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Draft Questionnaire for data collection
Version 1.0

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Abstract

This report describes the development of the standard questionnaires to be used in RENEWING HEALTH to assess the satisfaction with the telemedicine application by the stakeholders in the pilots.

Stakeholders are: the patients using the telemedicine applications, relatives of these patients, and healthcare professionals involved in the use of telemedicine.

The report includes the results of a review of previous EU projects on telemedicine, in which the opinion of stakeholders was assessed, and a literature review of studies of patient satisfaction for telemedicine applications.

Based on these reviews, the questionnaire for assessment of patient acceptability in the Whole System Demonstrate Programme (WSD) in the UK is chosen to be used in Renewing Health for assessment of patient perception. A short questionnaire for assessment of the perception of the healthcare professionals is also developed based on MAST. With regard to assessment of the perception of the relatives of the patients, it has been decided to leave it to the local pilots in Renewing Health to choose or develop a questionnaire, if it is considered relevant to included assessment of the perception of the relatives in each pilot.

Key Word List

Questionnaire, RENEWING HEALTH, satisfaction, perception, telemedicine applications, stakeholders, patients, relatives, health care professionals.
Executive Summary

The assessment of outcomes of the telemedicine applications in the pilots in “RENEWING HEALTH” is based on the assessment model MAST. Therefore the pilots will include assessment of the perception of the relevant stakeholders: the patient, their relatives, and the healthcare professionals.

This report describes the results of a review of the scientific literature (including nine studies) of studies of patient perception of telemedicine applications and a review of previous EU projects on telemedicine (Better Breathing, Health Optimum and Dreaming). Based on these reviews it is recommended that:

- The patients’ perception of the telemedicine applications is assessed by use of the WSD patient acceptability questionnaire.

- The perception of the healthcare professionals is assessed by collecting answers to ten questions on the effects on collaboration, usability, work processes, communication and satisfaction.

- The perception of the relatives of the patients is assessed based on a locally developed questionnaire, if the relatives are expected to have a perception of the application and this is considered relevant in the local pilot.

To secure that the questionnaire on patient perception is translated and validated correctly, each of the participating countries must carry out pilot studies with a small subset of users. This process will be based on a common instruction and documented by use of a template for reporting of the results. These results will be included in the deliverable D3.5 describing the final questionnaires for data collection.

The use of common questionnaires for assessment of the perception of patients and the healthcare professionals will increase the possibilities for comparison of the results between countries. At the same time, the results from Renewing Health will, together with the collaboration with the WSD programme, provide an important basis for the development of a validated and well tested patient perception questionnaire in studies of telemedicine in Europe.
Change History

Version History:
0.1 19th January 2011  Initial draft
0.2 24th January 2011
1.0 25th January 2011  Version for release

Version Changes
0.1  Initial draft
0.2  Update to section 5.1, other minor changes
1.0  Minor updates prior to release

Outstanding Issues
Further revisions to questionnaires for data collection will be included in D3.5
IZQUIERDO ET AL (2003)  
APPENDIX E - HOME TELECARE SATISFACTION QUESTIONNAIRE BY MAIR ET AL (2005)  
APPENDIX F - QUESTIONS IN THE QUESTIONNAIRE BY BAKKEN ET AL (2006)  
APPENDIX G - PATIENT SATISFACTION QUESTIONNAIRE USED IN PIRON ET AL (2008)  
APPENDIX H - QUESTIONNAIRE USED IN GARCIA-SAEZ ET AL (2009)  
APPENDIX I - PATIENT QUESTIONNAIRE IN HEALTH OPTIMUM  
APPENDIX J - PHYSICIAN QUESTIONNAIRE IN HEALTH OPTIMUM  
APPENDIX K - QUESTIONNAIRE FROM HEALTH OPTIMUM ON THE HEALTHCARE PROFESSIONALS’ PERCEPTION OF THE ORGANISATIONAL ASPECTS OF TELEMEDICINE  
APPENDIX L - QUESTIONNAIRE USED IN HEALTH OPTIMUM  
APPENDIX M - QUESTIONNAIRE USED IN HEALTH OPTIMUM - ECONOMIC, ETHICAL AND LEGAL EVALUATION FORM  
APPENDIX N - QUESTIONNAIRE USED IN HEALTH OPTIMUM EVALUATION – FORM IN THE ECONOMICAL, ETHICAL AND LEGAL DOMAIN  
APPENDIX O - QUESTIONNAIRE TO PATIENTS FROM THE DREAMING PROJECT  
APPENDIX P - QUESTIONNAIRE TO HEALTHCARE PROFESSIONALS IN DREAMING PROJECT  
APPENDIX Q - PATIENT SATISFACTION QUESTIONNAIRE USED IN BETTER BREATHING  
APPENDIX R - QUESTIONNAIRE ON PATIENT SATISFACTION USED IN THE DANISH STUDY IN BETTER BREATHING
1. Introduction

1.1 Purpose of the report

The purpose of this document is to describe the development of the standard questionnaires to be used in RENEWING HEALTH to assess the satisfaction with the telemedicine application by the stakeholders in the pilots.

The final questionnaires will be presented in deliverable D3.5.

1.2 Structure of document

Section 2 provides some background information for the report.

In section 3, the methods used are described. In Annex I “Description of work” to the Grant Agreement for RENEWING HEALTH, it was described that the development of the questionnaires should be based on the work accomplished in previous EU-projects for collecting the opinion of stakeholders. However, to improve the basis for the project a systematic literature review has also been made of studies of patient satisfaction for telemedicine applications.

The results from the literature review and the review of EU projects are described in section 4. Section 5 describes the choice of questionnaires that will be used in Renewing Health based on the results of the reviews.

1.3 Glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
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<tr>
<td>MAST</td>
<td>Model for Assessment of Telemedicine</td>
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<tr>
<td>RCT</td>
<td>Randomised Control Trial</td>
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<tr>
<td>WSD</td>
<td>Whole System Demonstrator. A telecare project in UK</td>
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2. Background

2.1 Work package objectives

As described in the document Annex I “Description of work” to the Grant Agreement for RENEWING HEALTH, one of the main objectives of work package 3 (WP3) Evaluation Methodology and Pilot Evaluation is to ensure that all pilot sites in the project use a common approach for assessment of the outcomes of the telemedicine applications being evaluated in the project.

The common approach used in RENEWING HEALTH is called MAST – Model for Assessment of Telemedicine. It is described in the MAST manual, see www.renewinghealth.eu.

The manual specifies that if the purpose of an assessment is to describe effectiveness and contribution to quality of care of telemedicine applications and to produce a basis for decision making, then the relevant assessment is: a multidisciplinary process that summarises and evaluates information about the medical, social, economic and ethical issues related to the use of telemedicine in a systematic, unbiased, robust manner.

In practice, an assessment of the outcomes of a telemedicine application by use of MAST should involve assessment of the following seven aspects or domains:

- Health problem and characteristics of the application
- Safety
- Clinical effectiveness
- Patient perspectives
- Economic aspects
- Organisational aspects
- Socio-cultural, ethical and legal aspects

The MAST manual describes how the perception and preferences of patients and the relevant clinical staff can be assessed as part of domains 4 and 6. It also describes that many different methods and questionnaires have been used in the studies of telemedicine applications so far.

Therefore, to improve the comparability of the results from the different pilots in RENEWING HEALTH, it was decided that WP3 should include the development and pilot test of standard questionnaires for the stakeholders in the pilots. The term stakeholders here includes:

- Patients using the telemedicine application.
- Relatives of the patients using the applications.
- Healthcare professionals involved in the use of telemedicine.
2.2 Satisfaction / acceptability

The term satisfaction is here defined as the fulfilment of the expectations or perceived needs of the stakeholders e.g. the patients, as suggested by Hagan et al (2000). This means that satisfaction reflects the personal, subjective preferences of the patient and cannot be measured by more “objective” question (e.g. questions on the extent of the use) only.

The patients’ acceptability is sometimes used synonymously with the patients’ satisfaction of telemedicine applications in empirical studies. Here the two terms are also used as synonyms.

For the purposes of this document, patient satisfaction is also considered as separate from measures of quality of life (e.g. SF-36) and measures of concepts such as the patient’s degree of empowerment and self-efficacy. Such measures are also important in studies of the outcomes of telemedicine application, and they are included in MAST. These measures are also expected to be included in most of the pilots in RENEWING HEALTH. However, this report only focuses on measures of a more narrow part of the preferences of the patients, the relatives and the health care professionals, that is, the preferences related to the satisfaction with the use of the telemedicine applications. Instead, measures of quality of life, empowerment and self-efficacy can be found in the MAST Manual, see www.renewinghealth.eu.

The extent or degree of use of a telemedicine application by the patient can also be used as a more indirect measure of the patients’ satisfaction or acceptability. For example, measures of the number of video visits or contacts, the length of the visits etc., can be said to illustrate the patients satisfaction with and acceptance of the application. Such measures of the utilisation should be included in the pilots and the questions should be based on the special characteristics of the individual application. The wording of these questions, however, is not discussed in this report, where the focus is on questions about the patients’ satisfaction.
3. Methodology

This section describes the methods used in the systematic literature review and the review of previous EU-projects.

To supplement these reviews, there has also been contact with the following institutions:

- The Whole System Demonstrator (WSD) programme in the UK. In the programme, assessment is made of a large number of telehealth and telecare applications in the United Kingdom by use of randomised controlled trials. A number of different questionnaires are use.
- Eurocarers – European association working for carers. This association aims to advance the issue of informal care at both national and EU levels. EUrocarers have been asked about their knowledge of questionnaires to relatives of patients using telemedicine.
- Other partners involved in Renewing Health.

3.1 Systematic literature review

The aim of the literature review was to identify validated questionnaires for assessment of patients’ perception, satisfaction or acceptability of telemedicine applications. The questionnaire should also be relevant for patients with diabetes, COPD or cardiovascular diseases.

The search was made in the following databases in September 2010: Pubmed, Embase and Cinahl.

The search terms were:

- Telemedicine (hospital at home, telemonitoring, tele monitoring, telehealth, ehealth).
- Diseases: diabetes, COPD and cardiovascular diseases.
- Questionnaire*, patient questionnaire*.
- Validation.

The search in Pubmed revealed 112 articles, Cinahl 6 articles and Embase 18. The 136 search hits were skimmed in abstracts and included if they included the relevant patient groups and were written in English.

Articles were excluded if:

- The respondents were healthcare professionals.
- Questionnaires were on service provision.
- The articles were on diagnostic instruments.
- Studies were on children.
This resulted in the elimination of 100 articles. The remaining 36 articles were obtained for further reading in order to review the relevance of the particular articles. Of these, 25 articles were discarded because they did not provide the questions on patient satisfaction, and two articles were doublets. This resulted in nine relevant articles in which the questionnaires were included. The description of the results (see section 4.1 below) also includes the main conclusions from four reviews of studies of patients’ perception of telemedicine applications. These reviews are included to give a more overall description of the status of these kinds of questionnaire and interview studies.
4. Results from reviews

4.1 Results from the literature review

4.1.1 Reviews:

Mair and Whitten (2000) made a review of 32 studies of patient satisfaction of telemedicine applications. They conclude that methodologies used in the assessments are not clearly specified in many studies, and that there is a need for research tools that have been shown to be reliable and valid. They also emphasise that representative samples of patients should be included to improve the usefulness of the results obtained. Finally, they argue that it is most likely an oversimplification to generalise results on patient satisfaction across specialties, since patient perception can be expected to differ, e.g. between psychiatry and oncology.

In a review by Williams et al (2001), 93 studies of patient satisfaction and acceptability of telemedicine applications were identified. Many methodological problems were identified: Only 21% had a sample size of more than 100 patients, about half of the studies only included one or two dimensions of satisfaction, and only 33% compared preferences for telemedicine and face-to-face consultation. Similarly, 86% did not report on validity or reliability and 94% were using a uniquely designed questionnaire. Many different aspects of patient satisfaction were found in the literature:

- Feelings experiences and comfort.
- Professional-patient interaction.
- Timeliness and convenience.
- Overall satisfaction.
- Preference between face-to-face and telemedicine.
- Privacy and confidentiality.
- Professional competence/ personal manner.
- Technological.
- Informativeness.
- Potential for future use/ usefulness.

Based on a review of 92 articles, Scott et al (2007) conclude that very few studies use specific or validated instruments in the assessment of patients’ satisfaction. Only three studies were using validated tools for assessment of patient satisfaction: Vincent et al (2006), Bakken et al (2006) and Bishop et al (2002). Theses are described further below. The review also mentions that telemedicine can improve patients’ satisfaction with healthcare services by improving access to care. Increased access may also improve the overall level of satisfaction with life in rural communities. Therefore improved access should be considered as a factor that can be included in studies of patient satisfaction.

The literature review by Ekeeland et al (2010), on which MAST is based, also shows that various ways to measure patient views exist. These include use of standard consumer surveys and creation of questionnaires or interviews suitable for the outcomes desired to be measured.
4.1.2 Individual studies

Lusignan et al (2001) describes a study of the effectiveness of telemonitoring for patients with chronic heart failure. The study included a patient satisfaction questionnaire about the patients' perception of the video consultation. The questionnaire (see Appendix B) included questions on the interaction with the nurse, access, overall satisfaction, comparison with face-to-face consultation, and questions on the technical quality. The question could be answered on a seven point Likert scale (1= strongly disagree, 7=strongly agree). 10 patients were included in the study and reliability and validity was not examined.

Yip et al (2002) studied the effect of patient education by use of videoconferencing on patients with diabetes type two. 41 patients participated in a study which including a 15 item questionnaire on patient satisfaction developed as part of the study. The questionnaire is called TSQ – the Telemedicine Satisfaction Questionnaire.

Each item was rated using a 5 point Likert scale; the highest possible score was thus 75. Higher score indicate greater satisfaction with the use of videoconferencing. The content validity of the scale was attempted increased by having members of the faculty of medicine judging the relevance and representativeness of the items. Test-retest reliability was also assessed by having seven patients answer the questions twice within six weeks.

The questionnaire is presented in Appendix C. The patients hearing, seeing and talking to the “healthcare provider” is a central part of the questions. Results showed that satisfaction was positively related to age. There was high correlation between the overall satisfaction score and the answers to question 6 (Telemedicine provides for my healthcare needs) and question 14 (I do not need assistance while using the system). Other indicators for validity of the questionnaire were not described.

In a study by Bishop et al (2002), the patients’ satisfaction with the use of a videoconferencing system in tele-psychiatry was examined by use of the eight items in the Client Satisfaction Questionnaire (CSQ-8). The instrument is generic and used in assessment of many kinds of healthcare; it has been tested for validity and reliability repeatedly. However, the questionnaire is not developed specifically for assessment of telemedicine and does not include questions about access, use of time, privacy or replacement of face-to-face meetings that can be said to be important aspects of telemedicine.

Izquierdo et al (2003) describes a questionnaire used in a study of the outcomes of diabetes education administered through telemedicine. The questionnaire (see Appendix D) includes six questions on satisfaction with the diabetes treatment. Answers were collected from 19 patients, but no information about reliability and validity was presented.

Mair et al (2005) has, in connection with a RCT of home telecare for COPD patients, used a patient satisfaction questionnaire to study the patients’ perception of the telemedicine application. As part of the study, a simple 10-item questionnaire was developed (not further described). Each item was rated using a 5 point Likert scale (1= totally disagree, 5= totally agree). The mean score per item was calculated but there was no calculation of an overall score.
The questions are presented in Appendix E. Many questions focus on the communication with the nurse and the patients’ feelings related to the communication. 22 patients answered the questions. Differences in the satisfaction between different patients groups are not reported, and neither is information on the validity of the questions.

Bakken et al (2006) describes the development of questionnaire on patients’ perception of satisfaction and usefulness of a telemedicine application. The questionnaire was developed by selection of 51 items from other published questionnaires, prioritising by telemedicine experts for inclusion of questions in the survey, creation of a common response scale, revision in order to secure comparability between English and Spanish version and translation into Spanish.

The process resulted in a 26 item questionnaire (see Appendix F). The first 21 questions are answered with a Likert type rating scale from strongly disagree (=1) to strongly agree (=5). The five remaining questions relate to the perceived usefulness of the five components of the telemedicine service.

A study of the validity was made on a sample of 346 elderly patients with diabetes. The response rate was 66% for the rural patients where data collection was made by a survey and 87% for the urban patients who were interviewed by a medical doctor.

The following results indicate the validity of the results, according to the author:

- There was statistically significantly higher satisfaction among the patients who knew how to use a computer.
- Education level was negatively correlated with the patients’ satisfaction.
- Factor analysis showed that the answers to the two groups of questions (the first 10 general questions called “Impact and Use” and the next 11 more specific questions called “Video visits”) could explain 63.6% of the variance. Thus, the two groups of questions seem to describe or reflect two common parts of the patients’ perception of the telemedicine application.

However, it should be noted that other studies of validity have not been produced, and that reliability has not been tested. Similarly, the questionnaire in the Likert scale can be criticised for only including positive statements about telemedicine, which can result in bias, as described by e.g. Neuman (2003).

Vincent et al (2006) have studied patient satisfaction with a public telesurveillance service for frail elderly living at home. In the study, the Quebec User Evaluation of Satisfaction with Assistive Technology questionnaire was used. The questionnaire included 12 questions. This questionnaire has been validated and tested for reliability, however it is developed for assessment of assistive technologies (i.e. assistive, adaptive, and rehabilitative devices for people with disabilities) and does not include questions about access, use of time, privacy or replacement of face-to-face meetings that can be said to be important aspects of telemedicine.

Piron et al (2008) have studied the satisfaction of patients undergoing a telerehabilitation programme at home after stroke. The questionnaire was based on a validated scale for measurement of patient’s satisfaction with physical therapy, but modified according to the characteristics of telemedicine. The questionnaire included (see Appendix G):
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- Three questions about the patients’ attitude towards the treatment.
- Six questions about patient-therapist relationship.
- Two questions on global opinion about the treatment performed.

The answers ranged from 1 (strongly disagree) to 5 (strongly agree) and were all included in a total Likert scale. The questionnaire was answered by a sample of 10 patients. Validity or reliability was not examined.

Garcia-Saez et al (2009) describes a questionnaire used in a study of the satisfaction of diabetes patients with a PDA system providing patient specific information to the patient and his/her physician. The questionnaire included six questions on the usability of the system and six questions on the utility of the system to the patients (see Appendix H). Each item could be answered “I agree”, “I partially agree”, “I partially disagree” and “I disagree”. The questions were answered by 10 patients and reliability and validity were not examined.

4.2 Results from EU projects

Below is a short description of the three EU projects on telemedicine including information on the basis of the development of the questionnaires, the content of the questions and the validity and reliability.

4.2.1 Health Optimum

In the EU project Health Optimum, surveys were carried out in three countries of the patients’ and the healthcare professionals' perception of specific telemedicine applications.

The patient questionnaire is described in deliverable ID2.2 Quality of care indicator definition from 2005, see Appendix I. The questionnaire was adapted from a widely used University of Texas Health Science Centre questionnaire. The questionnaire includes nine questions, it is general and can be used independent of the medical specialty. The questions are focused on general issues such as comfortability, convenience and privacy. There is one question about the technical quality of the telemedical consultation (“difficult seeing or hearing the specialist”).

The report D6.3 Trial Evaluation Report includes the results from the survey with patients in the three countries. However, no information is given regarding the validity or reliability of the questionnaire.

The questionnaire to professionals (see appendix J) was answered by physicians who participated in the telemedicine consultations. The report D6.3 Trial Evaluation Report includes the content of the questionnaire and the results from the survey with physicians in two of the three countries.

The nine questions are quite general and independent of medical specialties. The focus is on the physicians’ perception of the quality of the telemedical service, their comfortability, technical and other difficulties and potential effects on the health of the patients using the service. No information is given regarding the validity or reliability of the questionnaire in the report.
In another part of the Health Optimum project, other questionnaires were used to collect information about "user feedback" in interviews with healthcare professionals. The questionnaires are described in report ID3.2 User feedback (2005). Three questionnaires were used:

- Professional Domain: This questionnaire was used to assess the physicians’ point of view on the general benefits provided by services in HEALTH OPTIMUM trials.
- Organisational domain: This questionnaire was used to assess the physicians’ point of view on the organisational aspects related to services in HEALTH OPTIMUM trials.
- Economic, legal and ethical domain: This questionnaire was used to assess the hospital point of view on the economic, ethical and legal aspects related to services in HEALTH OPTIMUM trials.

The questionnaires are presented in Appendices K, L, M and N. Report ID3.2 does not include information about the basis for and development of the questionnaires, the number of respondents, response rate or statistical analysis of the data. Instead a number of examples of responses to the questionnaire are given, thus the questionnaires are use as a tool in a more qualitative study. Assessment of validity and reliability is also lacking.

4.2.2 Dreaming

In the ongoing EU project Dreaming, questionnaires are planned to be used for assessment of user satisfaction. Deliverable D3.4 “User Satisfaction Questionnaires” describes the questionnaires that will be used in six pilots of telemedicine applications.

The aim of the study of user satisfaction is described in the report as (p. 6) “Testing the DREAMING environment with a real-life user sample and evaluating their level of acceptance and satisfaction with the concept and with the specific implementation of the services represented by the platform (usability, user-friendliness, relevance, etc.).

It is also stated that the focus of the questionnaire is on the users’ level of satisfaction concerning the usability of the equipment and the services, and not on quality of life. The total expected number of users in the study is about 180.

Report D3.4 also describes that the questions are based on the most widely used consumer satisfaction model within marketing research, however this relation is not explained. The questions are either Likert scale or open ended.

Different versions of the questionnaire are developed for users of (1) a portal, (2) a video conferencing system, (3) a central unit (MAMBO) and some sensors.

The questionnaire for patients on the video conferencing system includes about 30 questions, plus the possibility to give comments (see Appendix O). The focus is on:

- Problems with use, user friendly.
- Satisfaction with the service.
- Improvements in aspects of quality of life.
• Improvements in aspects related to self-efficacy.
• Changes in the need for help from home nurse, relatives etc. because of the service.
• Possible negative effects (placement problems, missing the home nurse, acceptance by other persons).
• Willingness to pay for the service.

No information is given on the results of using the questionnaire and information about the validity or reliability of the questionnaires is not presented. Some of the questions can be criticised for not being well framed. Some questions use words that can be difficult to understand (e.g. “The equipment is user friendly”) and others can be consider to be leading (e.g. “What has become possible by this technology that was impossible before?”).

The questionnaire for the healthcare professionals on the video conferencing system include about 30 questions and the possibility to give comments (see appendix P). The focus is on:
• Satisfaction with the equipment, training etc.
• Easy to use, user friendly, easy to maintain.
• Improvement in work, ability to help elderly.
• Increase in self-esteem, stronger sense of security, job satisfaction.
• Given more time to other things, saving time.
• Given ability to socially interact with the elderly.
• Feeling independent.
• Better cooperation / integrated care.
• Frequency of use.
• Possible negative effects (placement problems, missing the home nurse, acceptance by other persons, dangerous situations, costing more time).
• Needing extra payment for operating the service.

Again, no information is given on the results of using the questionnaire and no information is presented about the validity or reliability of the questionnaires.

4.2.3 Better Breathing

The Better Breathing project is an EU-funded market validation project under the eTEN programme. It was carried out between 2007 and 2009 and involved five European countries.

In the Danish trial, the outcomes of the COPD patient suitcase was examined in a prospective cohort study involving 50 patients. A questionnaire on patient satisfaction was used in telephone interviews with the patients after they have used the COPD suitcase.

In their article, Sorknaes et al. (2010) describe the results from the study, but the basis for the development of the questionnaire is not described.

The questionnaire is presented in Appendix R. The focus is on safety, usability and suitability. The validity and reliability of the questionnaire was not examined.
In the Better Breathing trial in Norway, the patients’ perception of telemedicine was examined by use of an interview with an interview guide with mainly open ended questions:

- How was it to participate in the project.
- What does the participant think about the concept offered.
  - A The different services;
  - B How was it to use the technology;
  - C How was the program appreciated.
- Experiences from participating (effects, results, motivation, etc).

These questions were followed up by several other questions, both open and closed. The report from the project is still confidential and validity and reliability therefore cannot be described.
5. Choice of questionnaires

5.1 Patient perception

Even though a number of questionnaires for assessment of patient perception of telemedicine applications were found in the literature review (as described in section 4.1), it has not been possible to find a validated questionnaire that included questions about the special characteristics of telemedicine (e.g. access, use of time, privacy or replacement of face-to-face). The review of a number of questionnaires used in telemedicine project for the EC also identified a number of studies, however, these were not tested for validity and the statistical results were generally not well described.

Instead the NHS England Whole System Demonstrators (WSD) programme was contacted (for more information on the programme and the assessments, see http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Healthcare/Longtermconditions/wholesystemdemonstrators/index.htm).

The programme is a two year research project funded by the Department of Health, UK to find out how technology can help people manage their own health while maintaining their independence by use of different telehealth and telecare applications. The programme was in 2009 probably the largest randomised control trial of telecare and telehealth in the world.

Researchers under the leadership of Professor Stanton Newman at University College of London have developed a patient acceptability questionnaire based on a literature review and testing in qualitative studies. The questionnaire is used in WSD pilots including about 3000 patients. The questionnaire can be self-completed by the patients. The wording of the questions does not include "NHS-terms" and any references to NHS and similar, and thus can be used in other countries.

The wording of the 22 items (statements) in the Likert scale questionnaire are both positive and negative, and this reduces the risk of bias. The topics include questions on:

- Utility of the 'kit'.
- Effect on health status.
- Effects on access to care.
- Effect on healthcare / social care.
- Privacy.
- Suitability of the kit.
- Satisfaction with the kit.

Renewing Health has made a formal collaboration agreement with Professor Newman and has been granted permission to use the same patient perception questionnaire as in the WSD programme, although the questionnaire and the British results are unpublished at the moment.

The advantages of this solution are firstly that the pilots in Renewing Health and the WSD programme can compare the estimated patient acceptability. Secondly, Renewing Health and the WSD programme in collaboration can collect information
from the largest sample of patients in the world and thereby produce unique scientific studies of patient perception of telemedicine and contribute to the development of a solid and well validated questionnaire to be used in future studies. The questionnaire is confidential at the moment, because the first results from the WSD programme still remains to be published.

To ensure that the questionnaire is translated and validated correctly, each of the participating countries must first carry out forward and back translation of the questions. Thereafter pilot studies with a small subset of users must be made in each country. This process will be based on a common instruction and documented by use of a template for reporting of the results.

It should be noticed that the pilots can decide to include also other methods or instruments in assessment of the perception of the patient, e.g. if the patients perception of special features of the telemedicine application need to be assessed.

5.2 The perception of healthcare professionals

The review of questionnaires used on previous EC projects on telemedicine applications did not identify any validated or well described question for assessment of the perception of telemedicine applications by the health care professionals

In stead the description of the organisational aspects of telemedicine applications in MAST can be used as the point of departure for development of a new standard instrument in the pilots in Renewing Health. As described in MAST studies of the organisational aspects of telemedicine applications can include assessment of:

- Effects on work processes:
  - Workflow: Effects on number of patients treated, procedures performed etc.
  - Staff: Changes in distribution of work (task shifting)
  - Resources: Changes in working hours for each profession
  - Training: Time spent on training to learn to use the application
  - Internal communication: Changes in the way the staff communicate within the organisational unit
  - External communication: Changes in the communication with staff in external units

- Effects on structural outcomes:
  - Description and number of units collaborating in the production of the service
  - Changes in organisation of generalist and specialist tasks
  - Changes in geographical spread
  - Changes in time spent on travel

- Cultural outcomes:
  - Staff attitudes towards the application
  - Staff experiences with the use of the application

Notice that the description of the intervention and the content of the telemedicine application is part of domain 1 “Health problem and characteristics of the application” and therefore not included here, e.g. the description of interoperability. However, the effects of e.g. interoperability on tasks and time used by the different health care professions are included in the indicators above.
With regards to data collection methods most of the information described can be collected by interview (qualitative studies) with the healthcare professionals. However, information on quantitative effects on number of patients treated, use of resources for training and time used by different professional must be collected as part of the economic analysis and thus can be used as the basis for description of both domains.

Based on the description of the potential organisational aspects of telemedicine and a number of questions from different EC projects (see section 4.2), the pilots in Renewing Health will assess the perception of the health care professionals by collecting answers to the following questions:

- Have you experienced technical difficulties which may affect the quality of care delivered by the telemedicine service?
- Have you experienced difficulties in your collaboration with other professional groups in relation to the telemedicine service?
- Have you experienced difficulties in your collaboration with the staff at other institutions in relation to the telemedicine service?
- How would you describe the usability of the telemedicine application for you?
- Has the use of the telemedicine application had any effect on your use of time?
- Has the use of the telemedicine application had any effects on your tasks?
- Has the use of the telemedicine application had any effects on the communication within your institution?
- Has the use of the telemedicine application had effects on the communication with other institutions?
- Would you like to continue to use the telemedicine service?
- How would you describe your overall satisfaction with the use of the telemedicine service?

Because the telemedicine applications and the role of the health care professionals vary from cluster to cluster, the wording of the questions are made quite general and the questions are open ended and without response categories.

5.3 The perception of relatives of patients

As described above no validated questionnaire on the perception of telemedicine applications by the relatives of the patients was found in the literature review or the review of EU projects.

Therefore contact has been made to Eurocarers, the European association working for carers. However, Eurocarers did not have access to a relevant questionnaire regarding the perception of telemedicine applications for relatives.

Based on this it has been decided to leave it to the local pilots in Renewing Health to choose or develop a questionnaire, if it is considered relevant to included assessment of the perception of the relatives in each pilot.
6. Conclusion

As described in Annex I “Description of work” to the Grant Agreement for RENEWING HEALTH, the assessment of the outcomes of the telemedicine applications will be based on MAST, and include assessment of the relevant stakeholders: the patient, their relatives, and the healthcare professionals.

Based on a review of the scientific literature and a review of previous EU projects on telemedicine this report recommends that:

- The patients’ perception of the telemedicine applications is assessed by use of the WSD patient acceptability questionnaire.
- The perception of the healthcare professionals is assessed by collecting answers to ten questions on the effects on collaboration, usability, work processes, communication and satisfaction.
- The perception of the relatives of the patients is assessed based on a locally developed questionnaire, if the relatives are expected to have a perception of the application and this is considered relevant in the local pilot.

To ensure that the questionnaire on patient perception is translated and validated correctly, each of the participating countries must carry out pilot studies with a small subset of users. This process will be based on a common instruction and documented by use of a template for reporting of the results. These results will be included in deliverable D3.5 describing the final questionnaires for data collection.

The use of common questionnaires for assessment of the perception of patient and the healthcare professionals will increase the possibilities for comparison of the results between countries. At the same time the results from Renewing Health will, together with the collaboration with the WSD programme, provide an important basis for the development of a validated and well tested patient perception questionnaire in studies of telemedicine in Europe.
Appendix A - References


Appendix B - Questionnaire used in Lusignan et al (2001)

- The nurse was able to address what was bothering me today
- Telemedicine makes it easier to get medical care
- The nurse cared about me as a person
- I felt I could talk about anything with the nurse
- The nurse knew what she was doing
- I think I was satisfied with today’s telemedicine consultation
- I had difficulty hearing what the nurse said because of the video system
- Overall, I was satisfied with today’s consultation
- During the consultation, I was nervous about using the equipment
- I was embarrassed or self-conscious
- My medical problem was quite urgent today
- I had no problem seeing the nurse over the video system
- I would prefer to see the nurse face to face
- The care I received from this video consultation was as good as a visit from the nurse
- The care I received from this video consultation was as good as a telephone call from the nurse
- The picture quality on the screen was as good as on my TV
Appendix C - Telemedicine satisfaction questionnaire
by Yip et al (2002)

- I can see my health care provider as if we meet in person
- Telemedicine saves me time travelling to hospital or a specialist clinic
- Overall, I am satisfied with the quality of service being provided via telemedicine
- I can clearly hear my health-care provider.
- I think the health care provided by use of telemedicine is consistent
- Telemedicine provides for my health care needs
- I find telemedicine an acceptable way to receive health care services
- I obtain better access to health care services by use of telemedicine
- I feel comfortable communicating with my health care provider
- I do receive adequate attention
- I can easily talk to my health care provider
- The health care provider is able to understand my health care condition
- I meet with the health care provider more frequently via telemedicine
- I do not need assistance while using the system
- I will use telemedicine service again

- How comfortable did you feel?
- How convenient was the encounter?
- Was lack of physical contact acceptable?
- Concerns about privacy
- Overall satisfaction?
Appendix E - Home telecare satisfaction questionnaire by Mair et al (2005)

- I could see the nurse clearly
- I could hear the nurse clearly
- I felt the TV phone system was a safe way to care for me
- I felt I could say all I wanted to the nurse
- I felt something important was missing because the nurse was not in the room
- I felt the nurse could understand my general concerns
- I felt comfortable using the TV phone system
- I would feel more comfortable seeing the nurse face to face
- I felt that the nurse could understand my medical problems
- It was easy to measure my own blood pressure, pulse and temperature
Appendix F - Questions in the questionnaire by Bakken et al (2006)

Questions on satisfaction (1=strongly disagree to 5=strongly agree)

Impact and Use
1. In general, I am satisfied with the telemedicine system (11.5)
2. My health is better than it was before I used the technology (5.8)
3. I am more involved in my care using the telemedicine system (8.0)
4. The telemedicine system helps me to better manage my health and medical needs (9.4)
5. The telemedicine system helps monitor my health condition (12.0)
6. My doctor uses information from the telemedicine system in my office visits (12.0)
7. I follow my doctor’s advice better since working with the telemedicine system (10.7)
8. The telemedicine equipment is easy to use (10.7)
9. I can always trust the equipment to work (3.7)
10. It was easy to learn to use the equipment (3.6)

Video visits
11. Talking to a nurse during a video visit is as satisfying as talking in person (9.1)
12. A nurse can get a good understanding of my medical problem during a video visit (9.9)
13. My privacy is protected during video visits (12.0)
14. I can explain my medical problems well enough during a video visit (9.7)
15. The lack of physical contact during a video visit is not a problem (8.5)
16. Video visits are a convenient form of healthcare delivery for me (8.7)
17. Video visits save me time (5.2)
18. Video visits make it easier for me to contact the nurse (5.8)
19. My nurse case manager answers my questions (5.6)
20. My nurse case manager deals with my problems (3.7)
21. My nurse case manager engages me in my care (4.9)

Questions on Usefulness (1=not at all useful to 5=very useful)
22. ADA educational Web pages (12.0)
23. Blood pressure testing (9.9)
24. Blood sugar testing (9.9)
25. Video visits from the nurse (4.4)
26. Web site where I can review my results (2.2)
Appendix G - Patient satisfaction questionnaire used in Piron et al (2008)

- 1. I was willing to carry out the VR therapy sessions
- 2. The VR therapy procedure was easy to understand
- 3. The VR therapy system was user-friendly
- 4. The therapist did not spend enough time with me
- 5. The therapist thoroughly explained the treatment(s) I received
- 6. The therapist treated me respectfully
- 7. The therapist listened to my concerns
- 8. The therapist answered all my questions
- 9. The therapist advised me on ways to avoid future problems
- 10. The therapist gave me detailed instructions regarding my future programme
- 11. Overall, I am satisfied with the VR therapy set-up and assistance
- 12. I would recommend VR therapy to other patient
Appendix H - Questionnaire used in Garcia-Saez et al (2009)

Usability

- A The system helps me to collect data (BG, insulin, diet...) faster and more efficiently
- B The system helps me to understand and analyze my monitoring data faster and effectively
- C It was easy to learn how to use the system and become familiar with it
- D The system is convenient to use
- E The use of the system has made my daily life more difficult
- F I like the system

Usability

- A The system helps me to communicate with the physician quickly and effectively
- B The system helps me to make decisions regarding my diabetes
- C The system increases the flexibility of my therapy
- D The system has helped me to reduce the number of acute problems (hypoglycaemia, ketosis, etc.)
- E The use of the system makes me feel more secure in handling my diabetes
- F I would recommend the use of the system to other diabetic patients
Dear patient,

The medical visit you have just finished has been enabled by a new telemedicine service funded by a research project of the European community. In this way, you have been visited and/or treated by a specialist without the need to travel to a distant hospital. In order to further improve our service and to record eventual difficulties or problems, we would like to ask you some questions. Please give us your opinion. Feel free to respond, questionnaires are anonymous and personal or medical information is not stored.

**Is this your first time to use telemedicine?**
- [ ] Yes
- [ ] No

**What was the medical speciality / service related to your visit?**
- [ ] Cardiology
- [ ] Endocrinology (Diabetes)
- [ ] Haematology
- [ ] Anticoagulation monitoring
- [ ] Nephrology (Dialysis)
- [ ] Oncology

**How would you rate the overall quality of the telemedicine consultation?**
- [ ] Excellent
- [ ] Good
- [ ] Fair
- [ ] Poor

**Do you think that the medical care you received from this telemedicine service is as good as the care you would have received if you had seen the physician face-to-face?**
- [ ] Yes, just as good
- [ ] About the same
- [ ] No, not as good
- [ ] I am not sure

**Were you comfortable during the telemedicine consultation?**
- [ ] Yes, I was very comfortable
- [ ] Yes, I was somewhat comfortable
- [ ] No, I was somewhat uncomfortable
- [ ] No, I was very uncomfortable
Was this telemedicine consultation more convenient than travelling to see a specialist?

- [ ] Yes, more convenient
- [ ] About the same
- [ ] No, less convenient
- [ ] I would not have travelled to see a specialist

Did you have any difficulties seeing or hearing the specialist during the telemedicine consultation?

- [ ] No, not at all
- [ ] Yes, I had some difficulty
- [ ] Yes, I had much difficulty

Are you worried that telemedicine might not protect you privacy?

- [ ] Yes, I am very worried
- [ ] Yes, I am slightly worried
- [ ] No, I am not worried

Would you use this telemedicine service again?

- [ ] Yes
- [ ] Maybe
- [ ] No
Appendix J - Physician questionnaire in Health Optimum

1. How do you rate the overall quality of the telemedicine consultation?
   [ ] Excellent
   [ ] Good
   [ ] Fair
   [ ] Poor

2. How would you rate the technical quality of the telemedicine consultation?
   [ ] Excellent
   [ ] Good
   [ ] Fair
   [ ] Poor

3. How do you rate the quality of care delivered by the telemedicine service when compared to the quality of traditional care?
   [ ] Better
   [ ] About the same
   [ ] not as good
   [ ] Not sure

4. Were you comfortable during the telemedicine consultation?
   [ ] Yes, very comfortable
   [ ] Yes, somewhat comfortable
   [ ] No, somewhat uncomfortable
   [ ] No, very uncomfortable

5. Do you feel that the telemedicine consultation service may influence the health status of your patients?
   [ ] Improved health
   [ ] No change
   [ ] Negative effects on health

6. Did you experience technical difficulties that might affect the quality of care delivered by the telemedicine service?
   [ ] Not at all
   [ ] Sometimes
   [ ] Often

7. Did you experience organisational or other difficulties that might affect the quality of care delivered by the telemedicine service?
   [ ] Not at all
   [ ] Sometimes
   [ ] Often
8. Would you continue to use the telemedicine service?

[ ] Yes, in the same way as the service has been deployed
[ ] Yes, but with improvements
[ ] No.
Appendix K - Questionnaire from Health Optimum on the healthcare professionals’ perception of the organisational aspects of telemedicine

---

### Evaluation form details:
This questionnaire is used to assess the physicians’ point of view on the organizational aspects related services in Health Optimum trials. The questionnaire should be fulfilled by a physician at a hub or at a spoke.

### General information

**Physician’s name**
__________________________

**Date:**
______________

**Works at a:**
- Hub
- Spoke

**Hub/spoke Name:**
__________________________

### Specialities:

- **Radiology**
- **Neurosurgery**
- **Haematology**
- **HomeCare**
- **Oncology**
- **Endocrinology**
- **Nephrology**
- **Cardiology**

**Others (specify):**
__________________________

### Type of service:

- **Tele-counselling**
- **Virtual Referral**
- **Tele-laboratory**
- **Tele-care**
- **Shared clinical records**

**Other:**
__________________________
HEALTH OPTIMUM SERVICES

In my opinion, the way the service meets organizational needs is…

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Regular</th>
<th>Poor</th>
</tr>
</thead>
</table>

Improvement suggestions:

Do you think the organization is ready for the services? If not, what are the organization needs?

Is the objective of the services clear? Does it fit with the organizational strategy?

How do you think organizational aspects in the hospital should change to meet the needs of the Health Optimum services? How should new tasks be performed? Who would or should perform the new tasks? Who is or should be responsible for services’ maintenance?

Which value added benefits would you expect from the Health Optimum services: What has become possible with this technology that was impossible before? Besides patient treatment, which applications for this technology would you also need?

Final comments

Other comments and suggestions:  

Accepted and approved by:  
Name:
Surname:
Title:
### Optimum Services Evaluation Form in the professional domain

**Evaluation form details:**
This questionnaire is used to assess the physicians’ point of view on the general benefits provided by services in Health Optimum trials. The questionnaire should be fulfilled by a physician at a hub or at a spoke.

### General information

<table>
<thead>
<tr>
<th>Physician’s name</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>___________________________________________</td>
<td></td>
</tr>
</tbody>
</table>

Works at a:

- Hub ☐
- Spoke ☐

Hub/spoke Name:

- ____________________________________________

**Specialities:**

<table>
<thead>
<tr>
<th>Radiotherapy</th>
<th>Oncology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurosurgery</td>
<td>Endocrinology</td>
</tr>
<tr>
<td>Haematology</td>
<td>Nephrology</td>
</tr>
<tr>
<td>Homecare</td>
<td>Cardiology</td>
</tr>
</tbody>
</table>

Others (specify):

- ____________________________________________

**Type of service:**

- Tele-counselling ☐
- Virtual Referral ☐
- Tele-laboratory ☐
- Tele-care ☐
- Shared clinical records ☐

Other:

- ____________________________________________
## TELE-CONSULTATION SERVICES

The way the service meets my professional needs is…

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Regular</th>
<th>Poor</th>
</tr>
</thead>
</table>

**Improvement suggestions:**

The user-friendliness of the tool is…

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Regular</th>
<th>Poor</th>
</tr>
</thead>
</table>

**Improvement suggestions:**

The service makes my work easier…

<table>
<thead>
<tr>
<th>Always</th>
<th>Almost always</th>
<th>Sometimes</th>
<th>Few times</th>
<th>Never</th>
</tr>
</thead>
</table>

**Improvement suggestions:**

Is patient stay time being decreased?

<table>
<thead>
<tr>
<th>Always</th>
<th>Almost always</th>
<th>Sometimes</th>
<th>Few times</th>
<th>Never</th>
</tr>
</thead>
</table>

**Improvement suggestions:**

Which clinical tasks could be performed better than today and where could “treatment quality” be improved with Tele-consultation?

Which value added benefits would you expect from the tele-consultation service: What has become possible by this technology that was impossible before? Besides patient treatment, which applications for this technology would you also need?

How often would you expect the tele-consultation service to be used (by yourself, by your department, by the total hospital)? Who would be the main conference partners (regional, national, international)? For international use, how do you assess the importance of the "language barrier"?

## POCT instrumentation (Tele-care and tele-laboratory)

The way the service meets my professional needs is…

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Regular</th>
<th>Poor</th>
</tr>
</thead>
</table>

**Improvement suggestions:**

The user-friendliness of the tool is…

<table>
<thead>
<tr>
<th>Excellent</th>
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<th>Good</th>
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<th>Poor</th>
</tr>
</thead>
</table>

**Improvement suggestions:**

The service makes my work easier…

<table>
<thead>
<tr>
<th>Always</th>
<th>Almost always</th>
<th>Sometimes</th>
<th>Few times</th>
<th>Never</th>
</tr>
</thead>
</table>

**Improvement suggestions:**

Which clinical tasks could be performed better than today and where could “treatment quality” be improved with tele-laboratory (or tele-care) service?
Which value added benefits would you expect from the tele-laboratory (or tele-care) service: What has become possible by this technology that was impossible before? Besides patient treatment, which applications for this technology would you also need?

<table>
<thead>
<tr>
<th>Final comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other comments and suggestions:</td>
</tr>
<tr>
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</tbody>
</table>
Appendix M - Questionnaire used in Health Optimum - Economic, ethical and legal evaluation form

Health Optimum Services Evaluation Form in the organizational domain

**Evaluation form details:**
This questionnaire is used to assess the physicians’ point of view on the organizational aspects related services in Health Optimum trials. The questionnaire should be fulfilled by a physician at a hub or at a spoke

<table>
<thead>
<tr>
<th>General information</th>
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</thead>
<tbody>
<tr>
<td><strong>Physician’s name</strong></td>
</tr>
<tr>
<td>______________________________</td>
</tr>
<tr>
<td><strong>Works at a:</strong></td>
</tr>
<tr>
<td>Hub ☐</td>
</tr>
<tr>
<td><strong>Hub/spoke Name:</strong></td>
</tr>
<tr>
<td>______________________________</td>
</tr>
<tr>
<td><strong>Specialities:</strong></td>
</tr>
<tr>
<td>Radiology ☐</td>
</tr>
<tr>
<td>Neurosurgery ☐</td>
</tr>
<tr>
<td>Haematology ☐</td>
</tr>
<tr>
<td>Homecare ☐</td>
</tr>
<tr>
<td><strong>Others (specify):</strong></td>
</tr>
<tr>
<td>______________________________</td>
</tr>
<tr>
<td><strong>Type of service:</strong></td>
</tr>
<tr>
<td>Tele-counselling ☐</td>
</tr>
<tr>
<td>Virtual Referral ☐</td>
</tr>
<tr>
<td>Tele-laboratory ☐</td>
</tr>
<tr>
<td>Tele-care ☐</td>
</tr>
<tr>
<td>Shared clinical records ☐</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
</tr>
<tr>
<td>__________________________________</td>
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</tbody>
</table>


HEALTH OPTIMUM SERVICES

In my opinion, the way the service meets organizational needs is…

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Regular</th>
<th>Poor</th>
</tr>
</thead>
</table>

Improvement suggestions:

Do you think the organization is ready for the services? If not, what are the organization needs?

Is the objective of the services clear? Does it fit with the organizational strategy?

How do you think organizational aspects in the hospital should change to meet the needs of the Health Optimum services? How should new tasks be performed? Who would or should perform the new tasks? Who is or should be responsible for services’ maintenance?

Which value added benefits would you expect from the Health Optimum services: What has become possible with this technology that was impossible before? Besides patient treatment, which applications for this technology would you also need?

Final comments

Other comments and suggestions:  

Accepted and approved by:  
Name:  
Surname:  
Title:
### Appendix N - Questionnaire used in Health Optimum Evaluation – Form in the economical, ethical and legal domain

#### Health Optimum Services Evaluation Form in the economical, ethical and legal domain

**Evaluation form details:** This questionnaire is used to assess the hospital point of view on the economical, ethical and legal aspects related to services in Health Optimum trials. The questionnaire should be fulfilled by a key contact at a hub or at a spoke.

#### General information

<table>
<thead>
<tr>
<th>Name of key person</th>
<th>Date:</th>
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</table>

**Works at a:**

- Hub [ ]
- Spoke [ ]

**Hub/spoke**

<table>
<thead>
<tr>
<th>Name:</th>
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</table>

#### HEALTH OPTIMUM SERVICES

- How do you assess the importance of this economic aspect for the regular use of Health Optimum eServices in your country?

- How important, do you think, are the economic aspects of the Health Optimum technology (hardware costs, connection costs, costs for the physicians’ time)? From which intensity of usage of Health Optimum services would the variable costs (connection and physicians time) become important?

- At the moment, is it legally possible to use these eServices in your country? What changes should be made to make this possible?

- Besides the economic situation, which laws or government regulation could inhibit the use of Health Optimum services? What do you think must be changed in this respect?

- How do you think will data protection aspects influence Health Optimum services?

#### Final comments

**Other comments and suggestions:**

**Accepted and approved by:**

<table>
<thead>
<tr>
<th>Name:</th>
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<th>Surname:</th>
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<th>Title:</th>
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</table>
Appendix O - Questionnaire to patients from the Dreaming project

<table>
<thead>
<tr>
<th>ello! Videoconferencing system</th>
<th>User friendliness, acceptance and satisfaction!</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following questions concern the videoconferencing equipment you have received as a part of the DREAMING project. The aim of this section is to measure your level of satisfaction or dissatisfaction with the equipment and to see how user friendly it is.</td>
<td></td>
</tr>
</tbody>
</table>

Have you experienced any problems with the videoconferencing equipment? (mark with one X)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Please specify:

In the following, please note how much you agree with the stated argument. Mark your opinion with an X from the five categories below

1. I strongly disagree
2. I disagree
3. I am indifferent / neutral
4. I agree
5. I strongly agree

<table>
<thead>
<tr>
<th>The equipment is user friendly</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have received enough training to use the equipment on a normal basis</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>I am satisfied with the user manual</td>
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<tr>
<td>I am satisfied with the video quality</td>
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</tr>
<tr>
<td>I am satisfied with the system as a whole</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The equipment has improved my daily life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The equipment has improved my health situation</td>
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<tr>
<td>The equipment has improved my social life</td>
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<tr>
<td>The equipment has given me more time to do the things that I want</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am going to miss the equipment when the project ends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The equipment has given me a stronger sense of security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>The equipment has increased my self-esteem</td>
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</tr>
<tr>
<td>I feel more independent because of the equipment</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I have experienced a better connection to my carers and relatives because of the equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not need as much help because of the equipment</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would be willing to buy the equipment privately</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would be willing to buy the total DREAMING service privately</td>
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<td></td>
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</tr>
</tbody>
</table>

Comments:

<table>
<thead>
<tr>
<th>How often do you use the equipment? (mark with one X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Daily</td>
</tr>
<tr>
<td>2. Weekly</td>
</tr>
<tr>
<td>3. More than once a month</td>
</tr>
<tr>
<td>4. Less than once a month</td>
</tr>
<tr>
<td>5. Never</td>
</tr>
</tbody>
</table>
**Have you experienced more or less visits from the home nurse after the installation of the videoconferencing equipment? (mark with one X)**

- More
- Less
- The same

**Do you miss visits from the home nurse? (mark with one X)**

- Yes
- No

**What has become possible by this technology that was impossible before?**

- 

**Would you like to have the videoconferencing equipment installed permanently? (mark with one X)**

- Yes
- No

**Why / Why not?**

- 

**Has the equipment given rise to placement problems? E.g. if the equipment has given rise to interference with other activities or furniture. (mark with one X)**

- Yes
- No

**Please elaborate**

- 

**Has there been any issues of acceptance by other relevant persons in the setting? These could for instance be other household members, spouses, carers, etc. (mark with one X)**

- Yes
- No

**Please specify**

- 

**Would you be willing to pay for the services? (mark with one X)**

- Yes
- No

**Why / Why not?**

- 

If yes, how much would you be willing to pay for the service?

- 

**Suggestions for other functionalities for future versions**

- 

**Final comments:**

- 

**Accepted and approved by:**

Surname:

Title:

Forename:
Dear Sir / Madam
This is a questionnaire concerning your satisfaction or dissatisfaction with the equipment you have received from the DREAMING project.
The aim is to investigate how well the equipment works, and to find possible areas for improvement.
The answers you give will be evaluated by the project and will be valued extremely high.

General information

<table>
<thead>
<tr>
<th>Name of respondent:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td></td>
</tr>
<tr>
<td>Respondent’s position:</td>
<td></td>
</tr>
<tr>
<td>Respondent’s organisation:</td>
<td></td>
</tr>
<tr>
<td>Address/City/Country:</td>
<td></td>
</tr>
</tbody>
</table>

Role in the DREAMING project (mark with one X)

<table>
<thead>
<tr>
<th>Relative</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td></td>
</tr>
<tr>
<td>General practitioner</td>
<td></td>
</tr>
<tr>
<td>Formal caregiver</td>
<td></td>
</tr>
<tr>
<td>Informal caregiver</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Specify:</td>
<td></td>
</tr>
</tbody>
</table>

I have used the following equipment:

*Please note what equipment you have used during the period of the project (please mark your answer with an x):*

Questions on video conferencing system

In the following section, please mark your opinion with an X. The 5 categories are as follows:

1. Extremely little
2. Very little
3. Neutral
4. Very much
5. Extremely much

<table>
<thead>
<tr>
<th>How satisfied are you with the equipment?</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>How satisfied are you with the training you received?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How satisfied are you with the manual you received?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How satisfied are you with the support you received?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Draft Questionnaire for data collection

**How satisfied are you with the video quality?**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**How satisfied are you with the connection to the end users?**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**Comments:**

---

In the following, please note how much you agree with the stated argument. Please mark your opinion with an X. The 5 categories are as follows:

1. I strongly disagree
2. I disagree
3. I am indifferent / neutral
4. I agree
5. I strongly agree

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment is user friendly**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**I feel that the equipment has improved my work**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment has improved my ability to help elderly citizens**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment is easy to maintain**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment has given me more time to do the things that I want**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**I am going to miss the equipment when the project ends**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment has increased my self-esteem**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**I feel more independent because of the equipment**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment is easy to use**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment has given me a stronger sense of security**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**The equipment has improved my ability to interact socially with the elderly**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**I have experienced a better cooperation/integrated care with the elderly because of the equipment**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**Comments:**

---

**How often do you use the equipment? (mark with one X)**

1. Daily
2. Weekly
3. More than once a month
4. Less than once a month

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

**Has the equipment improved your job satisfaction? (mark with one X)**

- Yes
- No

**Please specify:**

---

**Have you experienced any problems with the equipment? (mark with one X)**

- Yes
- No

**Please specify:**
Has the equipment given rise to placement problems? E.g. if the equipment has given rise to interference with other activities or furniture. (mark with one X)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please specify:

| Has there been any issues of acceptance by other relevant persons in the setting? These could for instance be other household members, spouses, carers, etc. (mark with one X) |
|-----|---|
| Yes | No |
|     |    |

Please specify:

| Is the equipment a useful tool? (mark with one X) |
|-----|---|
| Yes | No |
|     |    |

Please specify:

| Has the equipment given rise to any dangerous situations? (mark with one X) |
|-----|---|
| Yes | No |
|     |    |

Please specify:

| Has the equipment given rise to any ethical considerations? (mark with one X) |
|-----|---|
| Yes | No |
|     |    |

Please specify:

| Has the equipment saved you time in your daily work? (mark with one X) |
|-----|---|
| Yes | No |
|     |    |

Please specify:

| Has the equipment cost you time in your daily work? (mark with one X) |
|-----|---|
| Yes | No |
|     |    |

Please specify:

| Has the equipment improved your working conditions? (mark with one X) |
|-----|---|
| Yes | No |
|     |    |

Please specify:
What has become possible by this technology that was impossible before?
Please specify:

Would you like to have the videoconferencing equipment as a permanent tool? (mark with one X)
Yes
No
Why / Why not?

Would you need extra payment to operate the services? (mark with one X)
Yes
No
If yes, please give an estimate:
Hour wage:
One-off fee:
Other:

Suggestions for other functionalities for future versions

Final comments:

Accepted and approved by:
Surname:
Title:
Forename:
Appendix Q - Patient satisfaction questionnaire used in Better Breathing

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because of the TVC the patients felt more safe or safe with discharge</td>
<td></td>
</tr>
<tr>
<td>Used the equipment without help from anyone</td>
<td></td>
</tr>
<tr>
<td>Could easily or with little difficulties make the TVC measurements work</td>
<td></td>
</tr>
<tr>
<td>The measurements made the patients feel more safe or no difference</td>
<td></td>
</tr>
<tr>
<td>Found the number of consultation suitable</td>
<td></td>
</tr>
<tr>
<td>Will recommend that the TVC should be the usual care</td>
<td></td>
</tr>
<tr>
<td>Preferred TVC to telephone calls</td>
<td></td>
</tr>
</tbody>
</table>
Appendix R - Questionnaire on patient satisfaction used in the Danish study in Better Breathing

1. To take the COPD-suitcase with me to my home caused that I at discharge felt:
   i. More confident
   ii. Confident
   iii. Not confident
   iv. Not at all confident
   v. Don't know

2. Who operated the COPD suitcase in your home?

3. Which of the following statements are most in correspondence with your view of the operation of the suitcase:
   i. I could easily turn the suitcase on and off
   ii. I had some problems turning the suitcase on and off
   iii. I could not turn the suitcase on and off
   iv. Don't know

4. Which of the following statements are most in correspondence with your view of the measurement equipment on the suitcase:
   i.

5. Could you see the nurse on the screen?

6. Could you hear the nurse in the speaker on the suitcase?

7. Do you have suggestion for improvements of the suitcase?

Question of the consultations:

8. I what way did the consultations by use of the COPD suitcase affect your well being?

9. I what way did the measurements affect your wellbeing?

10. How did you experience the number of consultations by use of the COPD suitcase?

11. Did you in relation to your lung disease contact your GP, home nurse ect. between 3pm and 8 am I the first week after discharge?

12. Would you recommend the suitcase to other patients in your situation?
13. Would you recommend that the telephone hotline to the lung nurse was given as an offer to other patients in your situation?

14. If you should choose, would you then prefer consultation by use of telephone or by use of the suitcase?

15. Did you after submission receive the attention and help you needed regarding your lung condition?

16. Suggestions for improvements: ____________________________________________