unit</li> <li>• Infectious diseases in children</li> <li>• NIDCAP</li> <li>• Cancer in children</li> <li>• Diabetes in children</li> <li>• Asthma and allergies</li> <li>• Eczema in children</li> <li>• Handling medicines</li> <li>• Continuing education in paediatric nursing</li> <li>• Presentation of Infectious Diseases Section</li> <li>• Patient groups in the Infectious Diseases ward</li> <li>• Quarantine routines</li> <li>• Disinfections</li> </ul> |
| 1999 | <ul style="list-style-type: none"> <li>• Continuing education in nursing in Russia</li> <li>• Nursing unions in Russia</li> <li>• Presentation of Pathology and Anatomy Unit at RHA</li> <li>• Methods in pathological examinations in Russia</li> <li>• Pathological examinations of patients with infectious diseases</li> </ul> | <ul style="list-style-type: none"> <li>• Treatment of wounds/sores</li> <li>• Treatment of patients in Infectious Diseases ward</li> <li>• Presentation of Pathology Unit</li> <li>• Preparing histological sections in the Pathology Unit</li> <li>• Immunohistochemistry</li> <li>• Molecular pathology</li> <li>• Presentation of the Habilitation Centre for Children and Adolescents</li> <li>• Electron microscopy</li> <li>• Autopsy</li> <li>• Work on the Spitzbergen plane crash of 1996</li> </ul>                                 |
| 2000 | <ul style="list-style-type: none"> <li>• TB – general information</li> <li>• Rehabilitation in Arkhangelsk</li> <li>• Pathological changes in</li> </ul>   | <ul style="list-style-type: none"> <li>• Imprint/frozen sections</li> <li>• Occupational therapy for patients with hand injuries</li> </ul>   |

|  |   |  |
|--|---|--|
|  | tuberculosis patients <ul style="list-style-type: none"> <li>• Cytology</li> <li>• Rare cases in pathology</li> </ul> | <ul style="list-style-type: none"> <li>• Communication with patients in the Intensive Care Ward</li> <li>• Immunohistochemistry</li> <li>• Dementia: assessment and diagnosis</li> <li>• Ethics and communication</li> <li>• Occupational therapy for patients with rheumatism</li> <li>• Communication in nursing</li> <li>• Rehabilitation of stroke victims</li> <li>• Post-operative pain treatment</li> <li>• The physiology of pain</li> <li>• Early stimulation of handicapped children</li> <li>• Nursing studies: a presentation</li> <li>• Transportation of patients with head injuries</li> <li>• Occupational therapy: a presentation</li> <li>• Basic nursing</li> </ul> |
|--|---|--|

Table 4. Topics for distance learning sessions in the period 1996-2000.

Table 4 shows the range of topics and professional fields involved. The following units/centres/wards have been involved in the distance learning programme in the period:

- Emergency Services Unit
- Emergency Services Communications Centre
- Anaesthesia Unit
- Paediatric Unit
- Occupational Therapy Unit
- Maternity ward
- Habilitation Centre
- Infectious Diseases Section
- Intensive Care Unit
- Surgical Unit
- Operating Theatre
- Department of Pathology and Anatomy
- Hospital pharmacy

Staff from Tromsø Municipal Department of Health and Social Services, Tromsø University College and the University of Tromsø has also given lectures.

Distance learning is part of a larger joint project at UHT between Russian and Norwegian nurses, which also comprises in-hospital training and various professional events. Some of the literature (booklets, compendiums) used in preparing distance learning sessions has been translated into Russian and distributed to many hospitals in Arkhangelsk. The lectures themselves have also been collected in compendiums and distributed in Russia. The compendiums are used on various occasions, such as when receiving visitors from Russia.

Table 5 shows the distribution of participants in distance learning activities in Russia in the period 1996 - 2000.

|                                  | 1996       | 1997       | 1998       | 1999       | 2000       | <b>Total</b> |
|----------------------------------|------------|------------|------------|------------|------------|--------------|
| Nurses                           | 78         | 76         | 12         | 130        | 480        | <b>776</b>   |
| <u>Doctors:</u>                  | 32         | 31         | 57         | 149        | 81         | <b>350</b>   |
| Pathologists                     |            |            |            |            |            |              |
| Endocrinologists                 |            |            |            |            |            |              |
| Paediatricians                   |            |            |            |            |            |              |
| Dermatologists                   |            |            |            |            |            |              |
| Anaesthesiologists               |            |            |            |            |            |              |
| Midwives                         |            | 24         |            |            |            | <b>24</b>    |
| Medical laboratory technologists |            |            |            | 106        | 6          | <b>112</b>   |
| Pharmacists                      |            |            | 6          |            |            | <b>6</b>     |
| Psychologists                    |            |            |            | 4          |            | <b>4</b>     |
| Teachers                         |            |            | 8          | 4          | 2          | <b>14</b>    |
| Students                         |            |            |            | 23         | 37         | <b>60</b>    |
| Administrators                   | 10         |            | 3          |            | 21         | <b>34</b>    |
| Others                           | 10         |            | 9          | 4          | 21         | <b>44</b>    |
| <b>Total</b>                     | <b>120</b> | <b>131</b> | <b>183</b> | <b>416</b> | <b>627</b> | <b>1477</b>  |

Table 5. Distribution of health care personnel by profession – participants in distance learning activities from Tromsø to Arkhangelsk in the period 1996 – 2000.

The pie-chart below (figure 3) gives a graphic presentation of the distribution of health care personnel by profession – participants in distance learning from Tromsø to Arkhangelsk in the period 1996 – 2000.

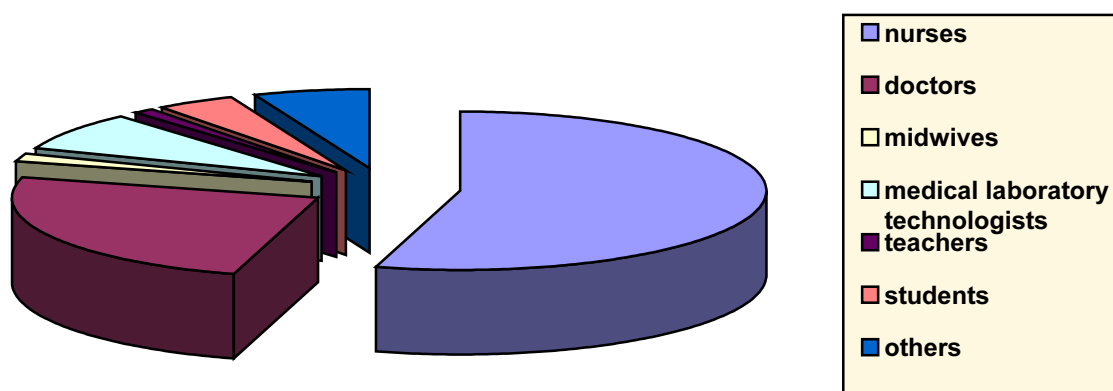


Figure 3. Distribution of health care personnel by profession – participants in distance learning in Arkhangelsk in the period 1996 – 2000.

Approximately 50 per cent of the Arkhangelsk participants are nurses. Among them are personnel with qualifications and functions equivalent to health visitors (mother/child speciality) and occupational therapists. 6 per cent of the participants are classified as “others”. This group includes psychologists, health care administrators, and other visitors.

Table 6 shows the distribution of participants in distance learning activities in Norway in the period 1996 – 2000.

|                                     | 1996      | 1997      | 1998       | 1999      | 2000      | <b>Total</b> |
|-------------------------------------|-----------|-----------|------------|-----------|-----------|--------------|
| Nurses                              |           | 10        | 27         | 16        | 10        | <b>153</b>   |
| Doctors                             | 52        | 11        | 43         | 10        | 23        | <b>139</b>   |
| Medical laboratory<br>technologists |           |           |            | 24        | 35        | <b>59</b>    |
| Occupational therapists             |           |           |            |           | 13        | <b>13</b>    |
| Teachers                            |           |           | 12         | 11        |           | <b>13</b>    |
| Students                            |           | 24        |            | 14        | 6         | <b>44</b>    |
| Others                              |           |           | 22         |           |           | <b>22</b>    |
| <b>Total</b>                        | <b>52</b> | <b>45</b> | <b>104</b> | <b>75</b> | <b>87</b> | <b>363</b>   |

Table 6. Distribution of health care personnel by profession – participants in distance learning from Arkhangelsk to Tromsø in the period 1996 – 2000.

The pie-chart below (figure 4) gives a graphic presentation of the distribution of these figures.

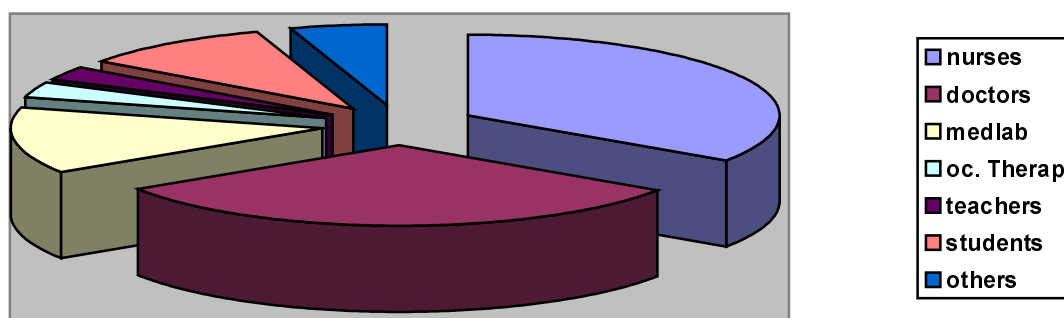


Figure 4. Distribution of health care personnel by profession – participants in distance learning in Tromsø in the period 1996 – 2000.

In Norway nurses and doctors each constitute about a third of the participants.

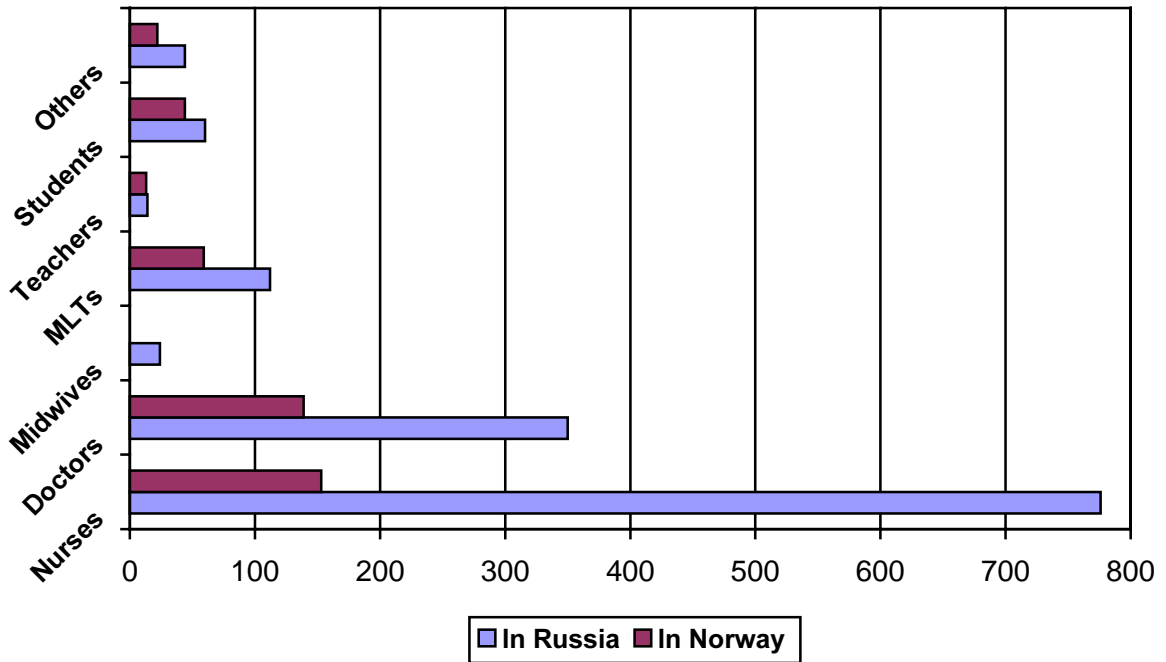


Figure 5. Distribution of health care personnel by profession – participants in distance learning activities in Norway and Russia.

An evaluation form<sup>4</sup> has been prepared for participants and lecturers in order to document technical problems and the professional value of the teaching. The form provided us with valuable information for the ongoing work of developing the distance learning programme.

Figures 6 and 7 show how useful participants found the sessions and the quality of the professional dialogue during transmissions in the year 2000.

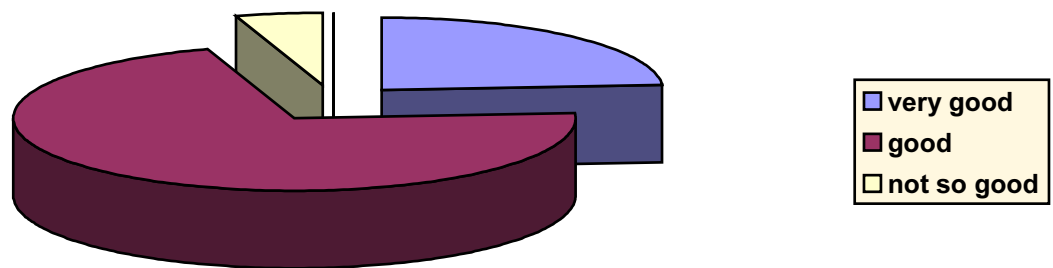


Figure 6. How useful did you find the sessions?

95 per cent of participants thought the sessions had been useful or very useful.

<sup>4</sup> See appended evaluation form”

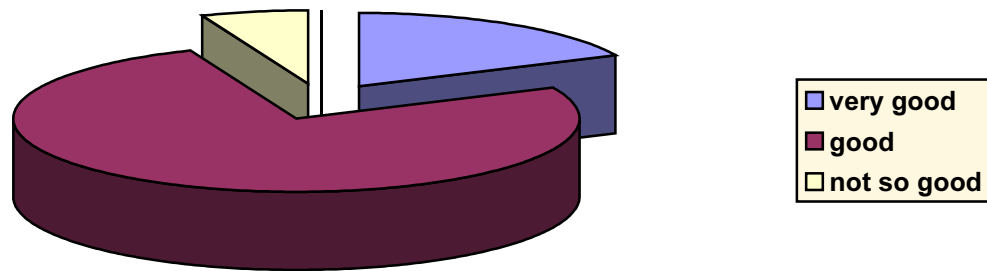


Figure 7. How good did you find the dialogue between lecturer and audience?

96 per cent of participants thought the dialogue between lecturer and audience had been good or very good.

## 2.2. Results

The major objectives of the project have been achieved. All scheduled activities have been carried out. Taking part in the project has given participants useful insight into several other areas beyond telemedicine. Health care personnel in Norway and Russia have increased their expertise in health care, technology, organization, and financial management.

### 2.2.1. Norway

- In Norway, the project has had considerable positive effects beyond the specific results of particular activities:
  - First of all, the project has contributed to increasing NCT's expertise in still-image-based distance learning.
  - UHT health care personnel have become more proficient in distance learning and ICT in general through their use of computers, PowerPoint and video conferencing equipment.
  - The project has contributed to strengthening other joint projects and activities in the Barents Region, especially through the videoconference link. An example is the collaboration in psychiatry, which was planned several years ago.
- The project has fostered ideas for other joint projects between Norway and Russia in several areas, e.g., pathology.
- The project has also supported educational projects involving the University of Tromsø and colleges in Northern Norway and Pomor University in Arkhangelsk.

### 2.2.2. Russia

The project has also had positive effects in Russia:

- A telemedicine centre has been established at the Regional Hospital of Arkhangelsk, which is closely linked with the Centre for Disaster Medicine and Air Ambulance Services.
- Health personnel involved in distance learning programmes have increased their ICT competence and learned a lot about using computers, PowerPoint and video-conference equipment.
- The infrastructure in Northwest Russia has been considerably improved in recent years, and this is partly due to the demands of telemedicine.

The results of the project have been thoroughly documented in various media: TV, newspapers, journals, reports, Internet publications, brochures, and last but not least, at conferences. Below is a list of the latest (2000-2001) publications and information about the distance learning project.

#### 2000

- Bye, S. Manankova and Sørensen, T.: “The Russia Project – Annual Report 1999”, NST report, March 2000, published on the Internet.
- Bye, S. Manankova: “Experiences with Distance Learning Programmes across Borders” (Russian), published on the Internet
- Information, descriptions, and some results of the project are available on the Internet in Norwegian and Russian:
  - [www.telemed.no](http://www.telemed.no)
  - [www.okb.msa.ru](http://www.okb.msa.ru)
  - [www.msa.ru](http://www.msa.ru)

#### 2001

- TV report on Finnish television (March 2001).
- TV report on Russian television (May 2001).
- “Bringing Arkhangelsk to the World”. Printed information about videoconference communication established with Arkhangelsk (in Norwegian, English and Russian).
- “The Video Conference Guide, 2001”. Brochure in Russian created in collaboration with “Net-based Education”.

### ***2.3. Results compared to the original proposal***

The project has generally followed the original plans, but the time frame has been adjusted somewhat. How well the project has fulfilled the original objectives was thoroughly discussed and documented at the Final Project Conference in Arkhangelsk, 22-24 May 2001. It is worth mentioning that the project has evolved beyond the original proposals. This is true especially of NCT’s involvement, and is mainly due to the fact that the project has lasted longer than initially intended.

The Russian-Norwegian distance learning programme has now become a normal service. This part of the project has been expanded to also extend distance learning to the telemedicine stations within the oblast. The project has also made it possible for other institutions to provide distance learning.

There has been a gradual increase in interest in using videoconference facilities for distance learning activities and as a supplement to more “traditional” forms of collaboration, such as ordinary meetings, travel, etc.

## ***2.4. Factors underestimated***

The most important points, which were underestimated, are listed below. The following deserve to be mentioned:

- Interest among Norwegian health care personnel for distance learning from Russia has been less than envisaged.
- The increase in distance learning activities has also increased the need for interpreters. The project manager has mainly done this work, but as the workload increased, external interpreters had to be employed.
- The long process of making potential users aware of the videoconference link.

## ***2.5. How could the results have been improved?***

The following could have been done differently:

- It would have been an advantage if the project had managed to get more support from key institutions working in the Barents Region, especially in the form of networking and publicity.
- The various activities should have been supported by specially designed journals so that the effects of telemedicine could be scientifically documented.
- The project could have been more closely coordinated with other projects and activities in the Barents Region in order to create synergic effects. This is particularly relevant in the area of telecommunications.

## ***2.6. Taking the project further***

This project shows that distance learning has positive effects, which go far beyond the concrete activities of the project. The project has been of great importance for cross-border communication and collaboration between health care personnel. Health personnel on both sides of the border have increased their expertise in ICT.

It is, however, clear that North-West Russia will be dependent on Norwegian support for many years to come. Others can exploit our experience of telemedicine collaboration with Northwest Russia. The telemedicine network can be used in specialized areas, such as control of infectious diseases, and the communication lines can be used for training, planning, and following up joint projects in all areas, not just in the health sector.

It is still necessary to carry out some upgrading and technical improvement of the communications.



The first cross-border patient counselling was conducted on 6 April 2001. An increasing number of institutions and organizations are approaching us with enquiries about using our videoconference link with Arkhangelsk. It will thus be necessary to continue the videoconference service and change the equipment (the Codec) in Russia.

In addition to the need for funding of basic infrastructure and developing the ideas of the project further, we must emphasize the need for more scientific documentation of the effects of distance learning programmes in North-West Russia. The following are also relevant topics for evaluation:

- Links with and influence on/from other projects.
- Technology, communication and structure.

A complete presentation of the entire project, its results, and both positive and negative aspects of the way the project was conducted might contribute valuable recommendations and form the basis of a “recipe”, which might be a help to anybody in the initial phases of new projects, in Russia and elsewhere.

### **III. APPENDIXES:**

3.1. **“Report on distance learning between Tromsø and Arkhangelsk, 1996-2001”** by Bodil Bach and Stine Skorpen

3.2. **“Telemedicine collaboration between Arkhangelsk and Tromsø”** by Trine U. Sørensen

3.3. **“Report on distance learning programme in pathology between the Department of Pathology and Anatomy at the University Hospital of Tromsø (UHT) and the Pathology Unit at the Regional Hospital of Arkhangelsk (RHA), 1999-2001”** by Irene Lund

3.4. **“The Occupational Therapy Unit at the University Hospital of Tromsø (UHT) and the video conference collaboration with Arkhangelsk, 1999-2001”** by Torill D. Nilsen

### **3.1. Report on distance learning between Tromsø and Arkhangelsk, 1996-2001**

In 1994, collaboration was initiated between Directors of Nursing at the Regional Hospital of Arkhangelsk (RHA) and the University Hospital of Tromsø (UHT). The intention was to exchange ideas and expertise in nursing. A Russia Group was set up at UHT, led by Director of Nursing Tove Forsdahl, who was to be responsible for contact with Russia.

In 1995, the then Department of Telemedicine, now National Centre of Telemedicine (NCT), had its first breakthrough, when still images were transmitted from UHT to RHA by modem, using the still-image system VIDA, which had been developed by Telenor Research and Development in Tromsø. The system has since been used for remote consultations in the Russia Project. In 1996, collaboration began between NCT and the Russia Group, with the aim of testing whether the VIDA system could be used in distance learning programmes between health care personnel in the two countries. The NCT co-ordinator of educational services was responsible for the practical and technical implementation of this work.

#### **Implementation 1996-1999:**

For the first few years, from 1996-1999, distance learning sessions were conducted using still images on a computer and a loud-speaking telephone. Nurses at UHT started the distance learning programme at the request of the nurses at RHA. Topics are chosen by mutual agreement. Each topic was filmed in advance, and images were then “videograbbed” (i.e. converted to digital images). Then images from the videotape were fed into the still-image system. The still images were transmitted using a computer, modem and analogue telephone lines. From 1998, we started using the newly-developed DORIS system. This system is a more user-friendly product and transmissions could be made by e-mail, which made the whole process much faster.

A Russian interpreter, Dr. Svetlana Manankova, translated all lectures. She later became the project manager for the project “Telemedicine in North-West Russia”, in which “Distance Learning between Tromsø and Arkhangelsk” was included as a subsidiary project. During lectures, nurses could see the images on their own computers in the “Telemedicine Room” at RHA, while listening to the lecture over the loud-speaking telephone. Nurses, doctors and medical laboratory technologists listened to the lectures and took part in the discussions afterward, which often lasted longer than the lectures themselves. In the course of the discussions, ideas for new distance learning topics were floated, and issues relating to the collaboration programme discussed.

This part of the project forms part of a larger joint project at UHT between Russian and Norwegian nurses. For instance, in-hospital training of Russian paediatric nurses at UHT began in 1998, after they had taken part in the paediatric distance learning module.

#### **Implementation 1999-2001**

The nurses started their distance learning programme in 1996, but soon other professions joined in the project. Medical laboratory technologists, doctors and occupational therapists

have been active contributors along with the nurses. The Psychiatric Unit at Åsgård Hospital also contributes lectures.

In 1999, a combined ISDN and satellite connection to Arkhangelsk was set up. This meant that from the autumn of 1999, video-conference lectures could be transmitted between UHT and RHA. In the beginning, there were some technical problems, which included noise, poor image quality and frequent breakdowns. This has since improved considerably, as the lines between the two countries have been improved. The video-conference connection is now used for distance learning sessions, meetings, and counselling and follow-up discussions.

### **Practical implementation at NCT:**

Project Manager Dr. Svetlana Manankova has been responsible for keeping in touch with the Training Officers in Arkhangelsk. The co-ordinator of educational services at NCT is responsible for assisting and supervising lecturers and for the practical arrangements for the lectures. Bodil Bach was co-ordinator of educational services from 1995 to June 2000. Today Stine Skorpen holds the post.

Co-ordination meetings are held a few times a year to discuss further progress, and both hospitals present their wishes for future distance learning sessions. The Training Officers pass the topics on to the co-ordinator, who then arranges times and books the studio. At least 14 days before a lecture, the manuscript is received from the lecturer and passed on to the interpreter. All lecturers are offered training in how to use the studio before giving their lectures, and are then also able to decide which technical equipment they wish to make use of. All receive an information package containing "Useful Advice and Tips" ahead of the lecture. The co-ordinator of educational services takes part in most of the transmissions, helping out with the technical equipment and making sure that the logbook and the lecturer and participants complete evaluation forms.

### **Stine Skorpen: My role as co-ordinator of educational services**

I work closely with the Training Officers at the various UHT units. Svetlana Manankova is responsible for keeping in touch with the Training Officers in Arkhangelsk. A few times a year, we hold co-ordination meetings at the National Centre of Telemedicine, where we discuss further progress and both hospitals present their wishes for future distance learning sessions. If topics are suggested which include professions that have not taken part before, we have to establish new contacts in the hospital in order to find lecturers. I receive lecture topics and names of lecturers from the Training Officers, book the studio at NCT, and try to find times, which suit the various lecturers and audiences. All lectures are announced in our "Nasjonale katalog for fjernundervisning" (National Distance Learning Catalogue). The catalogue is available in print and on the web at [www.telemed.no](http://www.telemed.no) (\*in Norwegian). The lecturers give me the manuscripts for their lectures and I send them on to our interpreters no later than 14 days before lectures.

All lecturers are offered training in how to use the studio before their lectures. All receive an information package containing "Useful Advice and Tips" before a video conference, usually several weeks in advance. I take part in most transmissions, helping to run the technical equipment. I get in touch with all lecturers in advance to discuss what technical equipment they wish to use. I also ensure that both lecturers and audience complete the logbook and evaluation

forms. Svetlana has translated the evaluation form into Russian. The same forms are used in Arkhangelsk.

### **Evaluation**

The distance learning programme for Russia started as a transmission of knowledge from UHT to RHA. Over time, however, it developed into “two-way traffic”, with RHA also transmitting lectures to health care personnel at UHT, and later also to other Norwegian participants beyond UHT who are now also able to hear the lectures in addition to the audience at UHT.

Some of the literature (booklets and compendiums) used in preparing distance learning sessions has been translated into Russian and sent to many hospitals in Arkhangelsk. The lectures themselves have also been collected in compendiums and sent to Russia. The compendiums are used on various occasions, such as when receiving visitors from Russia.

The success of the distance learning programme is due, not least, to the efforts of a whole range of individuals at UHT who have been willing to take part in planning, filming and editing, as well as giving lectures – i.e. they have been active at every stage of the process of making distance learning sessions. Supplying distance learning activities to Russia has gradually become a regular part of the distance learning programme at UHT (cf. NCT’s catalogue of distance learning sessions, which is published twice a year). Thanks to all these contributors, distance learning is here to stay. The project has also been an inspiration for the participating Arkhangelsk hospitals, in that more distance learning activities using still images have also taken place between the hospitals in the region.

### **Stine Skorpen: My experiences, spring 2001**

After having worked for one year as co-ordinator of educational services at NCT, I would like to sum up my impressions of the distance learning programme involving Arkhangelsk. There have been very few technical/line problems this last year. We had some problems just before Christmas 2000 and also some recently in the week ending 21 April. Whenever we experience line problems we call the help line in order to try to localize the fault as quickly as possible. The video conference manager at NCT does this.

In my experience, lecturers often find it difficult to have their manuscripts ready 14 days before lectures. This is a problem for those doing the translations: the translators have sometimes had very little time to do their work. The lecturers say it is difficult to get this work done during normal office hours due to large workloads and lack of time.

The lecturers I have been in contact with at UHT seem to think it is exciting and useful to interact with colleagues in Arkhangelsk. The lectures are always followed by interesting discussions, with questions being asked from both sides. The Russians are always best at posing questions.

The teaching is usually done in Norwegian and Russian with the assistance of an interpreter. In the autumn semester 2000, we at UHT had a lecture on tuberculosis from Arkhangelsk. The lecturer spoke English. The Psychiatric Unit at Åsgård Hospital uses English-speaking interpreters in Arkhangelsk, and that works very well.

I have at times had doubts as to whether we manage to “get through to” one another in our cross-border lectures. Cultural differences and different education/training might make it difficult to understand one another’s working conditions. There is, luckily, a lot of exchange going on between the two hospitals in terms of in-hospital training, and I think that by visiting one another’s places of work, we will be better able to understand our different situations. This will also improve our ability to profit from distance learning activities.

*Bodil Bach*  
*Stine Skorpen*  
02.05.2001

### **3.2. Telemedicine collaboration between Arkhangelsk and Tromsø**

We have been collaborating with nurses from Arkhangelsk and Severodvinsk since 1994. We have learned a lot during this period, especially once Raisa Grosheva of the Health Department of the Arkhangelsk Regional Administration took over as leader of the project. This is primarily due to her being a nurse/midwife and the fact that we can communicate directly in English by e-mail.

Over the years, we have had many suggestions for distance learning topics. We have managed to fulfil some, but by no means all, of the requests. In the autumn of 1999 and spring 2000, most of the teaching was on paediatric nursing, and an in-hospital training programme at the Paediatric Ward at UHT followed the lecture series. As a result, in spring 2000, we all sat down to discuss the future of this joint project. We had reached a crossroads, and if both parties were to get anything out of our collaboration, we were going to have to set a new course. Raisa Grosheva has been and is very interested in raising the standard of nursing training in Arkhangelsk, and has strongly indicated that she would like our help.

We agreed that in future the distance learning programme would have one topic per semester. For autumn 2000 we chose the topic of "Communication". As it turned out, this topic became very popular, and attendance was so high that all the transmissions have been repeated. We therefore chose not to start a new topic, but to continue with the same one in the spring semester 2001. To our great pleasure, these sessions have become compulsory for Arkhangelsk nursing students.

We have also made some changes in the strategy for in-hospital training. Previously, every new group arriving at UHT would ask for a chance to acquaint themselves with most of the hospital's units. The participants thus became overloaded with new impressions, and teaching tended to be drowned in a flood of general information. We have now taken steps to remedy this situation, and the last group of paediatric nurses to come here from Arkhangelsk and Severodvinsk remained within the Paediatric Unit. Working together closely gives all of us a chance to become better acquainted with one another's thinking about nursing, as well as with how we work. This knowledge, in turn, makes it easier to know what kind of teaching is needed in order to get a better practical and theoretical understanding of particular nursing specialities. We received very positive feedback on this programme.

We have now initiated collaboration with the nursing section at Tromsø University College, which will give us new and exciting challenges. Raisa Grosheva has been provided with the syllabus of the nursing programme here, and the topics on the distance learning programme will in future be related to this syllabus.

All the lectures are still being collected in a compendium, which is then sent to Russia. We had hoped to be able to videotape all lectures this semester, but we have unfortunately not been entirely successful in this respect. We hope to achieve this goal in the autumn. The plan is to distribute the videos, which will contain both lectures and subsequent discussions. Many questions are asked along the way, and anyone watching the lectures afterwards needs this part too in order to understand the lecture fully.

The collaboration between Arkhangelsk and Tromsø is important. It gives us a deeper understanding of who we are, professionally, culturally and as human beings.

*Trine Utkilen Sørensen*

Senior Nurse, Anaesthesia Unit



### ***3.3. Report on joint distance learning programme in pathology between the Pathology and Anatomy Unit at the University Hospital of Tromsø (UHT) and the Pathology Unit at the Regional Hospital of Arkhangelsk (RHA), 1999-2001***

This collaborative effort started as the result of an initiative from Arkhangelsk. The Russians wished to give medical laboratory technicians continuing education in pathology in the form of a distance learning programme organized by UHT. The challenge was passed on to us through the National Centre of Telemedicine, by special consultants Bodil Bach and Svetlana Manankova Bye. Chief Medical Laboratory Technologist Irene Lund of the Pathology and Anatomy Unit took on the responsibility for co-ordinating 5 transmissions from UHT on selected topics related to modern technical methods in diagnostic pathology.

The first transmission was a presentation of the unit in Tromsø: numbers of employees, numbers of tests, and various methods used, the Northern Health Care Region, etc.

The second transmission was on general histology: receipt of samples, tissue embedding procedures, types of diagnostic material, staining methods, technical equipment, etc.

The third transmission was on immunohistochemistry, a specialized technique for better classification of cancer types (and other illnesses). This was a topic prioritised by Arkhangelsk.

Transmission No. 4 was on electron microscopy in general and neuromuscular diagnostics, and the national function of the Norwegian Neuromuscular Centre in Tromsø.

Transmission No. 5 was on molecular-pathological techniques and gene technology in pathology.

Medical laboratory technologists at UHT prepared all transmissions. They were transmitted by telephone and still images, and were part of the continuing education programme in pathology in Arkhangelsk Oblast in March 1999.

UHT's pathology unit also transmitted a film about autopsy methods and a distance learning session on the identification of victims of the Russian plane crash on Spitzbergen in spring 1997.

The good relationship established between the two professional departments in spite of fairly primitive transmission methods and the fact that conversation and discussion had to be conducted via interpreters, led to a desire to learn more from one another. Pathologists in Arkhangelsk produced 5 transmissions consisting of video conferencing combined with still images on relevant topics relating to the everyday running of the pathology unit in Arkhangelsk (for instance, TB and other infectious diseases) and the cytology unit of the cancer hospital. Tromsø medical laboratory technologists learned about the techniques their

Arkhangelsk colleagues use, the equipment they have and the challenges they face. Both parties were able to talk about their professional and human experiences.

The distance learning sessions were also used to present difficult diagnostic cases, and patient material was sent from Arkhangelsk to Tromsø for further preparation and special staining using, for instance, immunohistochemistry techniques. Pathologists from both units discussed results, and stained histological sections were sent to Arkhangelsk so that the pathologists there could study the effects of the special stains for themselves.

### **The next step – closer contact**

The idea arose of further strengthening the bonds between the two professional departments, and this gave birth to the project “Quality Development of Diagnostic Methods in Histopathology Service of North West Russia”. In summer 2000, we were promised NOK 50,000 from the Ministry of Health and Social Affairs’ Health Co-operation Programme in the Barents Euro-Arctic Region. The money was to be used to introduce immunohistochemical methods at the RHA Pathology Unit.

In December 2000, Professor Andrey Valkov and Medical Laboratory Technologists Nataliya N. Neverovskaya and Kristina V. Savicheva came to Tromsø in order to learn the method and diagnostic evaluation. They spent a week in Tromsø, and were given a “starter kit” so that they would be able to start using the method in Arkhangelsk.

We have stayed in touch and provided counselling through monthly video conferences, in which problems have been discussed. The method has now been established in Arkhangelsk, but there is still potential for technical improvements. As of April 2000, we are applying for funding for a follow-up project, the aim of which is to extend the diagnostic repertoire in Arkhangelsk and purchase better technical equipment. We have also continued distance learning transmissions. In the autumn of 2000, UHT pathologists and medical laboratory technologists conducted two transmissions, and there have been four more transmissions so far in 2001.

### **Conclusion**

Using basic technical equipment, such as telephones and e-mail, it is possible to establish contact between professionals living in two different “worlds”, which speak completely different languages, and have never seen one another before. The result is that we in Tromsø feel we have made good friends in Arkhangelsk who have a lot to teach us. It has also been very inspirational for the Tromsø people to see that what we have to teach has been of use to our Russian colleagues. The contact we have had through the distance learning programme has added many new dimensions and improved our knowledge of our neighbours in the East.

*Irene Lund*

Senior Medical Laboratory Technologist  
University Hospital of Tromsø

### **3.4. The Occupational Therapy Unit at the University Hospital of Tromsø (UHT) and the video conference collaboration with Arkhangelsk, 1999-2001.**

#### **Background: is this something for us?**

It all started by chance. A letter from the National Centre of Telemedicine arrived by internal post, announcing that anyone who wished to conduct transmissions to Arkhangelsk in North West Russia could sign up by a particular date. This was in September 1999. My first impulse was to throw the invitation into the wastepaper basket, but I chose to first inform the Unit about it at an information meeting. At the meeting someone asked whether we should maybe do some transmissions: “We might have something to contribute, which knows?” “Do they have occupational therapists over there?” “How do they work?” We got in touch with the National Centre of Telemedicine, first Bodil Bach, and later Svetlana Manankova Bye, and that is how it all started.

#### **Aim/purpose**

We wanted to get involved because we had no knowledge of how the Russian health care system was organized or how it worked. We were also curious about what was being done within our field in North West Russia. What we wished to achieve can be summarized thus:

- To get to know the Russian health care system
- To find out what their view of occupational therapy was
- To convey knowledge

#### **Methods and practical approaches – video conferences**

We used video conferencing equipment. The conferences were transmitted from the studio at the National Centre of Telemedicine at UHT. The nurses at UHT have been conducting transmissions (and in-hospital training) since 1995. We thus entered a ready-made set-up in which the technical side was already working and contacts had been established in Arkhangelsk. The only thing we needed to find out was who were the target group.

In order for ourselves and the Russians to find out whether this could be useful, we agreed that each side would do one transmission: the Norwegian transmission had the title *What is occupational therapy?* While the Arkhangelsk transmission was on *Rehabilitation*.

We soon found out that there were no occupational therapists in Russia. So how were we going to proceed? What background did the people have who would be receiving our transmissions? We chose to produce a further 5 distance learning sessions on various topics relating to occupational therapy, both to convey information and to get to know one another better. The only thing we knew about occupational therapy in Russia was that the Swedish association of occupational therapists had started up a training programme in occupational therapy in Riga. Doctors attend these courses. In our project, just about every single occupational therapist in the unit at UHT has contributed (13.75 per cent of their working time), either by taking on the responsibility for a transmission or planning one.

#### **About the video conference transmissions:**

When we prepare a video conference transmission, we have to produce a script 2 weeks before the transmission, i.e. everything we wish to say has to be written down. Our interpreter,

Svetlana Manankova Bye, translates the script and sends it to Arkhangelsk. When the transmission starts, she reads out the Russian text, while we present images, videos or objects. At the end, there is time for questions. The transmissions can last up to 2 hours each.

#### Topics dealt with:

What is occupational therapy?

Early stimulation of brain damaged/mentally handicapped children

Occupational therapy in the treatment of stroke patients (emergency care and rehabilitation)

Occupational therapy and rheumatology

Dementia assessment

Hand injuries and occupational therapy

Our Arkhangelsk colleagues requested three transmissions in winter/spring 2001:

- Orthosis manufacture
- Regimes for the treatment of various injuries, e.g. flexor tendon injuries
- Fractures

We have asked for two transmissions from Russia this spring: one on the treatment of stroke patients and one on the treatment of patients suffering from rheumatism.

#### Results

We have achieved the following:

- We have been given an exciting introduction to the Russian health care system
- We have received some information on what rehabilitation is being provided in Arkhangelsk
- We have taught the Russians something about occupational therapy

We cannot present very impressive, measurable results, but an evaluative study has been carried out. The Russians have a long list of transmissions they would like from us. It seems that the more we give them, the more they want. It is nice to know that people are interested in the knowledge we have, but we are nevertheless in two minds as to whether to continue.

#### **Conclusion/perspectives for the future: do we continue or not?**

Is it right for us to teach occupational therapy when we are uncertain about who is learning from us and how this knowledge is being used? Is it right to be selective because the Russians do not have occupational therapists? We find that it is not right to teach rehabilitation when we cannot present it in an interdisciplinary way. We want to postpone further distance learning sessions until we have visited the people who have been receiving our transmissions. It is utterly fascinating to be able to meet people via video conferencing; borders are effaced, and it is fascinating to see the cultural differences in professional practices and methods as well as in organization and the use of uniforms.

The people in the Occupational Therapy Unit are glad to have taken part in this project, even if it took a lot of work. At times we have discussed whether we have the resources for this, since we have used a lot of time on preparation. In conclusion, we think this has been exciting and fascinating. What kind of relationship we would like to have with the Russians in future, we have yet to decide.

*Torill Davida Nilsen*

*Chief Occupational Therapist*

Occupational Therapy Unit, UHT



