



PARTICIPANTS IN THE REMEDY PROJECT FROM FINLAND, SCOTLAND AND SWEDEN

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## External evaluation

# Remote Telematic Solutions for patient diagnoses and the training of health care professionals in sparsely populated areas (REMEDY)

*Rafael Lindqvist*

## 1. Introduction

The REMEDY project was an international three-year project financed by the EU Northern Periphery Programme, INTERREG III B, which took place during the period 2002-2005. The application stated that the project aimed at developing the practical use of telemedical support within different branches of the health and medical services in sparsely populated, remote areas of the Northern Periphery. The purpose was to increase patient security, service quality and to protect patients' legal rights within the telemedical area. In order to achieve these goals, an IT-based training programme at individual, group and organisational level was to be developed in close co-operation with patients and relatives to serve as a basis for a standard European certification. The project built on the experiences from a previous cooperation project between the three countries in question, where the aim was to create, test and implement telematic services for the elderly.<sup>1</sup>

The three partners were, Sweden: Municipality of Vännäs, Västerbotten County Council and Umeå University; Scotland: The Remote Health Care Unit, the University of Aberdeen and the Highlands and Islands Research Institute, Inverness – and Finland: the Kainuu health care and special service district. The three partners designed their own national sub projects within the framework of the overall aim. Sweden assumed the role of lead partner.

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<sup>1</sup> Telematic Services for the Elderly, TSE project 1999 – 2001 in the Health Care and Social Services.

The aim of the Swedish part of the project was to achieve skills enhancement through the training of different staff categories in the use of telemedical support and to improve multi-professional team work in geriatric consultation and co-ordinated care planning. The ability of the staff to understand different care processes and their awareness of ethical aspects when using telemedical equipment in co-ordinated care planning prior to a patient's discharge from hospital care were also focused upon.

The objective of the Scottish part of the project was to produce an instructional training manual for use throughout the Northern Periphery, as well as identifying key factors that should be included in a training programme, including these in a flexible framework and delivering the training programme to members of the multi-disciplinary health-care teams based in remote areas.

The Finnish part of the project consisted of two subprojects. The first aimed to plan and establish a video conferencing network and to train the staff in the use of new work practices and to study whether such a system can support the development of co-operation between different units in the social service and health care sector in various municipalities. The second project aimed to develop new work practices in the care of elderly patients with impaired memory. More specifically, the intention was to plan and establish a) a monitoring system in nursing homes, to train the staff in new work practices and to employ new alarms, emergency phones and other devices; b) a monitoring system for elderly patients with impaired memory, who live alone or with a family member.

## 2. Background

All three partners operate within the Northern Periphery, which means long distances between clients and the social services, not least specialist care within the health and medical services. Apart from the long distances involved, it is also difficult to recruit doctors and other health professionals to the care services in remote and sparsely populated areas. In these areas, the demographic structure is characterised by an overrepresentation of elderly people. Many people of working age migrate from the area due to poor employment prospects. Furthermore, in sparsely populated areas, the social services tend to become "thinned out", which makes it necessary to use available resources as cost-efficiently as possible. This also means that new technical solutions appear promising as a means of maintaining equitable care and geriatric services.

In international comparisons, the Nordic countries are usually characterised as "social-democratic" welfare state regimes, because of the fairly generous tax-financed income protection in connection with various social risks, high quality social services and the fact that social services in general are social rights delivered by public sector institutions (cf. Esping-Andersen 1990). The UK, on the other hand, is closer to what is

characterised as a “liberal welfare state”, in which “means-tested assistance, modest universal transfers, or modest social-insurance predominate”. (Ibidem, p 26) However, in terms of health care, the UK with its National Health Service (NHS) set up in 1948 is more or less unique in the Western world in claiming to provide a comprehensive, nationalized service to the whole population. Such services were largely funded by direct taxation, with little funding from social insurance contributions or local taxation. Services were also largely free at the point of consumption. However, recent decades have seen a transformation of the original model, whereby strategies have been developed for the ‘contracting-out’ of specific NHS services to non-NHS-contractors. Nevertheless, the NHS remains a popular and firmly established element of the British welfare state (Ginsburg 1993: 178).

In Sweden, the majority of health care services and their finances are not under direct central control but controlled by 18 elected regional authorities empowered to levy taxes, i.e. the county councils (and three regional authorities in Gothenburg, the Skåne region and the island of Gotland). The 290 municipalities have a responsibility for a wide range of social services, including geriatric care, disability services and social assistance. In Finland, health care is the joint responsibility of the state and local government authorities. The national-municipal tax-based system for primary health centres formed what Saltman and von Otter (1992: 57) called “a prototype for a publicly planned delivery system”, but the autonomous municipalities have extensive powers over the organisation of local public health care. The approximately 450 municipalities are responsible for the provision of social services. These local authorities finance 70 percent of social welfare and health services expenditure out of the municipal tax revenue. Central government funds to local government and client fees cover the balance. The municipalities may provide the services themselves, in cooperation with other municipalities or by purchasing them from private service providers.

Given the universal approach in health politics that prevail in all three countries, there is a case for a needs-driven implementation of new technical solutions that sustain high quality care. All three countries are also committed to equality in the health and medical services.

### 3. Theoretical framework for the evaluation

#### **Theory-based evaluation**

The evaluative approach implies that the evaluation is a future oriented, knowledge development process. It presupposes reciprocal interaction between the evaluators and those evaluated. So called self-evaluation combines such interaction, as the subject plays an active role in the process. Self-evaluation can be particularly valuable when the purpose of

the evaluation is to promote the continued development of an activity. The present evaluation is a combination of external evaluation and local self-evaluation (carried out by the persons directly involved in the national sub-projects). It is based on documentation produced within the project, such as progress reports, notes from videoconference meetings, participatory observation in connection with the seminars and conferences held in the different countries as well as conversations with project members. The intention was that the evaluation should be *formative*, i.e. performed in parallel with the pilot project and provide input on a continual basis, thereby contributing to continued interventions aimed at promoting the activity, in contrast to summative evaluation, where the intention is to investigate an activity after its completion (Shadish, Cook & Leviton 1991: 73). This means that the various local partners work with the detailed follow up of the different sub-projects in their respective locations. The role of the external evaluation has been to identify general patterns and conclusions associated with the practical use of telemedical support.

To enable the evaluation to be used for future decisions – both in the test areas under investigation in the respective country and in the whole of the Northern Periphery – it must provide answers not only to questions dealing with the extent to which the agreed goals are considered to have been fulfilled by the parties concerned, but also make clear the *reasons* for that particular outcome. This is achieved by a so-called explanatory oriented approach, which highlights the link between preconditions, implementation and outcome.

An in-depth understanding of the different prerequisites, mechanisms and conditions required to achieve a certain result demands that the preconditions prevailing at the start of the pilot activity (which have undergone an adjustment during the project period) and the processes started as a result of the interventions undertaken are clearly stated, in combination with a description of the *results*. The latter include an evaluation of the extent to which telemedical support has been implemented within different health service disciplines, whether the forms of collaboration have been changed and whether it is generally perceived that quality and patient security within the care and social services have been improved. Our evaluation therefore seeks to gain an understanding of the interventions in the context in which they have been undertaken, i.e. we attempt to ascertain the mechanisms behind certain outcomes in order to reveal what is going on in "the black box" of implementing the project. Apart from the interventions as such, a range of *contextual factors* can influence the results, for example the historical background of telemedical work models, the legal, organisational and financial environment in which such models are implemented and the manner in which key actors and others support the new work practices etc. It is clear that the context is crucial, but what does it mean? Kazi (2003: 110) defines the concept in the following way:

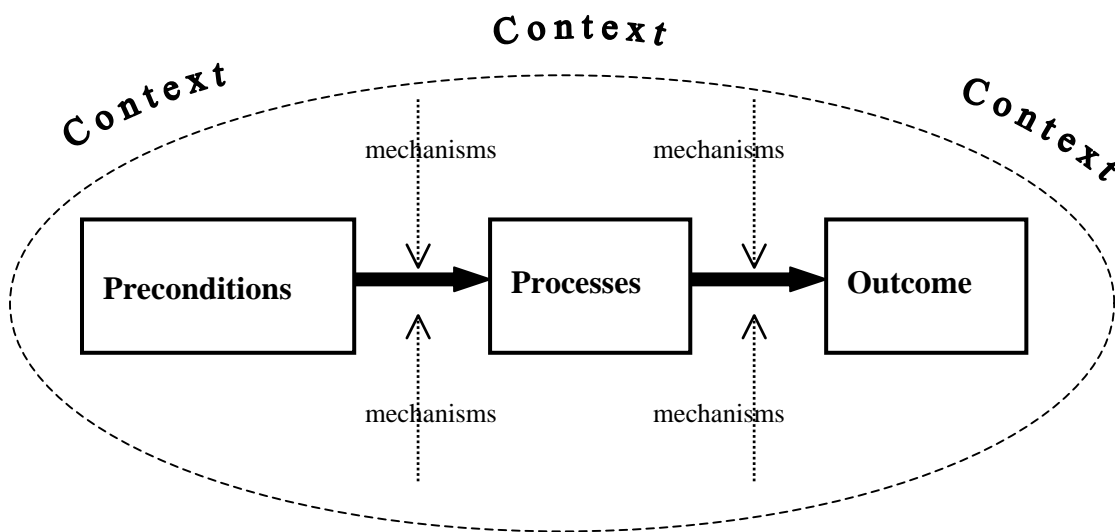
Contexts are defined as structures in the circumstances of people that take a longer time to change (when compared to mechanisms below), such as housing, employment; as well as historical circumstances in which practice takes place, ... The contexts provide the conditions in which causal mechanisms are triggered to produce the outcomes.

Kazi's (2003:110) definition of mechanisms is as follows:

Mechanisms are factors in the circumstances of service users that influence the agreed outcomes. They are either enabling, that is, helping to achieve the outcomes, or disabling, that is, working against the achievement of the outcomes. The content could be seen as generating mechanisms, that is, additional factors in the clients' circumstances introduced by the interventions and/or actions of the ... project social worker, with the intention of generating change.

The model applied in the external evaluation of the REMEDY-project is presented in Figure 2.1. below..

Figure 2:1. Evaluation model.



In the context of evaluations, this approach is usually termed realistic evaluation (see Pawson & Tilley 2000:55-82). The REMEDY-project can be viewed as a programme of social change, which means that the context of the test programme has to be related to a wider social context. In all social systems, the course of events is an interaction between individual and institution, actors and structures as well as between processes at micro and micro level. This implies that actions and social relations derive meaning from the norms and values enshrined in different organisations and social institutions. This train of thought can be exemplified as follows: The interaction that takes place between doctor or nurse and patient in a

geriatric ward does not only consist of scheduled concrete activities but also values and modes of thinking articulated by the professional category in question within the framework of professional practice, organisational affiliation and a specific care policy in relation to elderly people.

The possibilities offered by this perspective in the area of programme evaluations have been formulated by Pawson & Tilly (2000:63) in the following way:

Social programs are undeniably, unequivocally, unexceptionally *social systems*. They comprise, as with any social system, the interplays of individual and institution, of agency and structure, and of micro and macro processes. Much is to be learned from inspecting the 'social nature' of programs.

The purpose of the current project is to develop the practical use of telemedical support by creating new work practices, the ambition being to both reproduce and transform existing structures. This often takes place consciously through human practice and by means of socialisation. Social structures are reproduced, transformed or cease to exist over time as a result of conflicts and negotiations between different groups with disparate interests. When ideas, for example about telemedical support, are developed and implemented in three different countries, a *transformation* or translation takes place related to the application that the local actors consider appropriate: The actors' scope for action is dependent on the *packaging* of the ideas (Erlingsdóttir 1999). A *loosely packaged* idea is abstract and consequently open to reinterpretation. It leads to further reinterpretation and thus multiplicity. The more *prepackaged* and thereby concrete an idea is, the lesser the actors' scope for action, due to the inherent demand for replication. Telemedical support can be regarded as an idea that needs repackaging. Manuals for education and training in the videoconferencing technique can be described as ideas that require strict packaging, as they must be applied in an identical way in different countries. On the other hand, it is possible that the application of the technique within specific fields, e.g. coordinated care planning or the home-help service, can vary depending on the institutional frameworks in question.

#### 4. Preconditions for telemedical support

The preconditions shared by all three Northern Periphery areas are: sparsely populated regions, long distances to health care and social services, and an ageing population.

## Scotland

A specific feature of the Scottish project was long experience of telemedicine, and the existing structure could be utilised to develop this support: The Faculty of Medicine and Medical Sciences at the University of Aberdeen, a Telemedicine Laboratory in the Department of General Practice and Primary Care and The Remote Health Care Unit. In addition, there is the Highlands and Islands Health Research Institute, Inverness, all of which play an important role in providing educational services, as well as a telemedicine service in a large region of north-eastern Scotland.

Experience has shown that a key factor for success in constructing telemedical support within health care is training in how to utilise the equipment in the best possible way. No systematic or standardised model exists that has been specifically developed for education purposes. Telemedical development could take a huge leap forward if guidelines for such a model were available. The training that medical staff undergo within the framework of the standard education does not usually include any in-depth study of telemedicine – and it is clear that there is no further in-service training in the telemedical area for health professionals who have worked for several years within health care. This is remarkable in view of the fact that practical skills and evidence based knowledge are essential for clinical practice. The telemedical knowledge and skills that a small number of health professionals nevertheless possess have been acquired on the job – competence that is not always acknowledged.

However, those who utilise telemedicine in their work also need to maintain their knowledge, and their work practices need to be acknowledged as best practice. In order for the application to be considered worthy of further development, the allocation of resources as well as continuity of use is required. If the aim is to promote or maintain the use of telemedicine, it is not sufficient to merely install videoconferencing equipment in a hospital or health centre without providing a manual that is adapted to its operation in that particular context.

In the final report pertaining to the Scottish sub-project, this dilemma is described in the following way:

Telemedical equipment is often referred to by the clinicians as 'kit' and is sometimes installed in health centres and hospitals without any plans to educate staff about its purpose or train them in its use. This can sometimes result in staff apathy or fear of the technology. Following an initial dissemination of information aimed at raising awareness about telemedicine and its potential, staff must be properly trained, not just in how to turn on the equipment but in how to use it effectively for consultative, educational and administrative purposes. Training must be extensive and provided on an ongoing basis. The nurse practitioners

and consultants require initial lectures on optics, sound transmission, digitisation, image transfer, use of software, ethics and confidentiality.

Another requirement is that professional categories concerned are involved at an early stage, that the equipment is rigorously tested, that learning takes place in a structured manner and that one tries to assess the practical consequences of the introduction of new work practices. The training should be interactive and based on practical needs that exist in everyday situations, in addition to which clear protocols and user friendly instruction manuals should be made available. It is also important to evaluate the education and ensure that staff are proficient in the use of telemedicine in order to prevent patients becoming guinea pigs for "on the job" training as well as to ensure that telemedicine is considered a means of increasing professionalism within health care.

## **Sweden**

A clear trend within Swedish health care is that care times are becoming increasingly shorter. For many elderly individuals, this means that care and rehabilitation to a great extent takes place in the home with assistance from several categories of health professionals. In order for patients and their next of kin to be able to cope with the transition from the highly streamlined hospital environment to the new care situation in the home, it is necessary that there are forms of cooperation in place between in-patient and out-patient care and the community social services and that communication between them is clear and unambiguous. Coordinated care planning has been in focus ever since the introduction of the Care of the Elderly and Disabled Act (the Ädel reform) in 1992, which placed greater responsibility for the care and accommodation of elderly people on the municipalities, at the same time as in-patient care was restricted to the provision of medical services. In fact, coordinated care planning is regarded as so important that it has been enshrined in law and in regulations by the authority concerned, the National Swedish Board of Health and Welfare. This regulation views coordinated care planning as a process consisting of several phases and sets out the care provider's obligation to provide information (to the social and primary health care services) and to communicate the care recipient's needs. The recipients of the information should confirm receipt and decide whether a planning meeting is required, what form such a meeting should take and who should attend. The statute stresses the importance of patient participation. When a patient deemed "ready for discharge" by the responsible physician and thus no longer considered in need of medical hospital care, coordinated care planning is usually initiated and should be a part of the care plan that the hospital-based physician responsible for the patient is obliged to prepare. Furthermore, when the patient is deemed ready for discharge, a payment liability arises, which means that if the municipality fails to make the necessary arrangements for the patient to return to his/her home or to sheltered accommodation, it will

have to carry the cost of the “unnecessary” time the patient spent in hospital.

Use of the videoconferencing technique in conjunction with coordinated care planning provides opportunities to further develop the existing forms of collaboration between the different professional categories involved. However, this requires that a large number of professional categories receive education and training in how to use the new technique. New technical solutions also lead to new questions about what ethical stance to employ in relation to patients and their next of kin. The new technique must not “take over” nor must the patient’s needs be disregarded.

The sub-project carried out by the Swedish partner was to a) educate staff at different levels of in-patient, primary and municipal health care in the use of the video conferencing technique in their everyday work, and b) to apply this technique in connection with coordinated care planning between the hospital, primary and municipal geriatric care. This sub-project focused on ethical aspects and the attitudes/behaviour of health professionals. Evaluation manuals for the collection of data on the subject of perceptions of the received training in the technique and ethical reflection, analysis and decision making were developed during the sub-project.

Both sub-projects rested on the assumption of commitment on the part of the departments in question at the Geriatric Centre, Umeå University Hospital, Vännäs health centre and the Care services administration in Vännäs municipality. In recent years, close cooperation has been developed between the three actors, and the geographical distance between these units is relatively small.

In addition, an inventory of the existing training manuals has been made and subsequently developed as input to the Scottish efforts to produce a joint Northern Periphery manual.

## **Finland**

The focus of the Finnish sub-projects was twofold: 1) the videoconferencing technique in conjunction with consultations within general practice and treatment of diabetes and 2) the use of new technical aids within geriatric care. One of the preconditions for the Finnish partners in the project was the longstanding lack of doctors in conjunction with the fact that telemedicine technology is very promising in terms of finding new organisational forms that allow optimal use of available medical staff. Can the video conferencing technique be used in consultations in general practice where the doctor is not in the same location as the patient and nurse?? Experiences indicate that the technology as such does not pose an insurmountable problem and that such a work model is cost effective.

The aim of the Finnish telemedical sub-project that focused on patients with diabetes was to develop a new method of treating diabetic patients in order to improve quality and accessibility of care in remote areas. The background was the increasing incidence of diabetes and the fact that technical developments have made possible new forms of organising treatment and care. The care of this patient group has a great impact on national health and public finances due to the long-term complications of diabetes. The main responsibility for diabetes care in Finland rests with public health care institutions.

The aim of the gerontechnology part of the project was to identify and test new ways of taking care of elderly patients suffering from dementia by use of the technology. The selected products (a well-being bracelet, safety phone system and medicine dosing machine) were tested in the home health care units located in Sotkamo and Puolanka and with elderly patients living in their own homes in the same municipalities.

The preconditions for the Finnish sub projects also included commitment on the part of local and regional actors. The University of Oulu acted as scientific guarantor and as the basis for the researchers involved, while Kainuu hospital and the participating municipalities in the region were the partners who carried out the actual consultations. It should also be noted that The Association of Finnish Municipalities and the Finnish Interior Ministry assumed a measure of responsibility for co-financing the projects.

## Processes – training, consultation and co-ordinated care planning

### **Scotland**

As previously mentioned, the objective of the Scottish sub project was to produce an instructional training manual for use throughout the Northern Periphery and to identify key factors that needed to be included in such a training programme. Furthermore, these key factors were to be included in a flexible framework suitable for use throughout the Northern Periphery.

The Scottish sub-project brought together an expert group consisting of doctors, nurses, educationalists and telemedicine researchers, who together established the content of a teleconsultation training course. This group had access to the knowledge gained in Vännäs, Sweden, pertaining to the development of training manuals. The following user competencies were identified and agreed upon as components necessary for successful training:

- adjusting the near-end camera angle (pan, tilt, zoom)

- adjusting the near end brightness
- making a call
- use of picture in picture
- use of the mute button
- adjusting the volume
- controlling the far end camera
- saving a still image
- viewing a saved image
- use of the camera for clinical image and x-ray transmission
- disconnecting a call

The videoconferencing equipment was set up at a base site and at remote training locations. A training manual was produced and training sessions were provided. These training sessions were transmitted from the Telemedicine Laboratory, University of Aberdeen, the Geriatric Centre at Umeå University Hospital, Vännäs Health Care Centre and The Care Services Administration, Vännäs municipality, to remote peripheral sites. A quantitative and qualitative questionnaire was developed for the evaluation of user satisfaction and the effectiveness of the training. A booklet was also provided in order to back up the training programme. The Scottish partner's description of the different stages of developing the training manual is as follows:

Stage 1: The first stage of the project was to conduct a literature review of relevant information relating to training in the use of telemedical equipment. Information was collected relating to the clinical, care support and educational use of telemedicine. This information was gathered from published papers in electronic databases, conference proceedings and personal interviews and reflects pan European requirements for remote areas.

Stage 2: A flexible training matrix was developed which can be adapted to all telemedical purposes. It has been produced in the form of a training manual and is used to conduct training programmes by videoconference.

Stage 3: A pilot training programme took place in order to gain information relating to the strengths and weaknesses of the programme

Stage 4: The flexible training matrix was modified in relation to the findings from the pilot course.

Stage 5: A training manual is being produced which will provide the necessary guidance for conducting training courses for members of the multidisciplinary health care team. The actual course content will be established by selecting the documents appropriate to the specific project requirements.

Stage 6: Project Outputs – results. The training manual for tele-teaching was completed, together with a manual detailing the main components of the system and how to operate it. In the final phase of the project a legal and ethical issues document was formulated.

The experience gained in the course of the development of the training manual was "that training is essential and must be ongoing in order for telemedicine to be adopted into the mainstream of clinical practice". As mentioned above, this requires that a number of mechanisms are in place, namely:

- A needs assessment is essential in order to ascertain requirements and usage prior to the installation of equipment
- A manual detailing the main components of the system and how it operates is necessary
- Loss of skills can be a problem and therefore a system of daily/weekly trials is important
- Telemedicine should be compatible with the restructuring and modernisation of healthcare
- Workload should be closely examined in order to determine what is required
- There is a learning curve in association with the training
- There is empowerment of the individual who receives expert knowledge via the telemedicine link
- Telemedicine enhances the quality of healthcare provided to people living in remote areas

These factors can be regarded as enabling in the sense that they help to achieve the intended outcome. It is also notable that the Scottish partner has reflected over and consciously attempted to avoid a number of disabling mechanisms such as a service that is not needs-driven, the lack of a firm commitment/mandate to provide telemedical services, the lack of an appropriate exit strategy when funding expires, and poor communication. Apart from the crucial issue of readiness to solve technical problems that might arise during the process, adequate protocols and updating of work practices are also necessary requirements. Consultations with key players in telemedicine took place throughout the duration of the project and reflected Pan European requirements.

## **Sweden**

Training of different staff categories in the use of telemedical equipment on an ongoing basis has taken place in Sweden. About 100 professionals received basic training in the use of videoconferencing equipment for co-ordinated care planning within the framework of the project, most of whom were assistant nurses, registered nurses and occupational therapists. Another 120 professionals at the Care services administration in Vännäs municipality took part in further training in the use of the videoconferencing technique for the purpose of establishing ethical care- and rehabilitation plans (the so-called IVOR-plans). According to a survey of the first group (n=80) conducted by the internal evaluator, most of the participants seemed to be satisfied with the training programme. However, those who were critical considered that more training was needed. Few of the respondents were able to practise sufficiently on their own after completion of the programme. As the majority spent less than

30 minutes on such practice; it can be concluded that training should be organised and form part of the staff's scheduled tasks. Lack of time, and to some extent motivation, also seemed to be crucial factors. Of those who took part in the Migra training programme, a majority had, wholly or partly, acquired skills in setting up a videoconference and adjusting camera positions. However, many respondents considered that a specially designated person is required to operate the camera during the videoconferences. Even if many of the respondents did not know exactly what to do in the event of sound and image problems, a majority knew who to contact. In general, the participants were satisfied with the training programme.

Work on the development of adequate ethical behaviour and appropriate attitudes in connection with telemedical support was initiated. 25 health professionals from three different care levels (municipal health care, primary care and university hospital care) met on six occasions for the purpose of *exploring* different ethical aspects that *could* occur in the encounter with the patient. Six local informational and work meetings were held, which focused on the training for and planning of a clinical trial including patients and relatives/next-of-kin and with particular attention to ethical reflection and ethical decision-making. Representatives from the respective units involved took part in all meetings, which enabled knowledge development and *an* exchange of experiences to take place. The operative ethics management group (three persons) has produced a systematic search word manual *or* "check list" on the subject of ethics in telemedicine. The systematic search word manual covers the three phases: preparation, implementation and reflection related to work supported by IT. Although the check-list can be used within the health care generally, it was mainly employed in connection with coordinated care planning. One observation from the six meetings was that all participants underlined the importance of ethical reflection and ethical decision-making at individual, group and organisational level. Observations of the staff also indicate that they became more aware of ethical dilemmas and that the focus on ethics, attitude/behaviour and professional stance seems to increase patient safety.

An internal evaluation of the use of videoconferencing in co-ordinated care planning was conducted with participating professionals from the discharging unit, i.e. the Geriatric Centre, Umeå University Hospital, and the receiving unit, Vännäs health centre and the Care services administration in Vännäs municipality.

The staff who took part in the coordinated care planning completed a self-rated questionnaire containing questions about ethical aspects related to the preparatory, implementation and post reflection phases. The questionnaire was adapted to suit the respective routines and duties of the discharging and receiving units in conjunction with coordinated care planning, but also included, when applicable, a number of identical

questions. The self-rated questionnaire was completed by the discharging unit on 10 occasions and by the receiving unit on 34 occasions between June 2004 – March 2005. The respondents include health centre personnel and staff from the municipal services for the elderly.

The internal evaluation shows that, when the video conferencing technique is applied to institutional meetings, such as coordinated care planning, there are both obvious advantages and disadvantages. As revealed by our interviews, one of the advantages is that the meeting saves time. Several participants, in particular rehabilitation and nursing staff, are invited to provide their views; thus the addition of two new perspectives allows a more comprehensive assessment. It is a rational and effective way of meeting in order to plan a patient's continued care and rehabilitation, provided that relevant and adequate information is provided to the participants– and that the technique is employed for suitable patients.

There is an ethical dilemma involved in the assessment of a patient's suitability for the videoconferencing technique. Moreover, the technique to some extent creates distance between the patient and staff; it is not possible to see each other's features as clearly as at a face to face meeting nor to touch each other. The strength of the videoconferencing technique is primarily its contribution to the creation of appropriate routines that are suited to their purpose – or that at least involve reciprocal relations on the part of staff members. Thus, the preparatory stage seems to mainly focus on the reciprocal relations of staff members and to a lesser extent on specifying the patient's role and wishes. The implementation phase was characterised by the introduction and presentation being conducted in a satisfactory manner, which included the facilitator's way of giving each participant an opportunity to express his/her views and confirming the aim of the meeting. Representatives from the receiving unit stated to a greater extent than their counterparts at the discharging unit that the patients were allowed to express their views and that there was a dialogue between the participants about issues raised during the conference. Despite the fact that all staff members reported reflecting over ethical issues in everyday practice, the discharging unit staff had difficulty confirming that the golden rules of ethics (basic principles) were highlighted during the conference. One possible explanation is that these rules may appear too abstract for practical application in everyday practice, where a wide range of concrete decisions have to be taken on the basis of constantly changing conditions. The post reflection phase seems to be a hitherto untapped potential for quality assurance and analysis of ethical principles in the context of care planning. This is especially true in the case of the discharging unit studied. The main obstacle to more general application of the model is reported to be the high tempo within care and the fact that joint post reflection requires the simultaneous participation of many health professionals. The most important strategic mechanism that may have an enabling effect is

the effort involved in making the new care planning model acceptable among staff at different levels. Such a strategy was pursued by means of a series of meetings, where staff discussed different ethical aspects. However, a university hospital is a large organisation with considerable staff turnover and internal mobility, which makes continuity a problem.

## **Finland**

On the whole, the Finnish telemedical project appears to have functioned according to plan, despite initial technical problems. The consultations were organised so that the patient and a specially trained nurse were located at Puolanka Health Centre while the GP was at Kainuu Central Hospital in Kajaani city (100 kilometres away). The study group consisted of two random selections; 508 patient visits carried out by means of remote consultation and 490 visits conducted in the traditional way in Puolanka Health Center. Two questions were addressed; were the patients who received traditional treatment more satisfied compared to those who took part in telemedical consultation, and which model was the most cost effective?

Besides the diary, in which technical problems were recorded, and the questionnaire on patient satisfaction completed by the patients, the success of the consultation was also measured by assessment of the number of cases in which a return consultation was required. The quality of the information transfer was measured by examination of a number of video recordings. In addition, a calculation of the costs of the consultations for the patients with diabetes was performed.

The design of the diabetes project was as follows: The study population consisted of two groups of about 700 people with diabetes in the three remote municipalities. One group of diabetes patients was treated with the help of an IP-videoconference system. The other group consisted of control patients from the same region. The control patients were treated in the traditional way in their own health centres. The framework of the overall aim – to develop a new method of treating diabetic patients in order to improve the quality and accessibility of care in remote areas – also included the aim of improving the performance of the diabetes team and organising health services for these patients in a more efficient way. A further purpose was to bring about change and a reassessment of the traditional role of doctor/nurse. Central issues were: does the technique work; does it enhance patient satisfaction; does the new treatment produce better outcomes, and is the patient/doctor interaction affected?

This approach meant that registers of diabetics were created; patients treated in the public health care system were invited to participate in the research programme and be treated by a team of local nurses and the doctor from Oulu. The working method implied that the patient and the

nurse were in the remote health centre while the doctor communicated with them by means of the video-conference system in Oulu University. The doctor had access to the patient's electronic medical history and x-ray database. The diabetic nurse had specialist training in diabetic issues and had also received instruction in the use of the video conference system and in assisting the doctor with physical examinations. Remote consultations were carried out on four days per week, comprising a total of 26 hours; thus an average of 8-10 patients were treated per day. The patient's first appointment took about 45 minutes and the follow-up visits 30 minutes. Close to 2,000 patient visits took place.

Possible factors explaining the success of the video conference consultations are that the activities took place in the patient's local community, which made it easy for him/her to get to the health centre, and the security afforded by the presence of a specially trained nurse who could handle this type of consultation. The proper function and use of the technique is essential. Another important factor was that the professionals taking part in the network were enthusiastic about the new mode of work.

In the diabetes project, the central role of the specially trained diabetes nurse with both telemedical and special medical competence can be considered important. The detailed preparations and the carefully ordered consultation together constituted a form of best practice within diabetes care. We can also note a shift in doctor-nurse-patient relations, where the nurse assumes an increasingly important role in relation to the patient, probably implying an expansion of the nurse's professional duties. This has to be followed up in order to determine whether this actually is the case.

In the gerontechnology project, a survey of the main problems identified by home help staff was undertaken at an early stage. Two areas were revealed to be more problematic than others, namely 1) the need for safer and more efficient administration of medication and 2) the need for monitoring in order to ensure that elderly people do not endanger their health and well-being. Based on the above-mentioned criteria, a well-being bracelet, a safety phone system and a medicine dosing device were selected for testing. The well-being bracelet measures the condition of the person wearing it in real time and sends the information to the central unit, where it is transferred to the information receiving computer through a modem. If there are any abnormal changes, the bracelet will automatically alert the unit responsible for the monitoring of the device in question. The warning will be transmitted through the central unit to, for example, a mobile phone. The electronic medicine dosing device reminds the user about the correct time to take his/her medication and eliminates the risk of over dosing or deviations from the prescribed timetable. These two devices are supposed to make it easier for the next-of-kin carer or the home care unit personnel to obtain accurate information about problematic situations connected to the intake of medication.

The experience of testing the new devices in home health care was challenging in many ways. These technical aids were not fully developed in terms of their intended function; they were delivered late and did not operate as envisaged. Problems also arose in relation to the timing of staff education. The training of the personnel took place before the holidays, and when they returned to work they had to deal with new equipment but had forgotten most of the information concerning its use.

Interviews with home help personnel and representatives of the manufacturers of the medicine dosage device and the well-being bracelet indicate that these products have the potential to become important home care aids. However, they need to be further developed and tested to improve their functioning, as they currently give rise to an unacceptable number of unexpected problems.

The conclusion on behalf of the Finish partner is that “the experience gained through the project pushed the development of the design and technical features forward and many improvements have already taken place”.

As part of the internal evaluation, interviews were conducted with elderly patients and their next of kin as well as with a control group who did not use these new technical aids. These interviews revealed that the sense of safety within the care and social services did not increase, nor did the aids improve the capacity of the home help services to provide assistance to this group (or reduce pressure on the next of kin). A conclusion is that careful selection of the subjects for such support is necessary. Another conclusion is that the introduction of such aids, especially when they have not been fully developed, requires careful planning in order to avoid unexpected problems, which could lessen the motivation of staff to utilise the aids.

A problematic aspect of the gerontechnology project was that the aids were not fully developed; it was the first time they were tested “in real life”. It can also be questioned whether their introduction was needs-driven, i.e. the extent to which the project and its design was based on the problems experienced by the elderly patient and his/her next of kin. The above-mentioned survey reveals that they were a solution to the problems experienced by the home help personnel, which is hardly sufficient. Another factor involved was that the planning, including staff training, was not adequately carried out. These unexpected problems, in combination with product malfunction, resulted in delays, extra work and difficulty in remaining on schedule as well as loss of motivation among staff.

## 6. Outcome – dilemmas and opportunities in telemedical support

A common feature of the three-partner projects evaluated in this report is the ambition to strengthen the training in telemedical support and its use within different health care sectors and the social services in the Northern Periphery. However, there were differences between the projects in terms of focus; in Scotland the focus was on the development of a training manual and testing it among users. In Finland and Sweden, the projects can be regarded as more field-based in view of the application of telemedicine (and other technical aids) within the general care and social services. In Finland, the application involved patients in general practice/family medicine and within diabetes care – as well as among elderly individuals with impaired memory. The projects in Finland and Scotland mainly took the form of research projects, i.e. academic theses are viewed as an important outcome of the application of telemedicine while, in Sweden, the research element is not as apparent.

The results of the Scottish sub-project demonstrate that the electronic training manual was developed in a stepwise process. When produced, the manual provided the necessary guidance for conducting training courses for members of the multidisciplinary health care team. The actual course content can be found by selecting the appropriate section from the contents page based on the specific clinical/educational requirement. It is anticipated that the training programme to be developed will become the accepted standard throughout the Northern Periphery Region and will be used to help establish successful telemedicine programmes.

In the Swedish part of the project, professionals within health care, municipal geriatric care and primary care received education and training in the use of the video conferencing technique on a daily basis. The results show that it is possible to educate a large number of health professionals and that, in general, they have a positive attitude towards education. However, a requirement is that they are given sufficient time, that the education is integrated with their regular work and that there is a specially designated person to whom they can turn when technical problems arise.

The second Swedish sub-project focused on the practical application of the video conferencing technique in connection with coordinated care planning between a geriatric clinic, primary care and municipal geriatric care. Ethical aspects received particular attention in order to ensure that the current ethical health care principles are not set aside when the new technique is introduced.

Analysis of the self-rated questionnaires and interviews shows that the new technique, including the planning and preparation involved, helps to identify the reciprocal relations and division of work between staff members but that it does not automatically lead to greater involvement by

the patient and next of kin. Therefore, work has been initiated to better utilise the potential of the new technique for involving patients and next of kin in the communication that forms a part of the care planning process. The prototype developed in the final stage of this sub-project, which is a web based "on-line training programme called REMEDY-ethics click by click version", is part of these efforts. On the basis of the Swedish sub-projects, it can be concluded that more advanced technical training as well as in-depth education in ethical reflection and ethical decision-making has strengthened the work process.

The results of the Finnish sub-project show that it is possible to build a teleconsultation system network that functions adequately and is acceptable in terms of cost. The patients in general practice were equally satisfied with the consultation using the videoconferencing technique as with traditional consultation. The transfer of the information during the teleconsultation was good enough to enable reliable diagnoses. It is estimated that three out of four from a random general practice population could be treated by means of teleconsultation.

The technique also proved to function well in the area of diabetes treatment. Both the personnel and patients have accepted the new work practices. Access and continuity of care have improved significantly. The information transfer between team members was handled more efficiently. The consultations have been an important learning process for the nurse who was in attendance. Glucose values improved significantly in both type I and type II diabetic patient groups, and the incidence of long-term complications was reduced. A reduction in the rising cost of diabetes treatment was also anticipated. The new work practice is still in use in the Kainuu region and has also been extended within the Oulu region.

The most important lessons learned from the gerontechnology project were the importance of advance planning and the need to start such a project on a smaller scale due to the fact that it is a first-time test of entirely new technical devices in the care of the elderly. It is also essential to ensure that the patient and his/her next of kin support the design of such a project. The project management group considers that, in spite of higher costs and the technical and functional challenges faced during the project, the technical devices are worth developing.

### **Exchanging knowledge and experiences**

The partners exchanged experiences on an ongoing basis throughout the project period, including knowledge of the practical application of different video conferencing technique training manuals. (For example, the partner in Vännäs sent Tanberg, Sony and Migra manuals to the Scottish partner as input for the task of developing the joint manual. Another example of practical knowledge transfer is the questionnaire completed by telemedical support users after training; the same or similar questionnaires have been

used in the different sub projects. Ethical aspects (which were focused on by the Swedish partner) are another issue that has been the subject of knowledge exchange, which has also taken place in connection with the regular video conferences. Thus, the dissemination of ideas and communication regarding application shows that the outcome is dependent on how the ideas are packaged. The idea of a joint training manual presupposes a single package, while telemedical support in coordinated care planning provides scope for several modes of packaging.

Exchange of knowledge has also taken place in more formal contexts. Seminars and major conferences have been organised in all three countries, at which communication not only took place between the partners but also with external national experts, who provided information on how telemedical support has been designed within different disciplines. The conferences have been open to the general public, which can be considered an example of the interaction between context and project-internal preconditions and processes.

### **Evaluation of project management**

The working method of the REMEDY project steering committee was based on a continuous systematic process. The agenda for the board meetings was prepared well in advance of the date fixed for the meeting and distributed via e-mail to the respective partners for any additions, comments or viewpoints. Final approval of the agenda took place at a video conference meeting approx. 14 days before the board meeting. The development of the content of the various interim parts of the project took place in close partnership with the participating professional categories at the University and with the involvement of different care levels and care providers. Any problems or questions that occurred during the project were easily dealt with, due to the clear division of responsibility between different levels and were solved in accordance with our proposal document. The views of reference persons and ordinary community residents on the direction of the project were collected in order to attain a realistic user-perspective on the project. To sum up, the project work was carried out in close dialogue between the participating parties.

### **Transnationality**

The development and communication of knowledge relating to good practice in telemedicine and education have added value to all countries within the Northern Periphery. Comparisons between the three countries in terms of how the technique was developed and implemented and the decision processes applied have resulted in advantages that otherwise would have been difficult to achieve. The project has added value to the respective national planning processes aimed at strengthening equality in

rural communities, developing IT knowledge within health care organisations as well as achieving a quicker response and an equal level of service for patients in remote areas due to increased knowledge of information technologies on the part of healthcare workers and support for health professionals who are working in isolated areas.

The Scottish partner considers that “it has been possible to address these areas by drawing on European-wide organisations and skills. The project actors are endeavouring to have an impact on the adoption of technology-based service provision for remote communities at European level (including the introduction of European standards) by means of multi-national collaboration.

Through co-operation on spatial planning, the partners are working transnationally to share tools and resources to tackle common problems and exchange experiences, knowledge and best practice”.

### **Contribution to equal opportunity**

Equal opportunity in health care is a principle that is fundamental to the three countries whose projects are included in the evaluation. In addition, the authorities and universities concerned also have policies in the area of equality. The project and its results are deemed by the partners to have the potential to promote equal access to care for persons living in different regions irrespective of gender. An important aspect in this connection is that telemedical support can improve assessment, diagnostics and treatment at local level for many categories of patients, not least elderly persons with chronic diseases. The Finnish partner has expressed this in a progress report as: “The remote doctor model offers a possibility to even out the differences in access to health care services between sparsely inhabited areas and densely populated communities.” For the elderly, the project means that they can remain in their own home longer than would otherwise have been the case. The Swedish partner also considers that “the project is designed in such a way that all categories of health professionals, both men and women, are offered equal training opportunities in the use of telemedical support.” To conclude, the participants are of the opinion that the projects contribute to enhancement of the quality of care in sparsely populated areas as well as to improved access to medical expertise. The new distance bridging technology is assumed to lead to a more democratic and egalitarian work environment for healthcare staff and the provision of health care on equal terms.

### **Sustainable and spatial development**

Proximity to health care is one of several critical factors for the survival of small communities in sparsely populated regions. The population trend in the remote Northern Periphery communities taking part in this evaluation

is declining, with migration of young people and elderly people remaining. It is likely that the interventions undertaken in the different sub-projects will contribute to this development being arrested. In areas where there is a severe lack of doctors, telemedical support appears especially promising for solving some of the resulting problems.

In practical terms, this means that patients in sparsely populated areas and relatives/next of kin accompanying them will be less often obliged to travel to the central hospital for medical, nursing and rehabilitative assessment and diagnostics. It also means that the possibilities of retaining health professionals and social service staff in sparsely populated areas will increase when opportunities for consultations with specialists are provided and when the new technology allows the work content to be expanded. There are also huge advantages for patients and next of kin; travel times are reduced as are waiting times for appointments with specialists. For employers, reduced travel and waiting times will lead to higher productivity. The development of a standard for education of personnel in telemedical supported care work in sparsely populated areas is also expected to contribute to higher quality nursing care and patient safety. The general opinion among the project partners is that the project has the potential to improve the sustainability of these communities. Local economies may also be improved, as healthcare provision often forms an important economic factor in these communities.

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