



Successful Teleconsultation - a Process Description for Diabetes Nurses

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2024 Laurea



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Global Health & Crisis Management
Master's thesis
June, 2024

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Year	2024	Number of pages	74
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The aim of this thesis was to describe and develop a diabetes nurse's teleconsultation process in Tampere University Hospital diabetes clinic and assess what should be considered before, during and after a teleconsultation. The purpose of this thesis was to gain understanding of the benefits and risks of video consultations and treatment-related phone calls from a diabetes nurse's perspective and consider in which situations teleconsultation is appropriate.

Diabetes is a rapidly growing global health problem that causes a heavy burden on public health and socioeconomic development. Sufficient diabetes management requires a lot of effort from both the patient and the medical team. Technology can help to produce new and innovative ways to deliver and extend health care. However, setting up teleconsultation includes various steps and requires holistic understanding and consideration.

This study was carried out as a research-based development work. A constructive approach with collaborative methods was used to form a comprehensive perspective of the teleconsultation process in diabetes care and to involve staff in the development process. The data were collected with a developmental peer visit to a peer-reviewing unit and an ideation workshop for diabetes specialists. During the ideation workshop, SWOT analysis was used to discover the strengths, weaknesses, opportunities, threats, and solutions related to video consultation and treatment-related phone calls in diabetes care.

The data were analysed with an abductive content analysis. As a result of this research-based development work, a practical process description and a teleconsultation suitability tool were developed to support the implementation of diabetes nurse's video consultation and treatment-related phone call. Four phases of teleconsultation were recognised: assessment, preparation, conducting and concluding. The findings indicate that when aiming for successful teleconsultation, all these phases require careful planning and consideration.

Keywords: diabetes, teleconsultation, remote care, video consultation

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1 Introduction

International Diabetes Federation (2021) estimates that every 1 in 10 adults (20-79 years) have diabetes. That is approximately 537 million people worldwide. Without adopting any effective prevention methods, the number of people living with diabetes is predicted to rise to 783 million by 2045. This means by then, every 1 in 8 adults worldwide would have diabetes. (International Diabetes Federation 2021, 34.)

Diabetes is a rapidly growing global health problem that needs to be acknowledged. It is one of the leading causes of death and reduced life expectancy and causes heavy burden on public health and socioeconomic development. (Lin et al. 2020.) Diabetes care is influenced by many varied factors such as social, geographic, and economic conditions, and access to diabetes care varies wildly. The use of technology may reduce these barriers by expanding health care. (Appuswamy & Desimone 2020.)

Diabetes is a complex condition and sufficient diabetes management needs a great deal of effort from both the patient and the medical team. People with diabetes need to engage in long-term self-management including self-monitoring, medication adherence and lifestyle changes. Technology can help to produce new and innovative ways to deliver health care. It can help reduce inequalities in healthcare access, increase efficiency and clinical decision-making, improve self-management, and promote patient-centred care - leading towards the fundamental goal of delivering “appropriate care at the appropriate time and place in the most appropriate manner.” (Appuswamy & Desimone 2020.)

Implementing teleconsultation is a complex process that needs holistic understanding and careful consideration (Verma et al. 2023). The purpose of this constructive research-based development work is to gain understanding of the benefits and risks of video consultations and treatment-related phone calls in a diabetes nurse’s perspective and consider in which situations teleconsultation is appropriate.

The aim of this research-based development work is to describe and develop a diabetes nurse’s teleconsultation process in Tampere University Hospital diabetes clinic and assess what should be considered before, during and after a teleconsultation.

2 Diabetes

American Diabetes Association (2024a) defines diabetes as: “a group of metabolic disorders of carbohydrate metabolism in which glucose is both underutilized as an energy source and overproduced due to inappropriate gluconeogenesis and glycogenolysis, resulting in hyperglycaemia” (American Diabetes Association 2024a). It is a serious, complex, condition in which blood glucose level is too high. There are two main types of diabetes, type 1, and type 2. In addition to these, there are a variety of other types such as gestational diabetes, Latent Autoimmune Diabetes in Adults (LADA), type 3c diabetes (pancreatogenic diabetes) and Maturity-onset diabetes of the young (MODY). Despite diabetes management and treatment differ between diabetes types, the main goal is the same in all the types - to try to keep glucose level within the target range. (Diabetes UK 2024.)

Over a prolonged period, high blood glucose can damage many body systems, especially nerves and blood vessels. The common complications of diabetes include heart, eye, feet, and kidney related problems. The comorbidities of diabetes can lower quality of life. Diabetes also increases the risk of early death. (Centers for Disease Control and Prevention 2021.) It is estimated that over 6,7 million people aged 20-79 will die due to diabetes related causes (International Diabetes Federation 2021).

People living with diabetes use different types of hardware, devices, and software to assist with self-management. Diabetes technology varies from various kinds of lifestyle modifications to glucose monitoring and therapy adjustments. They can be divided into two main categories: insulin administered devices such as syringes, pens, patch devices and pumps and glucose as assessed by devices such as blood glucose monitors and continuous glucose monitors. Nowadays, diabetes technology has also expanded to automated insulin delivery systems, connected insulin pens and diabetes self-management support software serving as medical devices. (American Diabetes Association 2024b.)

Diabetes technology is constantly developing but there is no technology that would fit for all. Diabetes technology can help people with diabetes to live better and improve their quality of life. For devices to work optimally, ongoing support, education and training is needed. The complexity and rapid development can also be a barrier to implementation for both people with diabetes and the medical team. (American Diabetes Association 2024b.)

To gain the desired diabetes health outcomes, the treatment decisions should be prompt, evidence-based and made collaboratively with people with diabetes. The care should be person-centred with integrated long-term treatment approaches to diabetes and comorbidities. There should be both in-person and virtual-based care, and the health care

maintenance should be assessed by using reliable and relevant data metrics to improve the process. (American Diabetes Association 2024c.)

In a global health perspective, a dangerous breakpoint has been reached. Nearly half a billion people are living with diabetes worldwide. Approximately 80% of them live in low- and middle-income countries. About 9 in 10 people with diabetes have type 2 diabetes and it is increasing fastest in low- and middle-income countries. The heavy global burden of diabetes has a negative economic impact that affects individuals, health care systems, and nations. (Centers for Disease Control and Prevention 2021.)

3 Telemedicine and legislation

World Health Organization (2022, 2-3) defines telemedicine as “the delivery of health-care services where distance is a critical factor, by all health-care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries all in the interests of advancing the health of individuals and their communities.” Teleconsultation is a type of telemedicine and means remote client-to-provider service. (World Health Organization 2022, 2-3.) There are two types of teleconsultations. Asynchronous teleconsultation involves monitoring and delivering feedback exclusively via short message service. Synchronous teleconsultation involves real-time video interactions between health professionals and patients, and real-time audio interactions. (Zhang, Ji, Lin, Yao & Chi 2023.)

This research-based development work focuses on video consultations and treatment-related phone calls. When referring to teleconsultations in this study, it means synchronous teleconsultations via video and telephone.

Ministry of Social Affairs and Health Finland (2015) states that remote services in health care are comparable to regular face-to-face consultations. Currently there are no comprehensive regulations for remote services in Finnish legislation. It is important to consider the following when providing remote services:

- Patient’s permission is needed for remote services.
- The professional must carefully assess whether the given service can be remote.
- At each visit, the professional must individually assess whether the patient is suitable for remote services.
- Patient identification must be based on a reliable method (strong identification)
- Good patient documentation practice must be met.

- The provider must meet the requirements set out in the Act on the Electronic Processing of Social Security and Health Care Customer Data. (Valvira 2024.)

As one of the four main objectives in the strategy for digitalization and information management in healthcare and social welfare, it is listed that whenever appropriate, or for customers that can use digital services, digital channels are the primary choice in all wellbeing services counties. Legislation enabling digitalization is listed as one of the success factors to reach the goals. (Ministry of Social Affairs and Health Finland 2023, 22-23.)

4 Planning and conducting teleconsultation

Running teleconsultation services is a complex system which can be challenging in multiple ways such as politically, organizationally, economically, technically, relationally, and clinically. Not to mention the ethical dimensions associated with them. Comprehensive planning and evaluation are crucial for successful teleconsultation. (Greenhalgh et al. 2021.)

Greenhalgh et al. (2021) describe seven domains that need to be considered individually and together when planning and evaluating remote consultation services: reason for consulting, the patient, the clinical relationship, the home and family, technologies, staff, the healthcare organization, and the wider system. They also highlight three key functions that are required for digital inclusion: 1) a hybrid model where clients can select from a wide range of options what suits best for their needs, 2) digital access support and 3) a non-digital alternative for those who are unable or unwilling to access care remotely. (Greenhalgh et al. 2021.)

When implementing telemedicine services, it is important to provide guides and standards for prioritized teleservice procedures to help avoid misunderstandings and to strengthen the process of circumstantial decision-making, patient coaching, and staff training. They can also be used in monitoring and evaluating the process. (World Health Organization 2021a, 4.) It is also important to understand and consider the different steps involved in setting up teleconsultation. The teleconsultation pathway can be divided into three stages: before, during and after the teleconsultation. (World Health Organization 2021b, 15-26.) These steps are demonstrated in Table 1.

Table 1 Teleconsultation pathway (modified from World Health Organization 2021b, 15-26)

Before	During	After
Understand the regulatory environment. <ul style="list-style-type: none"> Standards of practice Legal and regulatory issues Privacy and Confidentiality Informed consent Ethics and reimbursement 	Connect with the client remotely. <ul style="list-style-type: none"> Obtain informed consent Verify the identity of participants Establish expectations Maintain privacy 	Keep medical records and coordinate post-teleconsultation activities such as follow-up appointment
Consider whether teleconsultation is appropriate <ul style="list-style-type: none"> Client characteristics Technology Purpose of the consultation 	<ul style="list-style-type: none"> Use time wisely Communicate effectively Develop rapport Manage difficult behaviour Deal with technical problems 	
Create a virtual clinic <ul style="list-style-type: none"> Technology and equipment Data security Review physical space and personal presentation Maintain the same professional presentation as for a face-to-face consultation Replicate a typical clinical experience as much as possible 	<ul style="list-style-type: none"> Perform a physical assessment from a client report, visually or with a device Assess and treat mental health issues Use assessment tools (Provide pharmacotherapy) 	
Develop a teleconsultation protocol <ul style="list-style-type: none"> Checklists and process description Staff roles and responsibilities Safety plan 		
Prepare clients <ul style="list-style-type: none"> Written instructions 		
Organize interpretation if necessary		

Telemedicine offers great opportunities in improving health care by offering more accessible health services, increased efficiency, and a wider range of services. However, challenges to telemedicine implementation such as data security issues, limited access to technology, challenges in clinical practice and regulation need to be acknowledged. The key to solving these challenges is to use the right strategies such as clear regulations, adequate technological infrastructure, and involvement of key stakeholders. Telemedicine enables efficient consultation, treatment, and monitoring of medical conditions without the need for face-to-face meetings. (Judijanto et al. 2023.)

The Telemedicine Program Design Canvas is a visual tool for planning telemedicine interventions. It assists in prototyping and planning telemedicine interventions holistically with a structured and straightforward method. It helps to understand and consider the key elements that contribute towards a successful telemedicine initiative which include the problem, ecosystem, patients, patient journey, patient engagement and trust, providers, provider training, provider engagement, channels, technology, medicines and diagnostics, desired outcomes, costs, and revenues. (Verma & al. 2022.)

5 Teleconsultation in diabetes care

Diabetes has better outcomes when it is being monitored. With technology, the data can be stored and analysed, and reports digitalized. This can include many inputs that affect diabetes such as blood glucose levels, time spent exercising, steps walked, calories ingested, medication doses administered, blood pressure, and weight. Software can identify patterns and lead to specific treatment recommendations. There are also real time algorithms that support diabetes management. (Klonoff 2015.) This diabetes telemedicine data-driven action to improved outcomes is visualized in Figure 1. Cloud-based diabetes management systems allow the health professional to look at glucose profiles remotely whilst patients at home can look at them at the same time. This advanced diabetes technology makes teleconsultation particularly suitable for diabetes consultations. (Holt 2022.)

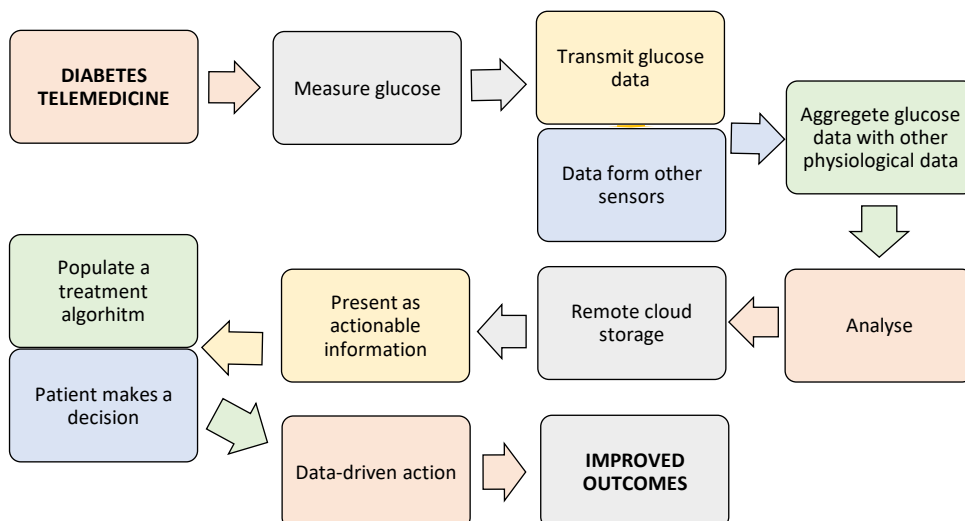


Figure 1 From diabetes telemedicine to improved outcomes (modified from Klonoff 2015)

Diabetes treatment relies heavily on patient self-management and use of technical devices that generate and capture data. Frequent contact with diabetes specialists helps to achieve better outcomes, however, they might be difficult to conduct in practice. This is where teleconsultation comes in especially handy. It provides another tool to communicate with patients and to individualize care. It is important to remember that telemedicine itself is a care modality, not an intervention. Health care professionals need to use their clinical judgement about when to use each care modality, no matter whether it is an ordinary face-to-face consultation or teleconsultation. (Crossen, Raymond & Neinstein 2020.)

Integrated interaction between the health professional and patient is usually needed in synchronous teleconsultation. In diabetes care it includes diabetes education, blood glucose monitoring, medication adjustments and diet and exercise instructions. For a person with diabetes, these are all important. Teleconsultation is a complex model of care that highlights holistic approach and the interactive relationship between health professionals and patients. The interaction takes different forms in different contexts, which is why it is crucial to pay attention to the components of the interaction. These include the behaviours required for delivering or receiving the consultation, the persons who participate in the intervention, the outcomes concerned, and the flexibility to customize the intervention. (Zhang et al. 2023.)

In diabetes care, contact by telephone has usually been seen more as a follow-up phone call after a face-to-face appointment to evaluate the effectiveness of therapy change, to monitor adherence to treatment or to optimize treatment plans. Due to the lack of visual cues, they are more suitable for dealing with a scope of specific concerns. (Forde, Choudhary, Hammond & Hussain 2022.) When communicating a complex treatment plan, a new diagnosis, or other situations that might bring out any questions and strong emotions, a face-to-face consultation might be more effective. However, in situations where a face-to-face appointment is difficult to organize such as busy work or family life, a telephone consultation might be beneficial. (Crossen et al. 2020.)

On the other hand, for a video consultation, the patient needs to be ready on a video consultation platform prior to the consultation. Compared to a phone call, this requires more accurate time allocation and scheduling. Video consultations are more complicated to use and require more technical skills, and often their time requirements are longer. A phone call is easier to answer and can offer more flexibility. However, with video technology it is possible to achieve more personal interaction. It also offers a better opportunity for education with the possibility of data sharing. (Forde et al. 2022.)

Face-to-face diabetes consultations usually include a measurement of blood pressure and weight, an inspection of injection sites and a foot examination. Where possible, people with

diabetes should be promoted to undertake blood pressure and weight measurements at home. Even though a limited physical exam can be conducted via video consultation, it is not possible to comprehensively monitor an active diabetic foot ulcer, signs of peripheral neuropathy or areas of lipohypertrophy during a teleconsultation. (Forde et al. 2022.)

Crossen et al. (2020) recommend developing standardized telemedicine processes for pre-visit and post-visit tasks such as data upload and follow-up. It is important to guide the patient's expectations about appropriate use of telehealth technology and remote data-sharing and about billing, location, timing, and frequency of teleconsultation. The focus should be on patient-driven and patient-centred diabetes care in telehealth. To maximize the benefits of teleconsultation, it is important to engage stakeholders early to allow culture change among providers and institutions. (Crossen et al. 2020.)

When planning the implementation of teleconsultation, it is important to ensure that the marginalized groups are not excluded. For successful teleconsultation, people with language and cultural barriers, and those with low level of digital literacy should be offered additional training and support. Teleconsultation could also widen disparities in care for people with impaired cognition or sensory and communication disabilities. It is important to identify those who struggle to adapt to teleconsultation early and offer them face-to-face appointments. (Forde et al. 2022.)

5.1 Benefits of teleconsultation

Telemedicine strategies, especially teleconsultation, are effective in reducing HbA1c (glycated haemoglobin) and may produce better glycaemic outcomes compared to usual care. Teleconsultation in diabetes care can provide easy access to health care especially for people in rural areas with limited health care resources. (Lee, Chan, Chua & Chaiyakunapruk 2017.) During the time of the COVID-19 pandemic, telemedicine enabled continued diabetes care. In 2020, 3/4 of diabetes-related health contacts were conducted remotely in North Karelia, Finland. Even senior patients (≥ 70 years) accessed the health services. Due to the telemedicine services, diabetes care was continuous during the COVID-19 pandemic. Telemedicine related processes had been included in the delivery of many essential services already before the pandemic. (Inglin, Wikström, Lamidi & Laatikainen 2022.)

Video consultations can maintain quality and improve patient experience by offering more accessible, efficient, and person-centred care. They can save time and money and increase flexibility. Waiting times can be shorter and missed-appointment rates lower. Video consultations can also increase productivity as the appointment times can often be shorter than regular face-to-face appointments. (Morris et al. 2017.) Teleconsultations have a better

chance to be successful if there is an existing relationship between the patient and the health professional and if there is no language barrier between the participants. The patient should also have a good knowledge of their personal health, be familiar with digital technology and have access to it. (Mathew et al. 2023.)

Fast technology development can help to achieve effective outcomes; however, it is important to preserve healthcare as patient- not illness-centred. It is important to keep the trust and relationships between patients and health professionals. The first appointment should always be conducted face-to-face, and the possibility to use telemedicine assessed later. Face-to-face visits should also be maintained at certain intervals to assess complications. Telemedicine, in addition to regular face-to-face appointments, allows a new communication opportunity. It can make appointments more meaningful with active patient involvement which can lead to improved quality of life. (Rosta et al. 2023.)

5.2 Challenges in teleconsultation

Sun et al. (2023) identifies three themes related to adults with diabetes type 2 and telehealth. The first theme is the benefits that telehealth brings such as convenience, time, financial efficiencies, and independence from caregivers. The second theme is technological challenges. These include variation in digital health literacy, unstable internet connection and frustration related to that, and difficulty in sharing glucose data. The third theme is the impacts on the quality of diabetes care such as lack of diabetes quality measures and preference and need for face-to-face visits. (Sun et al. 2023.)

In an ideal situation diabetes teleconsultation would have reliable IT and a private, peaceful space for having the consultation. Both the professional and the patient would be well prepared for the consultation. The diabetes technology data would be uploaded to the cloud server, and both the professional and the patient would be able to see it. And the expectations of the goals for the teleconsultation would be clear for everyone. In practice, however, things do not always go this smoothly. (Holt 2022.)

Video consultations require technical equipment and skills from both the health professional and the patient, and it should be considered when planning the teleconsultation. Telephone consultation might be easier to conduct but it allows communication only with limitations. Non-verbal clues play a significant role in communication, yet they are not visible during a phone call. Teleconsultations, despite the type, are more difficult for both the health professional and the patient if they have never met in person. Whenever possible, first-time visits should be face-to-face. (Kilvert, Wilmot, Davies & Fox 2020.)

Shaw et al. (2020) recognizes three main challenges during a video consultation: 1) setting up the connection and starting the consultation, 2) technical issues with audio or video and dealing with the disruption it causes to conversational flow and 3) carrying out a physical examination via video. By using communication strategies and collaboration between the health professional and the patient it is possible to find ways to overcome the challenges. Limited physical examination is possible to conduct via video consultation, however, it includes complex interactional work by the patient and even by their relatives. (Shaw et al. 2020.)

The burden of living with diabetes can cause distress and a variety of feelings such as denial, guilt, anxiety, and anger. Diabetes distress can lead to higher HbA1C and decreased self-management efficacy. During a teleconsultation non-verbal clue to distress might be missed. Talking about emotions might also be more challenging during a teleconsultation as the focus might be more on glucose management. Remote appointments from your own home can be seen as a benefit of teleconsultation due to its convenience, but it can also be a distraction with confidentiality issues and external events interfering with the conversation. These things should be considered when conducting teleconsultation. (Kilvert et al. 2020.)

In health professionals perspective, telehealth can sometimes require extensive resources. Patients might need assistance with teleconsultation and there can be more background administrative work to be conducted. It can be a useful additional model of care, but not a replacement for face-to-face consultations. (Mathew et al. 2023.) Rosta et al. (2023) name availability and access, quality, emerging costs, and ethical considerations as the key issues concerning telemedicine and health care. The use of and access to telemedicine is often determined by social, economic, and educational factors. Successful telemedicine services require coaching and training for both health professionals and patients. Sometimes even a mindset change is needed. (Rosta et al. 2023.)

5.3 Patient perspectives on teleconsultation

This research-based development work focuses on the diabetes nurse's perspective on teleconsultation; however, it is important also to consider patient perspective when planning the overall process. Many people with diabetes find teleconsultation useful and acceptable. For some, remote consultation and lack of visibility can make communication easier, but for some, it can bring difficulties engaging and talking freely. It is important to make sure that diabetes distress and other emotions are addressed during a teleconsultation and concerns regarding to confidentiality and safeguarding are carefully considered. Individual preferences should be considered despite specific categories such as diabetes type or even access to technology. (Kilvert, Fox & Calladine 2021.)

Diabetes UK (2020) lists four important aspects related to teleconsultation for people with diabetes: 1) knowing the exact time when the consultation takes place, 2) covering everything they want or need to during the appointment, 3) speaking to the person they want to speak with and 4) using their preferred method (face-to-face, video or telephone) (Diabetes UK 2020.). Both patients and health professionals will be more willing to use teleconsultation if teleconsultation is offered in addition to face-to-face consultations rather than replacing them. The most vulnerable population should not be forgotten. Not everyone will have the resources needed for teleconsultation, for example older people might have never used a computer. (Rego, Pereira & Crispim 2021.)

Rego et al. (2021) identifies three main drivers to patient intention to use teleconsultation: 1) the support to patient disease treatment and management related to the contact with health professional, 2) time saving and 3) interchange in health professional's willingness to perform teleconsultation. The main barriers to the intention to use teleconsultation can be related to privacy and confidentiality issues and the expected effort to explain and understand the medical problem when communicating via computer. (Rego et al. 2021.)

Eze, Mateus & Hashiguchi (2020) point out three main themes related to patient experience with telemedicine: patient acceptability, satisfaction, and barriers to the use of telemedicine. Lack of training, technical problems, and poor tolerance with faulty systems can negatively affect the uptake and sustained use of teleconsultation. Collaboration between the health professional and the patient, and a person-centred approach to meet needs and preferences can help to achieve a positive teleconsultation experience. (Eze et al. 2020.) In patient perspective, technical support, and assistance from health professional, together with flexibility and diabetes education can improve usability and sustainability in use of telemedicine (Sim & Lee 2021).

6 Purpose, aim and development questions

The purpose of this constructive research-based development work is to gain understanding of the benefits and risks of video consultations and treatment-related phone calls from a diabetes nurse's perspective and consider in which situations teleconsultation is appropriate.

The aim of this research-based development work is to describe and develop a diabetes nurse's teleconsultation process in Tampere University Hospital (Tays) diabetes clinic and assess what should be considered before, during and after a teleconsultation.

The first step towards providing an answer to a reasoned decision is clarifying the main elements of the question. A question that is clear and focused will more likely lead to a conclusive answer. The PICO (Population, Intervention, Comparator, Outcomes) model captures the main elements of a focused question. It will help to structure and define answerable questions. (Tovey 2022.) A modified PICO model without comparator (PIO model) was used to clarify the thesis planning process and define development questions (Table 2).

Table 2 PIO model for defining development questions

Population	Diabetes nurse's perspective	Diabetes nurse's perspective	Diabetes nurses
Intervention	Video consultations and treatment-related phone calls	Video consultation and treatment-related phone call	Video consultation and treatment-related phone call
Outcome	The risks and benefits	Situations that video consultations and treatment-related phone calls are appropriate	Process description of what should be considered before, during and after a teleconsultation
Full development questions	What are the risks and benefits of video consultations and treatment-related phone calls in diabetes nurse's perspective? In which situations video consultations and treatment-related phone calls are appropriate in diabetes nurse's perspective? What diabetes nurses should consider before, during and after a video consultation or treatment-related phone call?		

7 Development setting and methods

Wellbeing services county of Pirkanmaa (Pirha) sees digital transformation as an opportunity for providing comprehensive, equal, and accessible services and ensuring the adequacy of personnel. This requires a new way of working and leading and guiding clients towards digital services. When expanding digital services different user groups are considered. (Pirkanmaan hyvinvointialue 2023, 23.)

The need for this research-based development work arose from Tays Central Hospital diabetes clinic to clarify the process of diabetes nurse's video consultations and treatment-related phone calls. Currently video consultations or treatment-related phone calls are not in

regular use as an alternative for diabetes nurse consultations. However, shorter phone call check-ups and remote diabetes device monitoring (eSeuranta) and treatment discussion through OmaTays online service are used regularly. The overall goal for after implementation is to offer patients more comprehensive and accessible services in addition to face-to-face consultation. The final process description can be used in all Tays diabetes units including diabetes nurse consultants, Tays Hatanpää, Tays Sastamala and Tays Valkeakoski. With modifications it could also be beneficial in other diabetes clinics in Pirha primary care units.

Pirha is the largest wellbeing services county in Finland by population. It covers 23 municipalities and provides services for about 500 000 inhabitants. (Pirkanmaan hyvinvointialue 2024a.) Tays is one of the five University Hospitals in Finland. Diabetes clinic operates at Tays endocrinology polyclinic. It provides specialized care for all types of diabetes to adolescents (youth clinic for 15-18 years) and adult patients with diabetes. The clinic offers a variation of diabetes treatment options based on individual's needs, including insulin pumps. Diabetes nurses take their own patients according to the care plan. Different types of consultations include first time visits, checkups, serial treatments, device related visits and youth polyclinic visits.

7.1 Research-based development work

This thesis is conducted as a research-based development work. After considering the nature of the study and suitable approaches and methods, a constructive approach with different collaborative methods was chosen to form a comprehensive perspective of the teleconsultation process in diabetes care and to involve the diabetes nurses in the development process. Qualitative analytical methods are used in the data analysis. Each development process is carefully analysed and documented to increase trustworthiness. The plan and timeline for this research-based development work is listed in Figure 2.

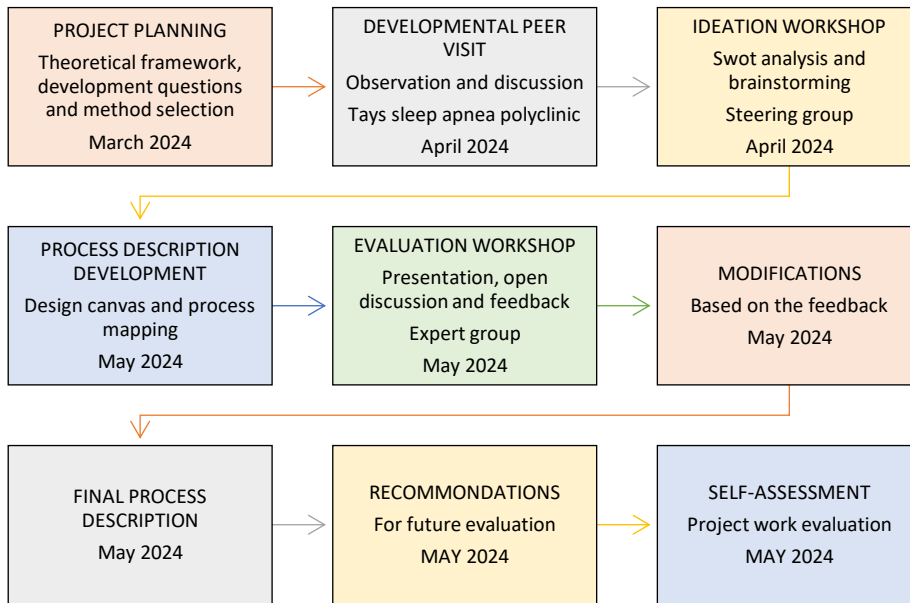


Figure 2 The plan and timeline for the research-based development work

Development can be seen as an objective process that aims towards a clearly defined goal - towards a change for a better and more productive way of action. Project work moves forward as a systematic process, which can be evaluated based on how well the goals defined at the start of the process were achieved. Development can be aimed towards a single procedure or larger operational structure. (Toikko & Rantanen 2009, 14-16.)

The goal of research-based development work is to discover new or improved solutions to practice and to create new forms of professional knowledge. All development work includes planning, implementation, and evaluation. This process of transformation project is shown in Figure 3. Research orientation appears in this process by organized working, data acquisition, analytical and critical thinking, creation and sharing new knowledge. (Moilanen, Ojasalo & Ritalahti 2022, chap 2.)

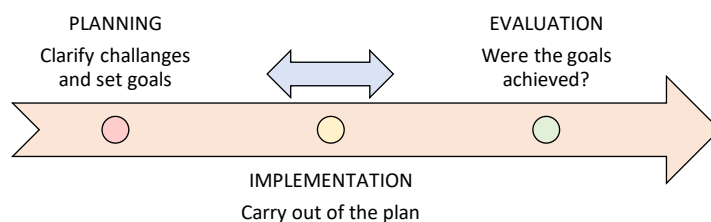


Figure 3 Process of a transformation project (modified from Moilanen et al. 2022, chap 2)

Moilanen et. al (2022, chap 2) describes six stages that are included in research-based development work (Figure 4). The first stage is to identify the development target and to understand the factors related to it. The next stage is searching for data. Discovering perspective and building a knowledge base is crucial to create a suitable framework for the development target. Once the knowledge base is built it is possible to define the scope of the research-based development work more precisely and plan the approach and methods to be used. The final stage is implementing the development, sharing the results, and evaluating the process. In practice, however, the differences between stages might be difficult to discover, or the process may not have clearly defined stages at all. (Moilanen et al. 2022, chap 2.)



Figure 4 The stages of research-based development work (modified from Moilanen et al. 2022, chap 2)

Evaluation is the most analytical phase in a development process - analysing the justifications, organization, and implementation of the development work. It can be seen as an interactive deliberative assessment between different participants and their views. There are three main aspects of deliberative assessment: self-assessment, peer-to-peer reflection and attempt to examine conflicting interests. The evaluation is a collective, interactive process with a reflective approach that is followed by a practical action of implementing the output, and after which the process goes back to evaluation. (Toikko & Rantanen 2009, 82-85.)

When research orientation is included in the development project, it is important to select a suitable approach to achieve the research target. If the purpose of the development work is to solve a problem in a practice-oriented way and to create a new construct or a concrete output, constructive research is an appropriate approach. To develop a theoretically well-founded solution and produce new knowledge, data should be collected by using several methods such as observation, group discussions surveys and interviews. It is important to explain the methods clearly, document all the stages and evaluate the results in practice. Collaboration and understanding the needs of the future users are important values of constructive research. (Moilanen et al. 2022, chap 2, 3.)

7.2 Data collection and sampling

The aim of qualitative research is to uncover the deeper meanings and to explore, narrate and explain the phenomena. Qualitative research is widely used in healthcare to understand patterns of experiences and behaviours, explore healthcare needs and design interventions. To seek an answer to the “how” and why” in qualitative research, various strategies can be used for data collection. (Renjith, Yesodharan, Noronha, Ladd & George 2021.)

To answer the development questions, the data is collected with a developmental peer visit to Tays sleep apnea clinic and with an ideation workshop for diabetes specialists from Tays Central Hospital. Purposeful sampling was used to invite participants with relevant knowledge and experience to provide a deep understanding of the phenomena. It involves selecting participants who fulfil the sampling criteria to increase the credibility. (Renjith et al. 2021.)

7.2.1 Developmental peer visit

Developmental peer visit is a peer reviewing model for similar professional groups, work units or people working with similar problems. The core part of this model is a developmental learning visit. External feedback will help recognise own blind spots - what we know from our own actions and how others observe them. In addition to peer reviewing, an important part of developmental peer visit is self-evaluation. The process itself is close to benchmarking, however, in developmental peer visit the co-creation partner is equivalent with similar interests, not necessarily the best possible example from any sector. (Hellstén, Outinen, Holma 2004, 12-14.)

During the peer visit, information is collected by discussing and observing. Prearranged questions or memory lists will support the conversation. Feedback is given both ways. This reflection process will help to discover the strengths and development needs. After the visit,

the development needs and improvement ideas are considered and reported. (Hellstén et al. 2004, 21.)

In this research-based development work a developmental peer visit was carried out to Tays Central Hospital sleep apnea clinic in which most of the treatment contacts are held remotely. Same as in diabetes care, sleep apnea technology allows remote monitoring, which is why it was an excellent choice as a co-creation partner for this research-based development work. (Pirkanmaan hyvinvointialue 2024b.) The purpose of the visit was to learn and reflect about teleconsultation process in Tays sleep apnea unit and to gain user experience in the nurse's perspective to discover what are the risks and benefits of teleconsultation, when is it appropriate and what should be considered before, during and after a teleconsultation.

The researcher contacted the ward sister of the unit by phone and introduced them to the study concept and asked about a possibility to come to the sleep apnea policlinic for a developmental peer visit. The ward sister proposed that the best time for the peer visit would be during the nurses morning meeting so that more people would have the opportunity to participate in the discussion. A suitable time was agreed. Originally the author was planning to meet 1-2 nurses during the peer visit, however, with a larger number of participants, more perspectives could be gained during the discussion.

The researcher sent a participant information sheet (Appendix 1) and prearranged questions (Appendix 2) to support the discussion during the peer visit by an email to the unit's ward sister, who kindly passed it onwards for the nurses working at the unit. The questions were developed to answer the three development goals and to gain background information about the unit to understand the telemedicine process in their unit. The participants had the opportunity to ask questions about the study before the peer visit by email or phone, and at the beginning of the peer visit before starting the discussion. Participation in the study was voluntary. The participants informed their willingness to take part in the study by showing up to the discussion. At the beginning of the peer visit, participants filled out a consent form (Appendix 3). The group discussion was attended by eight professionals. The author wrote notes during the discussion. A report of the visit was documented and approved by the participants. The information gained was considered and reflected on during the planning process of the overall teleconsultation process description.

7.2.2 Workshop

Creativity is the main element of developing methods. Collaborative methods, such as brainstorming, are used for generating ideas. Ideation workshop is a brainstorming session in

which a group of participants generates innovative solutions or approaches to a problem. The group is led by a facilitator who works as the project leader. An open and positive atmosphere is required for creative problem solving. It is important to separate ideation and evaluation in the process as it might harm participant's willingness and ability to produce new ideas. (Moilanen et al. 2022, chap 4.)

The main concept of facilitating is that the group of participants are the experts, and the facilitator focuses on the process itself. The facilitator prepares and supports the overall group process and assists the group to come up with ideas, making decisions and solving problems. However, the group is always in charge of the actual contents. The facilitator ensures that all the ideas and proposals are treated equally and the knowledge and wishes of all group members are considered. (Summa & Tuominen 2009, 9.)

An ideation workshop includes four stages. At first, the goals are set and limited during the preliminary stage. Next step is to get rid of unnecessary prejudices and mental limitations during the warming-up stage. Idea-generation stage focuses on free ideation and during it any kind of evaluation is fully forbidden. The last step, selection stage, includes examining and evaluating the ideas critically. (Moilanen et al. 2022, chap 4.)

In this research-based development work two workshops were organized, and the author worked as a facilitator in both workshops. The first workshop was an ideation workshop with the steering group. The steering group included six diabetes specialists from Tays Central Hospital. The author sent an email invitation to the participants to take part in the study attached with the participants information sheet (Appendix 4). Participation in the study was voluntary. Participants informed their willingness to take part in the study by showing up to the workshop, some also by accepting the email invite. At the start of the workshop, participants signed a consent form (Appendix 3). Participants had the opportunity to ask questions about the study before the workshop by email or phone, and at the beginning of the workshop. Participants wrote ideas on the brainstorming templates (Appendix 5-8) that were created and modified by using World Health Organization's guide on how to plan and conduct telehealth consultations with children and adolescents and their families (World Health Organization 2021b). The author wrote notes of the discussion. A report of the workshop was documented and approved by the participants. The information gained was considered and reflected during the planning process of the overall teleconsultation process description. The workshop followed the four steps of brainstorming (Figure 5):

- 1) Preliminary stage: the goals and purpose of the workshop were defined.
- 2) Warming-up stage: a SWOT analysis (Appendix 9) was conducted to discover participants thoughts on telemedicine.

- 3) Idea-generation stage: brainstorming session to determine the possibilities and challenges of telemedicine, in which situations teleconsultation would be appropriate and what should be considered before, during and after a teleconsultation. Brainstorming templates were used to support the discussion (Appendix 5-8).
- 4) Selection stage: determining in which situations telemedicine is suitable based on which options got the most plus marks. Analysing and evaluating the ideas arising from the swot analysis and the things that should be considered before, during and after a teleconsultation.

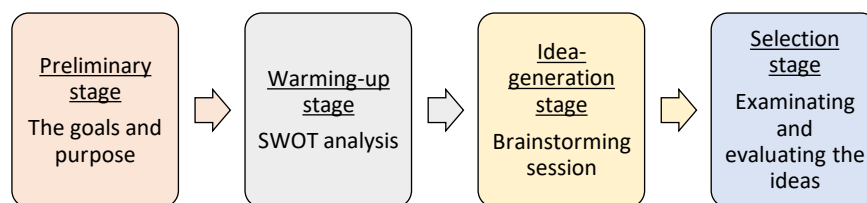


Figure 5 The four stages of an ideation workshop

SWOT analysis is a commonly used strategic planning and management tool to assess organizational strengths, weaknesses, opportunities, and threats. In addition to management science, SWOT analysis is often used in other fields of science. The summarizing analysis helps to discover central themes that needs to be focused on. The analysis should be followed by decisions and action plans. Listing ideas to SWOT analysis is always a subjective choice so some ideas might be seen as both strengths and weaknesses at the same time. (Vuorinen & Huikkola 2023.)

In this research-based development work the modified SWOT analysis was used to discover the positive characteristics (strengths), clinical and personal benefits (opportunities), barriers (weaknesses) and things that could go wrong (threats) with video consultations and treatment-related phone calls. In addition to the commonly used framework, solutions on how to fix the listed problems, is added to brainstorm different possibilities. After the workshop the data were analysed systematically, and the findings were considered together with patient's perspective on teleconsultation based on the theoretical framework. Based on the results a teleconsultation process description for diabetes nurses was developed.

The second workshop was an evaluation workshop with the expert group. The expert group was a multidisciplinary team with 15 diabetes specialists from Tays Central Hospital, Tays Hatanpää, Tays Sastamala and Tays Valkeakoski. The workshop was arranged at Tampere University Hospital diabetes clinic during a weekly diabetes specialists meeting. The workshop was organized as a hybrid meeting through Microsoft Teams platform so that diabetes

specialists from all the departments were able to attend. The workshop included a presentation of the final process description by the author and an open collaborative discussion and feedback. The author wrote notes of the discussion and feedback. The report of the workshop was documented, and modifications to the final process description made based on the feedback. The report of the workshop and modifications were sent to the steering group for acceptance. Recommendations for future evaluation for after the implementation were considered, and the author conducted a self-assessment to evaluate the overall development process.

7.3 Abductive content analysis

Qualitative research is flexible by nature and its capacity to generate theory from data. Systematic, organized, and iterative qualitative analysis is rigorous and trustworthy. A five-phase process to qualitative data analysis includes organizing, sorting, understanding, interpreting, and explaining the data. (Bingham 2023.)

Tuomi & Sarajärvi (2017, chap 4.1) name four main steps for a qualitative research analysis: 1) deciding what is interesting, 2) going through the data and separating relative subjects, 3) categorising and theming the content and 4) writing a summary (Tuomi & Sarajärvi 2017, chap 4.1). Qualitative content analysis is a method for analysing qualitative data systematically and objectively. It can be used to analyse both descriptive content and interpretative content. The focus is on the subject and context and variation - the similarities and differences in the data. (Graneheim, Lidgren & Lundman 2017.)

There are three methodological approaches to content analysis: inductive, deductive, and abductive. Inductive analysis is data-driven and deductive analysis relies on existing theories. Abductive analysis is a combination of these both - the logic of reasoning is combined with deductive perspective and the categories for the data could for example arise from the theoretical background of the study. (Tuomi & Sarajärvi 2017, chap 4.1.) Abductive analysis is used to discover meaningful fundamental patterns to integrate surface and deep structures. It allows using both inductive and deductive approaches and moving back and forth between them. This can help to gain a deeper and more complete understanding of the phenomena. (Graneheim et al. 2017.)

In this research-based development work the theoretical background supports and strengthens the perceptions from the data, however, not to test the existing research but rather to discover and describe new thoughts on diabetes nurse's teleconsultation process. Abductive content analysis was used to define clear and logical results of the developmental peer visit and the ideation workshop. The theoretical framework defined the model in which

the data were collected by using the prearrange questions for the peer visit and the brainstorming templates for the ideation workshop, but the drive for perceptions from the data were to concretize and discover thoughts and new ideas on diabetes nurses teleconsultation process in everyday work. The theoretical framework directed the formation of the main categories, but deductive approach was used to discover new aspects. The four steps for a qualitative research analysis by Tuomi & Sarajärvi (2017, chap 4.1) were followed during the analysis process of this research-based development work. The analysis process of the peer visit and the ideation workshop are demonstrated in Table 3 and an example of categorising in this research-based development work in Table 4.

Table 3 The analysis process of developmental peer visit and ideation workshop

Steps for a qualitative research analysis	The analysis process of the peer visit	The analysis process of the ideation workshop
Deciding what is interesting	In the analysing process the main interest was focused on the risks and benefits of teleconsultation, the suitability assessment and what to consider before, during and after a teleconsultation to answer the development questions and to get a deep understanding of what needs to be considered in the final teleconsultation process description.	
Going through the data and separating relative subjects	First the author went through the written notes that were made during the peer visit and wrote a report of the visit to familiarize themselves with the data. The author went through the notes and the report several times to make sure nothing was missed. Notes of the interesting subjects were made by marking them in the report.	To familiarize themselves with the data, first the author went through the notes that the participants had made on the brainstorming templates and the notes the author had wrote during the discussion. The author wrote a report of the ideation workshop and went through the notes and the report several times to make sure nothing was missed. Notes of the interesting subjects were made by marking them in the report.
Categorising and theming the content	After marking the interesting subjects, they were separated from the rest. The interesting subjects were simplified into reduced expressions. The reduced expressions were formed into subcategories and main categories and finally unifying concepts were formed based on the development questions.	After marking the interesting subjects, they were separated from the rest. The interesting subjects were simplified into reduced expressions. The reduced expressions were formed into subcategories and main categories and finally unifying concepts were formed based on the development questions. The suitability of teleconsultation was categorised by analysing the signs ++ (suitable), + (suitable with consideration), - (not suitable) used in the brainstorming templates.
Writing a summary	The author wrote a report of the analysing process. The summary was written with visualised example table to demonstrate how the data in this study was analysed and to add trustworthiness.	

Table 4 Example of categorising in this research-based development work

Analysis unit	Reduced expressions	Subcategory	Main category
The participants feel that learning from more experienced colleagues and sharing tacit knowledge is very important. Mastering and knowing several technical devices and software takes time to learn. The orientation folder is an important tool, but especially as a new nurse, it can be difficult to even search for information, before properly settling into the job and developing an understanding of the various devices and software. It can be impossible to fully understand the written instructions until gaining a deeper knowledge of the subject. The sleep apnea policlinic has invested in the orientation of a new employee: there is a two-week orientation period at the beginning, after which there is an opportunity to have a lighter roster for another two weeks.	Learning from (more experienced) colleagues	Know-how	Enablers for nurse's confident teleconsultation skills
	Introduction folder		
	Long enough introduction period	Time	
	Lighter roster at the start		

8 Results

The results are presented as the report of the peer visit and the ideation workshop. Abductive content analysis was used to answer the development questions: to discover the risks and benefits of teleconsultation, when teleconsultation is appropriate and what should be considered before, during and after a teleconsultation. The final process description was developed based on the findings gathered from the peer visit and the ideation workshop and considered together with patient's perspective on teleconsultation based on the theoretical framework. The final process description was evaluated by the expert group and the overall development process was evaluated by a self-assessment of the author.

8.1 Developmental peer visit

8.1.1 Background information

The sleep apnea policlinic examines and treats adult patients and adolescents over the age of 16 and is responsible for initiating and monitoring CPAP therapy for patients. The telemedicine used in the unit are a treatment-related phone call and digital monitoring via the OmaTays electronic service. The treatment-related phone call is subject to a patient fee

(€30) and the digital follow-up is free. A robot is used to book appointments for digital monitoring. Treatment-related phone calls are booked by a nurse. An invitation letter about the appointment is sent to the patient before the contact and later a separate automatic text message reminder.

Patients can contact the unit via OmaTays treatment discussion or Teleq call-back system. Through Teleq, the primary form of contact is SMS. The participants feel that patients often might be more used to calling, which is why it is important to market the benefits of the other remote services such as getting a response quickly. The unit's website includes patient guidance videos and a frequently asked questions section. Written guidance material is also used.

The first visit to the sleep apnea polyclinic is always a face-to-face appointment. The next control at 1 month is carried out as a treatment-related phone call. If everything is going well, the 3-6-month control is carried out according to the patient's preferences, either as a treatment-related phone call or as digital monitoring. If the patient is a professional driver or has a category R2 driving license, an annual control is arranged once a year after the initial controls. Other patients are put in a queue and, if necessary, they contact the unit themselves either through the OmaTays treatment discussion or via Teleq call-back system.

There is no separate time reserved for teleconsultations. Appointments are booked overlapping on the reservation book. Teleconsultations can take place between face-to-face appointments or, for example, face-to-face appointments all could be in the morning time and teleconsultations in the afternoon, depending on the reservation book. The fact that there are both remote and physical visits on the day is not perceived as confusing the day by the participants, but rather as a nice change. The patient's preference is considered and, if necessary, follow-up visits can also be arranged as face-to-face visits. Working-aged people are the largest patient group and, according to the participant's experience, remote options are often well suited for them, as they do not need to leave for a face-to-face appointment in the middle of everyday busyness.

During the discussion it became clear that observing the devices and software would be the most beneficial while observing the nurse working with an actual patient. As the research plan or permission did not include observation of patient work, it was agreed that no observation will be included in the visit. As the unit does not use video consultations, the observation of the treatment-related phone call would have not added any extra value for this study, in addition to the discussion. However, it could be beneficial for the diabetes nurses to carry out another peer visit to the unit to observe the additional digital services,

use of robot in statistics and the treatment device data integration from OmaTays to the patient information system.

8.1.2 Risks and benefits of teleconsultation

As a benefit of telemedicine, the participants highlight efficiency. Telemedicine makes it possible to handle larger numbers of patients. If the patient's treatment goes well and there are no problems, there is no need to use more resources. This saves resources for those who really need it. If the situation changes and there would be a problem with the treatment later, an extra appointment time can be arranged easier. From the patient's perspective, the participants feel that teleconsultation can also save the patient's time. The services the sleep apnea clinic uses through OmaTays are free of patient fee, so the patients will also benefit by saving on cost.

The participants feel that the challenge related to telemedicine is that patients sometimes do not respond to the control surveys prior to the contact. Another challenge the participants recognize is that patients may write long messages through the OmaTays treatment discussion, from which the nurse must be able to interpret the essential information. Messages written through OmaTays can sometimes be rude and the participants feel that this is greatly influenced by what time the message are written. If the message is written at late hours, for example fatigue can negatively affect the writing style. The participants feel that the tone of the writing can also be misinterpreted by both sides. For example, patients may be used to using emojis and plain text without smiley faces can be perceived as harsh. Despite the challenges, the participants consider OmaTays treatment discussion convenient to answer to what has been asked. During a phone call, the conversation can sometimes become sprawling, in which case the essential information may be lost. The risks and benefits of teleconsultation based are listed in Figure 6.

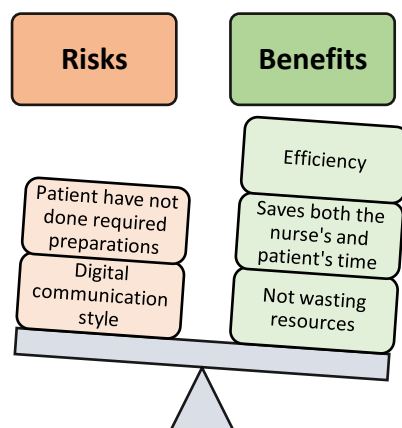


Figure 6 The risks and benefits of teleconsultation based on the developmental peer visit

8.1.3 Suitability assessment

Suitability for remote services is assessed during the first visit: is the patient able to use digital services. If not, follow-up controls are usually carried out as a treatment-related phone call. Face-to-face appointment is rarely needed for that. Appointments requiring an interpreter, especially if a sign language interpreter is needed, the appointment is conducted as a face-to-face appointment. The participants feel that teleconsultations are best suited for people of working age. The participants feel that teleconsultations may not be suitable if the patient has a mental illness, intellectual disability, or memory disorder, or for the seniors. People under the age of 18 may not have online banking credentials, and without them it is not possible to use OmaTays. There may also be other underlying illnesses that limit the use of teleconsultation. Based on the analysis, seven main categories that need careful consideration when determining whether teleconsultation is appropriate were recognized. These categories are represented in Figure 7.

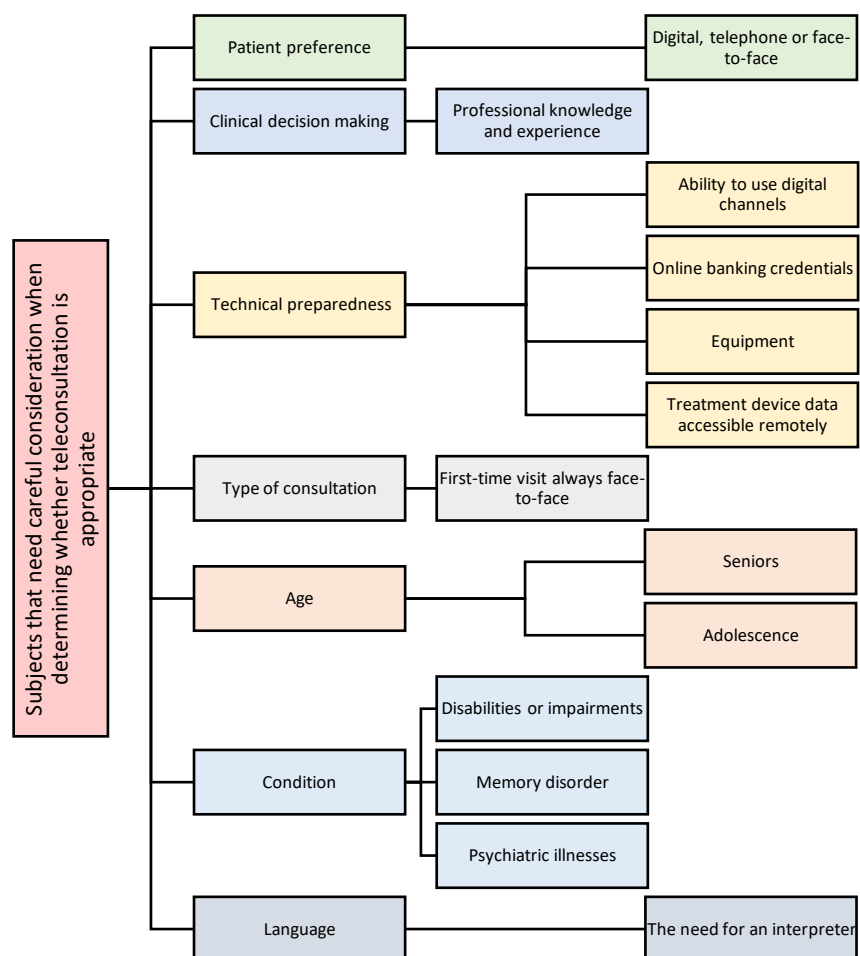


Figure 7 Subjects to consider when determining whether teleconsultation is appropriate

8.1.4 Things to consider before, during and after a teleconsultation

Digital monitoring patients are directed to fill in a follow-up form in the OmaTays service. During the treatment-related phone call, the information on the form can be clarified through a discussion. During a previous treatment contact, it has been agreed with the patient whether the next treatment contact will be a digital monitoring or a treatment-related phone call. Before the digital monitoring or treatment-related phone call, the nurse familiarises themselves with the patient's information, the information on the follow-up form and the treatment device data. For digital monitoring, the patient needs a therapy device that enables remote monitoring and a computer, or a smartphone. Old treatment devices might have a memory card that needs to be uploaded at the clinic. In this case, a face-to-face appointment will be booked.

In difficult situations related to remote consultations, such as technical challenges, every nurse will treat the situation in their own way and based on professional knowledge. If the follow-up form is not filled in before the contact, the same information can be clarified during a treatment-related phone call by asking the questions. Treatment device data can be easily updated to OmaTays. If for some reason the data cannot not be updated, the information can also be viewed at the Airview service, in which the necessary setting changes are also made to the treatment device. If, for some reason, the data is not visible remotely at all, the information can be collected in a conversation with the patient. If necessary, the patient can view the information directly from the device and share it with the nurse. If the patient does not answer the call during a call time, several attempts will be made to reach them. If the patient still cannot be reached, the nurse decides if the patient will need a new appointment or if the treatment is going ok, no new appointment is necessary.

After a teleconsultation, the nurse documents the remote contact in the patient information system and compiles the necessary statistics, such as diagnosis codes, procedure codes, invoicing, and updates the information in the device register. Some statistics are conducted by a robot. OmaTays integration allows device data to be transferred to the patient information system easily. In case of technical problems, it is also possible to transfer the data to the patient information system by copying the text. Ready-made text templates and phrases are used to help with documentation. Based on the analysis, four phases of teleconsultation (assessment, preparation, conducting and concluding) are recognized. The phases of teleconsultation are shown in Figure 8.

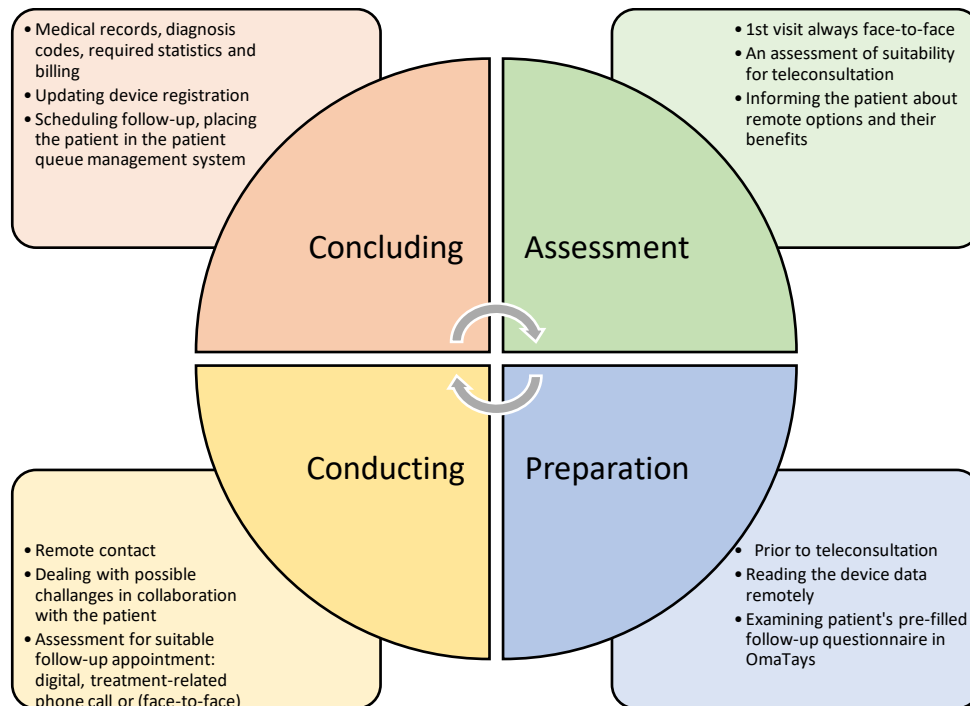


Figure 8 The phases of teleconsultation

The participants feel that learning from more experienced colleagues and sharing tacit knowledge is very important. Mastering and knowing several technical devices and software takes time to learn. The orientation folder is an important tool, but especially as a new nurse, it can be difficult to even search information, before properly settling into the job and developing an understanding of the various devices and software. It can be impossible to fully understand the written instructions until gaining a deeper knowledge of the subject. The sleep apnea policlinic has invested in the orientation of a new employee: there is a two-week orientation period at the beginning, after which there is an opportunity to have a lighter roster for another two weeks. In an ideal situation, orientation should be carried out according to the treatment path: what to consider before the first visit, during the first visit, at the 1-month control, at the 3-6 months control and so on. The participants feel there have not been many, if any, OmaTays or telemedicine guidance for staff at organizational level. In any case, the participants feel that the tactic knowledge passing from one colleague to another is the most important way to learn. Based on the analysis two main enablers (Figure 9) for nurse's confident teleconsultation skills are recognized: know-how and time.

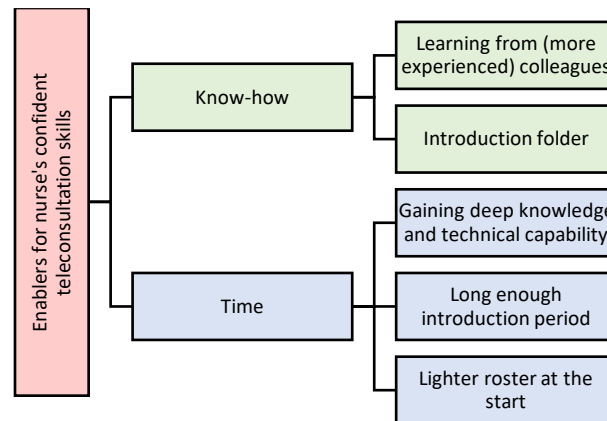


Figure 9 Enablers for nurse's confident teleconsultation skills

According to the participants experience, patients are mostly satisfied with remote options, especially when everything works and there have been no technical challenges. At the sleep apnea polyclinic, operations are nurse-led, and sometimes patients might be wondering when they will see a doctor. Feedback on the service is collected continuously through NPS surveys, which are sent to patients automatically.

8.2 Ideation workshop

8.2.1 Risks and benefits of teleconsultation

The brainstorming workshop started with a SWOT analysis (Appendix 9) to stimulate thinking work. At first, the participants wrote their thoughts on teleconsultation on the templates, its strengths, weaknesses, opportunities, threats, and solutions. Finally, the perspectives were discussed as a group. The researcher worked as a facilitator of the workshop, led the discussion, and took notes. As strengths of teleconsultation, the participants highlighted that managing appointment time is easier and there are fewer distractions than with a face-to-face appointment. Also, in teleconsultation, the patient is more equal as the appointment takes place remotely "in no man's land". This might help the patient to feel less nervous about the appointment. When considering a video appointment, the participants highlighted the visual expression as the main strength. Video consultation enables visually sharing the diabetes device monitoring data with the patient. Video consultation also allows to see facial expressions and gestures. Treatment-related phone call, however, was seen as ease to use. It has fewer technical requirements, and it takes the least preparation time and resources.

One of the weaknesses of teleconsultation was seen that it is not possible to perform a physical examination, such as checking the condition of injection sites. The participants were also concerned about the patient's commitment to treatment: whether they would read the

instructions and complete the required preliminary tasks. The participants felt that the main weakness of a video consultation is challenging technical requirements. It requires good technical skills from both the diabetes nurse and the patient. Device and connection readiness can also be difficult, if not impossible, to check in advance: will the sound or the video work, will the connection be slow or even present at all during the video consultation. As weaknesses of a treatment-related phone call, the participants highlighted the fact that it relies entirely on the sense of hearing. The patient's situation might be challenging, and relying solely on the sense of hearing can lead to misunderstandings on both sides. Also, the data from diabetes device cannot be visually shown to the patient.

As opportunities for teleconsultation and clinical benefits the participants listed that it frees up workspace. Holding a teleconsultation does not require a large appointment room, even a smaller workspace is enough. It also allows remote work. As clinical benefits of teleconsultation the participants also point out that it saves time and makes it easier to manage cancellation times. At short notice, it may be easier to get a patient to a remote appointment. As benefits for the patient, the participants listed that teleconsultation provides patients more options and the opportunity to choose between different types of appointments. The participants also felt that patients save in travel time and costs. During a teleconsultation, the patient must adjust their diabetes device, such as insulin pump, independently. This was felt to support the patient's learning to make the adjustments "when someone isn't doing it for them."

Technical problems, such as possible connection problems and other technical challenges, emerged as the biggest threat to teleconsultation. Appointment time management emerged as a strength of remote appointments, but at the same time it was also seen as a challenge: teleconsultations must start at the agreed time, otherwise the patient may no longer be available. An important issue and threat that arose in the discussions was whether there would be enough "quiet time" during a teleconsultation to bring up emotional health: will coping be discussed too briefly, or will it be talked at all. As a solution to these threats, the participants considered good planning and preparation, patient guidance, and sufficient time for the planning and development. Staff guidance emerged as a solution to technical problems. If necessary, help can be asked from IT support. Also, an idea to arrange a joint guidance session from a digital nurse for the whole diabetes team came up.

For communication related threats to pay special attention to the communication and to leave some "quiet time" to have a chance to bring up emotional health was seen as the solution. An idea arose to develop a shared image bank, which could contain different visual tools to support the discussion about emotional health during a video appointment. Images of

insulin pump menus, for example, could also be added to the image bank to demonstrate to the patient where the requested changes can be made. The results of the SWOT analysis are shown in Figure 10.

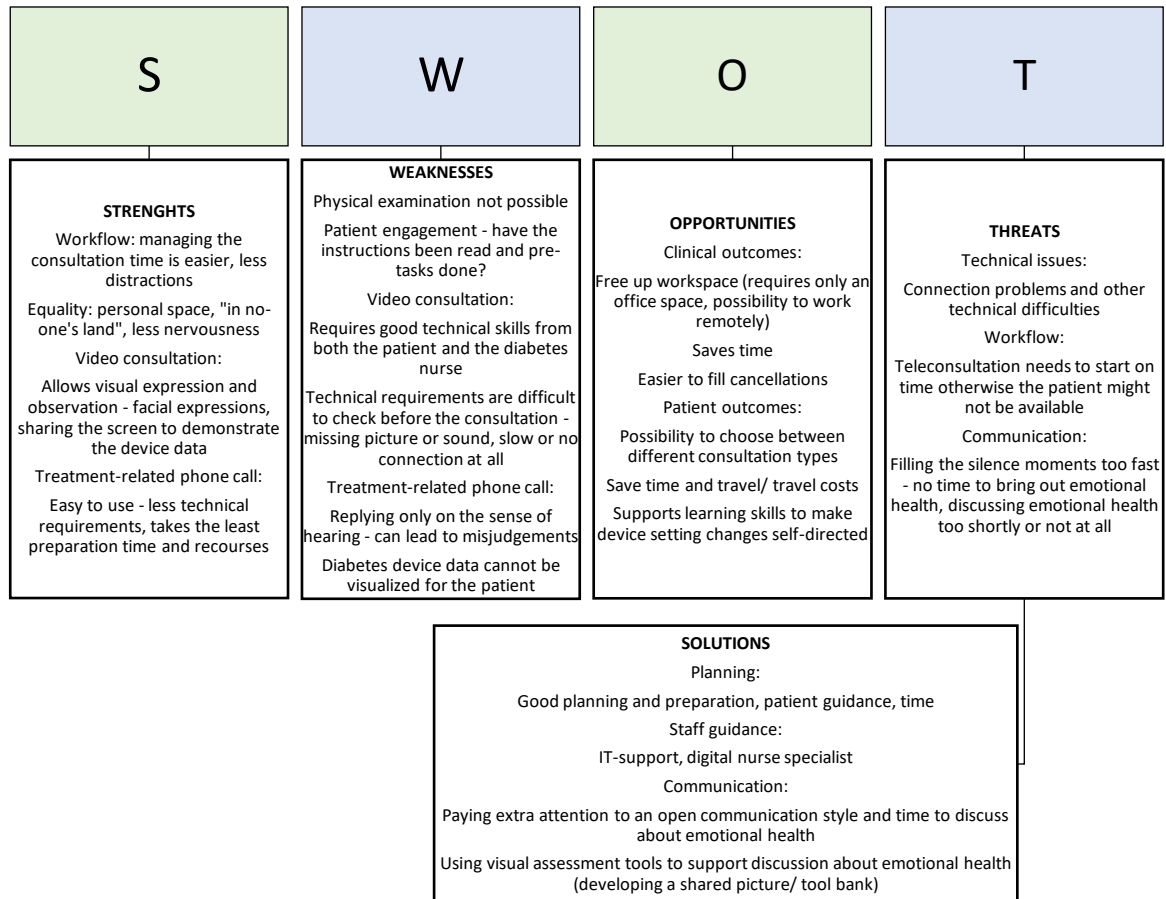


Figure 10 The results of the SWOT analysis

8.2.2 Suitability assessment

After the SWOT analysis, the ideation workshop continued with a group discussing about situations when teleconsultation is appropriate. The suitability for a video consultation and for a treatment-related phone call was evaluated with the signs ++ (suitable), + (suitable with consideration), - (not suitable). Based on the analysis four categories were developed: must have, suitable, suitable with consideration and not suitable.

The discussion revealed that for a video consultation, the diabetes device data must be uploaded to a cloud service and shared with the diabetes unit. The patient must have online banking credentials and access to the OmaTays digital service. The patient must have either a desktop computer, a laptop, or a tablet (smartphone screen is too small for sharing diabetes device data). The patient must also have the technical skills to use the required equipment and software.

The participants felt that the video appointment suits best for a follow-up visit, serial treatment of self-care support, follow-up visits of a newly diagnosed patient with diabetes after the first month's control visit, if a video appointment is based on the patient's preference, for adults, adolescence/students while abroad as an exchange student, if the patient speaks Finnish, or if the diabetes nurse and patient have some other shared language and the patient has access to a quiet and private space for the video consultation.

There was discussion concerning the adolescents, whether it is easier for them to get the time off during a school day and come for a face-to-face appointment, and do they have a peaceful and private space for a teleconsultation at school, or can they even answer a phone during a school day. For this reason, the participants felt that extra consideration should be used when planning teleconsultation for adolescence. Based on the analysis, a video consultation is also suitable with consideration for serial treatment after starting the insulin pump (if the patient can make the necessary adjustments independently), for seniors (if the technical requirements are met and the patient does not have a memory disorder) and in case the patient has sensory, cognitive, or behavioural disorders. In these cases, it is important to individually assess the suitability of a video consultation, or whether it would be possible with the help of carer, for example.

After the analysis, it was recognized that a video appointment is not suitable at all if diabetes device data is not visible in the cloud service, the other technical requirements are not met, the appointment is a first-time visit, a device start visit or a device technical problem visit, if the patient has a memory disorder or visual or hearing impairment, if the patient does not have access to a quiet and private space during the video consultation, or if the patient does not want to have a video appointment. The results for when video consultation is appropriate are listed in Figure 11.

MUST HAVE Technology requirements	SUITABLE	SUITABLE WITH CONSIDERATION	NOT SUITABLE
<ul style="list-style-type: none"> • Diabetes device data is available on cloud service and shared with the diabetes team • Online banking credentials • OmaTays digital service • The patient has either a desktop computer, laptop or tablet with camera and microphone (smart phone has too small screen to share the device data) • Technical skills to use the required software and devices 	<ul style="list-style-type: none"> • Checkup • Serial treatment for self-management support • Newly diagnosed with diabetes (after 1st month) • The patient prefers a video consultation • Adults • Student abroad during exchange studies • Finnish language • Other shared language that both the patient and the diabetes nurse are comfortable speaking • Patient has access to a private, peaceful environment for the video consultation 	<ul style="list-style-type: none"> • Serial treatment after insulin pump start (must be able to make setting changes self-directed) • Adolescence (peaceful environment during a school day) • Seniors (technical requirements and skills, memory) • Sensory, cognitive, or behavioural impairment (individual assessment, carer support) 	<ul style="list-style-type: none"> • Diabetes device data is not available on a cloud server • Other technical requirements are not met • First-time visit • Device start (glucose meters, sensors, insulin pumps) • Insulin treatment start • Consultation on device's technical issues • Memory disorder, vision or hearing impairment • Need for an interpreter • The patient does not have access to a private, peaceful environment for the video consultation • The patient prefers a face-to-face consultation or treatment-related phone call

Figure 11 The results for when video consultation is appropriate

For a treatment-related phone call the result were similar. For a treatment-related phone call the patient's diabetes device data must be uploaded to the cloud service and shared with the diabetes unit. The patient needs a phone, and the phone number need to be up to date in the patient information system. A treatment-related phone call is suitable when there is no need to demonstrate anything visual during the appointment. It is suitable for a follow-up visit, for serial treatment of self-care support, for follow-up visits of a newly diagnosed patient with diabetes after the first month's control visit, if the treatment-related phone call is based on the patient's preference, for adults, for seniors (if the technical requirements are met and the patient does not have a memory disorder), the patient speaks Finnish, or if the diabetes nurse and the patient have some other shared language and the patient has access to a quiet and private space for the phone call.

With consideration, the treatment-related phone call was also seen suitable for serial treatment after the insulin pump has been started (if the patient is able to make the necessary adjustments independently) and in case the patient has a sensory, cognitive, or behavioural disorder (requires individual assessment and possible help of carer). Based on the analysis, a treatment-related phone call is not suitable if the diabetes device data is not visible in the cloud service, the other technical requirements are not met, the visit is a first-time visit, a device start visit or a device technical problem visit, if the patient has a memory disorder or hearing loss, if the patient does not have access to a quiet and private space for

the phone call, or if the patient does not want to have a treatment-related phone call. The results for when treatment-related phone call is appropriate are listed in Figure 12.

MUST HAVE Technology requirements	SUITABLE	SUITABLE WITH CONSIDERATION	NOT SUITABLE
<ul style="list-style-type: none"> • Diabetes data is available on cloud service and shared with the diabetes team • The patient has a phone, and a valid phone number is saved to the patient record system 	<ul style="list-style-type: none"> • Suitable when it is not necessary to demonstrate anything visual such as the device data • Checkup • Serial treatment for self-management support • Newly diagnosed with diabetes (after 1st month) • The patient prefers a treatment-related phone call • Adults • Seniors (technical requirements and skills, memory) • Finnish language • Other shared language that both the patient and the diabetes nurse are comfortable speaking • Patient has access to a private, peaceful environment for the phone call 	<ul style="list-style-type: none"> • Serial treatment after insulin pump start (must be able to make setting changes self-directed) • Adolescence (peaceful environment during a school day) • Sensory, cognitive, or behavioural impairment (individual assessment, carer support) 	<ul style="list-style-type: none"> • Diabetes device data is not available on a cloud server • Other technical requirements are not met • First-time visit • Device start (glucose meters, sensors, insulin pumps) • Insulin treatment start • Consultation on device's technical issues • Memory disorder, hearing impairment • Need for an interpreter • The patient does not have access to a private, peaceful environment for the phone call • The patient prefers a face-to-face consultation or video consultation

Figure 12 The results for when treatment-related phone call is appropriate

8.2.3 Things to consider before, during and after a teleconsultation

At the end of the workshop, the participants discussed together what should be considered before, during and after a teleconsultation. After the analysis, three main categories were recognized to consider before a teleconsultation: suitability assessment, patient guidance, and planning. The discussion highlighted the importance of assessing the suitability of teleconsultation and paying attention to high-quality patient guidance before the teleconsultation. Informing and marketing patients on why it is important to upload the diabetes device data to a cloud service and share it with the diabetes unit was seen as particularly important. For patient guidance, using the pre-made invitation letter templates for teleconsultation and the unit's own phrases, as well as Pirha's general patient guidance material for teleconsultation were seen important.

In addition to these, it was also suggested that the patient should be instructed to have a pen and paper ready for the teleconsultation so that they can write down the instructions. The participants identified also good planning as an important factor for a successful teleconsultation. Sufficient time should be reserved for the planning. It is important to ensure that the patient's contact information (especially phone number) is up to date in the patient information system. Prior to the teleconsultation, diabetes nurse should familiarize

themselves with the patient's information and diabetes device data, check that all necessary equipment is ready and tested, even though testing was sometimes seen somewhat useless, as despite the testing, technical problems may have occurred and the program may have used the wrong microphone, for example.

After the analysis, four main categories to consider during a teleconsultation were recognized: data collection, clinical assessment, communication, and technical problems. When considering data protection, the participants point out that for video consultations the only acceptable video consultation service is through OmaTays that requires strong identification. The diabetes nurse should pay extra attention to data protection while sharing the screen so that no confidential information is exposed to the patient. Also, if the diabetes nurse does not recognize the patient, the patient should be identified. Clinical assessment during a teleconsultation includes analysing the diabetes device data, checking home measurements such as blood pressure and weight, when necessary, and asking about skin condition. For communication, the need for “quiet moments” was recognized to bring out emotional health. For dealing with technical problems during a video call, changing to a treatment-related phone call was seen as the best solution if the problem could not be easily solved otherwise.

After the analysis three main categories to consider after a teleconsultation were recognized: ending, documenting and follow-up. For after a teleconsultation, the participants highlighted the need for booking next appointment according to the treatment plan, keeping medical records, required statistics and invoicing, updating the device register and referral for medical supplies. As an important notice during the discussion came up that is also important for the diabetes nurse to make sure that the connection is closed/disconnected at the end of the teleconsultation so that the connection is not unintentionally left on in the background. The teleconsultation checklist based on the analysis is shown in Figure 13.

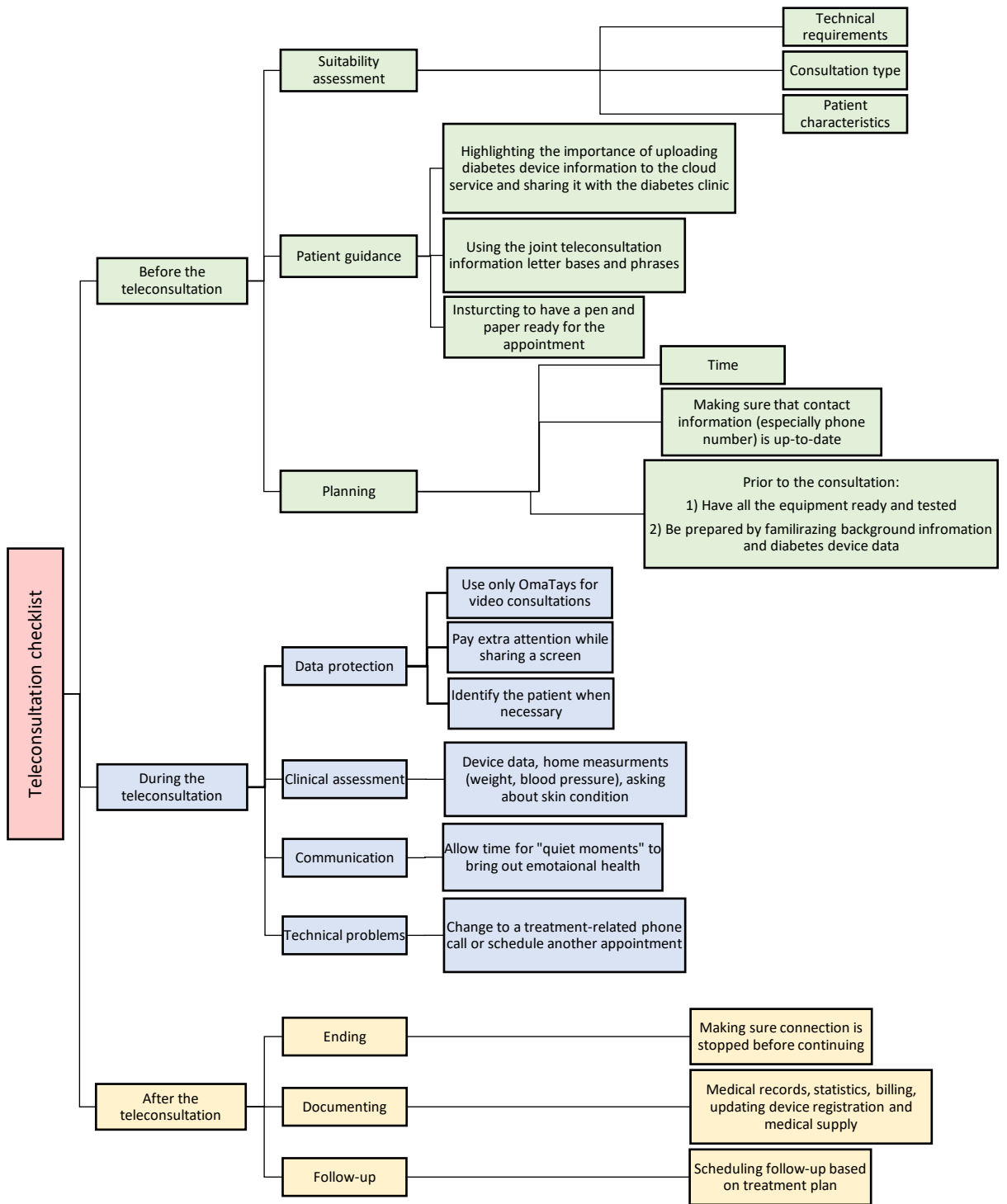


Figure 13 The teleconsultation checklist

8.3 Teleconsultation process description for diabetes nurses

The process description was developed based on the findings gathered from the peer visit and the ideation workshop and considered together with the patients perspective on teleconsultation based on the theoretical framework. Based the theoretical framework the main considerations in patients perspective are related to patient preference, communication, time management, considering the suitability, guidance, technical support and privacy and confidentiality issues. The findings from the developmental peer visit and the ideation workshop show similar categories.

For background information, the process description includes the discovered clinical benefits and benefits for patients to help engage the implementation by highlighting the positive sides. It includes a comparison of video consultation and treatment-related phone call to help notice the risks and benefits of each individually. It also includes a list of discovered risks and solutions to help minimize the risks.

Based on the analysis of the developmental peer visit, four phases of teleconsultation were recognised: assessment, preparation, conducting and concluding. These four phases were used to describe the steps of the teleconsultation process. Process mapping was used to visualize the steps involved during the different phases. Individual process maps were developed for both video consultations and treatment-related phone calls. To help assess the suitability of teleconsultation, individual suitability assessment tools for video consultations and treatment-related phone calls were developed based on the findings from the ideation workshop. The tools can be used to assess when teleconsultation is appropriate and to address to which patients teleconsultation should be marked to help the implementation.

After the evaluation workshop modifications were made based on the feedback and discussion. The suitability assessment tools were future developed to consider the seven subjects when determining whether teleconsultation is appropriate that were discovered during the peer visit: patient preference, clinical decision-making, technical preparedness, type of consultation, age, condition, and language. The modifications and a report of the evaluation workshop was accepted by the steering group. The final process description (Appendix 10-12) was published on the unit's website on Tays intranet. To whoever prefers, it can also be printed out to be available at the work desk. The author made recommendations for future evaluation for after the implementation. These recommendations are listed in Table 5.

Table 5 Recommendations for future evaluation for after the implementation

Meter	Timespan
Patient's experience of teleconsultation <ul style="list-style-type: none"> • How was the teleconsultation? • Technical issues (need for additional guidance)? • How does the patient prefer the next appointment (teleconsultation or face-to-face)? 	At the end of every teleconsultation
Diabetes nurse's experience of teleconsultation <ul style="list-style-type: none"> • How was the teleconsultation? • Technical issues (need for additional guidance)? • Is teleconsultation suitable for the patient? How will the next appointment be arranged (teleconsultation or face-to-face)? 	At the end of every teleconsultation
TaysTabu (a visual reporting tool) <ul style="list-style-type: none"> • Number of teleconsultations 	6 months
NPS <ul style="list-style-type: none"> • Customer satisfaction 	6 months

8.4 Evaluation

The author presented the developed teleconsultation process description to the expert group during the second workshop. After the presentation, there was time for an open discussion and feedback. The author worked as a facilitator and wrote notes of the discussion. Diabetes specialists seen the teleconsultation process description as an important tool. The instructions were considered clear and generally the idea of providing teleconsultation was considered as a very "good thing". There was discussion about how easy it is to think that holding a teleconsultation is "just a walk-through thing" and that no time is spent on preparation. However, with good planning, unnecessary problems could be avoided, and a successful teleconsultation experience could be ensured.

A proposal was made that the teleconsultation process description would be presented at the unit's upcoming development day to get the implementation off to a good start. The process description could also be utilised in doctors' teleconsultation. After the implementation, further research idea could be to find out how the implementation of the teleconsultations have started in the diabetes team, or which reasons might be preventing it.

The notice about the "quiet moment" and emotional health in the process description was considered important. There was discussion about how challenging it is, especially during a treatment-related phone call. The picture back development idea was seen as a good idea, and it could be implemented as a further development task. Another idea for a development task arose during the discussion to create a teleconsultation "checklist" to patient information system "orders" section to guide to comprehensive teleconsultation planning. The continuum

of care and planning was also considered important. The nurse who plans the teleconsultation and assesses the suitability should also look after the teleconsultation when possible.

Specialists experience related to treatment related phone call is that patients are not always prepared for it and might answer the call during a shopping trip, for example. When planning a treatment related phone call, it was considered important to guide the patient to be prepared for the call appropriately and to have a quiet time and place for the call. A suggestion was made that if the video consultation schedule is late, a text message could be sent to the patient. It was also brought up that as a new feature, a preliminary information questionnaire will automatically be sent to the patient in OmaTays if the teleconsultation is booked by using the right booking type. Shared phrases will be updated in nearby future so they will be added to the process description after the update.

After the evaluation workshop modifications were made based on the feedback and discussion. A report of the workshop was documented and approved by the steering group together with the modified process description.

8.5 Self-assessment

Development process is not a one-way system where you move from one stage to another after the previous one is completed. It has many directions and until the development is finished, all stages can change. A change in one stage can also mean changes in the others. Evaluation meter is a self-evaluation tool for development projects to help assess the development process and goals through nine key contents of development projects. These key contents are demand, goals, involvement, describing the solution, does the solution meet the goals, test, assessment, resources, and implementation. (Innokylä 2024.) The author considered the overall development process through these nine phases.

The need for this development arose from the work life partner to clarify the process of diabetes nurses video consultations and treatment-related phone calls. There was a high demand for developing teleconsultation process in the unit. At the start of this research-based development work, the purpose and aims were carefully considered and based on the need, three development questions were developed. Collaborative methods for data collection were chosen to form a comprehensive perspective of the teleconsultation process in diabetes care. The development strongly involved the staff in the development process and allowed them to bring in their thoughts and views related to teleconsultation. The patients perspective was considered based on the theoretical framework.

Visual graphs were used to describe the results and categories recognised during the analysing process. The teleconsultation process description was also highlighted with visual mapping. The process description was not tested during this research-based development work, but it was evaluated by a group of specialists. It was seen as an important tool and the overall concept of teleconsultations was seen as a positive thing. The study answered the development questions and as a result the teleconsultation process description for diabetes nurses was developed.

For resources, the main concern from the start of this development process was the tight schedule. This research-based development work stayed on schedule despite small day or two delays every now and then. A clear project plan helped with the time management. On one side, the tight schedule made working more efficient, but it also created a lot of stress. For future development works, a careful consideration for a suitable schedule with possibility for small delays, when possible, is important.

The implementation phase of the teleconsultation process will start after finishing this research-based development work so the usability of the teleconsultation process description will not be assessed. The author made future evaluation recommendations for the clinic to assess the teleconsultation process after implementation. The author also made future research suggestions and development work ideas.

9 Discussion

This research-based development work aimed to gain understanding of the benefits and risks of teleconsultation from a diabetes nurse's perspective and to assess in which situations teleconsultation is appropriate, and what should be considered before, during and after a teleconsultation. Three development questions were formed to address these aspects. The development questions framed the study and as a result, a practical teleconsultation process description for diabetes nurses was developed. The purpose of the teleconsultation process description is to help the work life partner clinic in implementing teleconsultation to diabetes nurses everyday work and to provide patients more comprehensive and accessible services in addition to face-to-face consultation.

Implementing teleconsultation requires careful planning and consideration of the different steps included in the process (Greenhalgh et al. 2021, World Health Organization 2021b, 15-26). To gain a deeper understanding of the possibilities and threats of teleconsultation implementation, first the risks and benefits of teleconsultation were addressed. When considering health care quality, the findings in this research-based development work show

similar findings to previous research, that teleconsultation in diabetes care can bring benefits for both the health care unit and for the patients (Morris et al. 2017). The main findings for clinical benefits of teleconsultation in this research-based development work were that it can free-up workspace, save time and resources, and help managing workflow and cancellation times. The main benefits for patients were that teleconsultation brings them more options in addition to traditional face-to-face appointment, it saves travel time and cost, more equal appointment "in no man's land" and it can help to support learning the skills to make device setting changes self-directed.

Based on previous research, the main challenges related to teleconsultation are due to technical issues (Sun et al. 2023; Holt 2022; Kilvert et al. 2020; Shaw et al. 2020), communication (Kilvert et al. 2020), carry out a physical examination via video (Shaw et al. 2020) and required skills (Kilvert et al. 2020). This research-based development work had similar findings. In addition, in this research-based development work a concern towards patient engagement was also raised - will the patients commit to follow the instructions and have all the pre-tasks done for the teleconsultation. As a solution proposal, investing in good patient guidance and explaining why it is important for example to upload diabetes device data to the cloud service and share it with the clinic.

When comparing a video consultation and a treatment-related phone call in diabetes care, this research-based development work shows that the main benefit of a video consultation is that it allows visual expression: sharing the screen to demonstrate diabetes device data for the patient. For patients to learn and understand diabetes selfcare, this is a very important part of the consultation. Which is why, when appropriate, video consultation should always be the primary teleconsultation model in diabetes care. Treatment-related phone call is easier to use with less technical requirements, which makes it a very good teleconsultation model for when nothing needs to be demonstrated visually to the patient.

As a result of this research-based development work, a suitability assessment tool for both video consultation and treatment-related phone call was developed to help diabetes nurses to discover when teleconsultation is appropriate. It can also help the professionals to discover to which patients teleconsultation could be actively marketed. The findings from the developmental peer visit address four phases of teleconsultation (assessment, preparation, conducting and concluding) which were used in the teleconsultation process description together with the findings from the ideation workshop to demonstrate what should be considered before, during and after a teleconsultation. Teleconsultation pathway (World Health Organization 2021b, 15-26) was considered while developing the brainstorming templates (Appendix 5-8) to support discussion at the ideation workshop. The

teleconsultation process description can be used by all diabetes nurses working in all Tays hospitals. In addition to diabetes nurses, it was also seen beneficial for doctor's working in diabetes care in Tays hospitals. With modifications to suit primary care, it could also be used in other Pirha diabetes units.

Acknowledging the teleconsultation benefits could help to engage both the diabetes nurse and the patient during the implementation phase. They can be considered while marketing the use of teleconsultation to patients, but also to help staff to keep in mind the positive side while facing possible challenges. By addressing the risks and benefits in advance and involving the staff in the planning process could help with a mindset change, that Rosta et al. (2023) refers is sometimes needed for a successful telemedicine service. This research-based development work highlights a positive and collaborative way of planning and implementing teleconsultation. Involving staff to the development process could lead to a better employee experience (Rauvola & Pietikäinen 2021).

There was a positive atmosphere between the staff members during the ideation workshop and the evaluation workshop. The overall idea of providing teleconsultation as an additional choice was seen as a positive thing and the staff showed enthusiasm towards the subject based on many future development ideas that arose during the workshops. These included developing a shared picture bank for video consultations, updating the shared phrases for patient guidance, developing a teleconsultation checklist to the patient information system "orders" section for teleconsultation suitability assessment and future developing the teleconsultation process description to include doctors. There was also a request to present the process description at the clinic's development day to get a good start to the implementation phase.

As future research it would be interesting to study was the teleconsultation implementation successful in this clinic and has teleconsultation been taken into everyday practice. If not, it would be beneficial to study what were the reasons that it failed and how it could be improved. It would also be important to study diabetes nurses and patients experiences towards the teleconsultation process. There was a concern raised towards the communication and discussing emotional health during a diabetes teleconsultation. This has also been acknowledged in previous research (Kilvert et al. 2020). As future research it would be very important to discover ways to improve the communication and discussing emotional health during a diabetes teleconsultation. As a future development work idea, development of a practical guide for diabetes specialists about communication and emotional health could be very useful.

At a national level in Finland, there are ongoing cuts and changes to the hospital network (Ministry of Social Affairs and Health Finland 2024). By freeing up office space, and saving time and recourses, teleconsultation could provide an opportunity to find a solution to these changes and the challenge of shortage of healthcare personnel. However, it is important to keep in mind that teleconsultation can be useful additional model of care, but not a replacement for face-to-face consultations (Mathew et al. 2023).

Diabetes has become a global health crisis that has a negative economic impact, which causes heavy global burden affecting individuals, health care systems and nations. Half a billion people are living with diabetes worldwide, of which approximately 80% live in low- and middle-income countries. (Centers for Disease Control and Prevention 2021.) Technology provides new and innovative ways to deliver health care, which could extend health care and reduce inequalities in health care access (Appuswamy & Desimone 2020). Even though this research-based development work was conducted in a high-income country city environment, the author sees telemedicine as a great opportunity to provide more accessible diabetes care globally and especially in rural settings, where distances to health care are long. With careful planning and consideration, sustainable technology could help to reduce inequities in the world, and hopefully provide one solution to the global diabetes crises.

9.1 Strengths and limitations

Shenton (2004) name four main quality criteria in to ensure trustworthiness in qualitative research projects: credibility, transferability, dependability, and confirmability. This includes providing a true picture of the studied phenomena and a detailed description of the context of the fieldwork, aim to enable future researcher to repeat the study and demonstrate that the findings derive from the data, not from assumptions. (Shenton 2004.)

To achieve trustworthiness in this research-based development work, triangulation, a combination of collaborative methods was used to gain broad understanding of the phenomena. Every step of the research-based development work was carefully reported to provide detailed description of the development process. Reports of the data collection was accepted by the participants. The data were analysed systematically, and the analysis process was explained and reported to clarify how the meanings of the data were elicited. The final process description was evaluated by an expert group of diabetes specialists. The connection of the results to previous research and to the development questions were discussed, and the limitations and strengths considered.

As the author currently works at the Tampere University Hospital diabetes clinic, the professional knowledge of the subject and the development environment helped to

understand the development target. However, it also creates a possibility for an observer bias. To minimize the risk, the author recognized and considered the bias before starting the development process and consciously made every effort to avoid personal assumptions and beliefs. The prearranged questions for the peer visit and the brainstorming templates were conducted based on the theoretical framework. During the ideation workshop the author worked as the facilitator and did not take part in the ideation.

Involving employees to the development process and increasing the opportunity to influence their own work can create a better employee experience, commitment to the organization's goals and promote well-being at work. By developing organizational activities together, benefits can be derived at the individual, team, and organizational level. (Rauvola & Pietikäinen 2021.) This research-based development work strongly involved the staff in the development process and allowed them to bring in their thoughts, the positives, and the concerns, related to teleconsultation. By considering the teleconsultation process, the phases it involves and having the opportunity to influence their own work, could help the implementation of the teleconsultation to everyday work and create a better employee experience. Due to the collaborative nature of this research-based development work, the sample size was small but enough to make meaningful interpretations for this research-based development work and answer the development questions. Even though the results from both the developmental peer visit and the ideation workshop were in line with previous research, due to the small sample size, generalizability of the findings cannot be assumed.

9.2 Ethical considerations

Reliability, honesty, respect, and accountability are the foundation of research integrity (Allea 2023, 5). For development projects on working life, the norms of scientific research and business life both need to be considered. The level of quality needs to be high, and the work must be done honestly and carefully. The results should be useful to business life. (Moilanen et al. 2022, chap 2.)

Good research practices, and the instructions and operating models of the project partner were followed throughout this research-based development work. As a result of this research-based development work, a practical process description was developed to support the implementation of diabetes nurse's video consultation and treatment-related phone calls. Research permit for this thesis project was accepted by the policy of Wellbeing services county of Pirkanmaa and the thesis agreement was signed before starting this research-based development work. Preliminary evaluation of ethics was not required for this research-based development work as it is not medical research, it does not involve intervention in the physical or psychological integrity of the participants, there are no minor participants, or the

participants will not be subjected to strong stimuli or posed to a safety threat. (TENK 2019, 16.)

The author is committed to the guidelines of Finnish Code of Conduct for Research Integrity (TENK 2023) and The European Code of Conduct for Research Integrity (Allea 2023). The author also reviewed this thesis with the students checklist for ethical guidelines for thesis work recommended by Arene (2020). All the data were processed carefully according to the data management plan. No sensitive data were processed. The author followed Laurea's guide for processing information materials to help categorise and handle information. The author familiarized Laurea's guideline for referencing and carefully followed the guidelines.

World Health Organization (2019) recommends “the use of client-to-provider telemedicine to complement, rather than replace, the delivery of health services and in settings where patient safety, privacy, traceability, accountability, and security can be monitored” (World Health Organization 2019). It is important to understand that this research-based development work was done to offer patients more comprehensive and accessible services in addition to face-to-face consultation, not to fully replace them. Each individual patient's preference, situation and needs should be always considered carefully when planning telemedicine.

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Appendix 1 Participant information sheet - peer visit

TIEDOTE TUTKIMUKSESTA

Aiming for successful teleconsultation – a process description for diabetes nurses “Tähtäimenä onnistunut etävastaanotto – prosessinkuvaus diabeteshoitajille”

Pyyntö osallistua tutkimukseen

Teitä pyydetään mukaan tutkimukseen, jonka tarkoituksena on suunnitella ja kehittää diabeteshoitajien etävastaanottoa. Olemme arvioineet, että sovellutte tutkimukseen, koska työskentelette Tays Unipoliklinikalla, jossa etätoimintaa on kehitetty laajasti ja käyttämänne laitehoito mahdollistaa niiden etäseurannan, aivan kuten diabeteslaitteissakin. Tämä tiedote kuvaa tutkimusta ja teidän osuuttanne siinä. Perekdyttyänne tähän tiedotteeseen teille järjestetään mahdollisuus esittää kysymyksiä tutkimuksesta, jonka jälkeen teiltä pyydetään suostumus tutkimukseen osallistumisesta.

Vapaaehtoisuus

Tutkimukseen osallistuminen on täysin vapaaehtoista ja voitte myös keskeyttää tutkimuksen koska tahansa syytä ilmoittamatta. Mikäli keskeytätte tutkimuksen, teistä keskeyttämiseen mennessä kerättyjä tietoja voidaan käyttää osana tutkimusaineistoa.

Tutkimuksen tarkoitus

Tämän tutkimuksen tarkoituksena on suunnitella ja kehittää diabeteshoitajien etävastaanottoa ja luoda valmis prosessinkuvaus diabeteshoitajien videovastaanotoista sekä hoitopuheluista.

Tutkimuksen toteuttajat

Tämän tutkimuksen toimeksiantajana toimii Tays Keskussairaalan Sisätautien ja Endokrinologian poliklinikka. Vastuututkijana toimii Marjo Madden, sairaanhoitaja ja terveydenhoitaja AMK. Tämä työ toteutetaan osana Laurea-ammattikorkeakoulun Global Health and Crisis Management YAMK-tutkintoa ja toimii opinnäytetyönä.

Tutkimusmenetelmät ja toimenpiteet

Tutkimuksessa käytetään kehittävä vertaiskäynti -menetelmää. Tutkija tulee vierailulle osallistujien työyksikköön. Käynnin yhteydessä tutkija keskustelee osallistujien kanssa etävastaanoton ja etäseurannan toteutuksesta heidän yksikössään sekä havainnoi käytettäviä välineitä. Tutkija lähettää kysymyslistan keskusteltavista aiheista osallistujille etukäteen. Kysymyslista toimii keskustelun tukena. Tutkija tekee käynnin aikana muistiinpanoja. Käynnin jälkeen tutkija lähettää osallistujille raportin vertaiskäynnistä.

Tutkimus järjestetään Tays Unipoliklinikalla aamupalaverin yhteydessä 30.4.2024 klo 7:45. Tutkimukseen osallistuminen kestää n. 30 min.

Kustannukset ja niiden korvaaminen

Tutkimukseen osallistuminen ei maksa teille mitään. Osallistumisesta ei myöskään makseta erillistä korvausta.

Tutkimustuloksista tiedottaminen

Kyseessä on opinnäytetyö, joka julkaistaan avoimesti Theseus-tietokannassa.

Tutkimuksen päättäminen

Myös tutkimuksen suorittaja voi keskeyttää tutkimuksen erittäin painavasta syystä, josta tiedotetaan tarvittaessa erikseen. Osallistujille ilmoitetaan tutkimuksen tuloksista ja kehittämistyön etenemisestä.

Tutkimuksen aineistojen hävittäminen

Tutkija hävittää vertaiskäynnillä kerätyt muistiinpanot asianmukaisesti heti aineiston analysoinnin jälkeen.

Lisätiedot

Pyydämme teitä tarvittaessa esittämään tutkimukseen liittyviä kysymyksiä tutkijalle/tutkimuksesta vastaavalle henkilölle.

Tutkijan yhteystiedot

Opinnäytetyöntekijä

Nimi: Marjo Madden

Puh. [REDACTED]

Sähköposti: [REDACTED]

Opinnäytetyön ohjaaja

Titteli: TtT, yliopettaja

Nimi: Mika Alastalo

Laurea-ammattikorkeakoulu

Puh. [REDACTED]

Sähköposti: [REDACTED]

Tutkimuksen tietosuojaseloste: Henkilötietojen käsittely tutkimuksessa

Tässä tutkimuksessa käsitellään teitä koskevia henkilötietoja voimassa olevan tietosuojalainsäädännön (EU:n yleinen tietosuojastatus, 679/2016, ja voimassa oleva kansallinen lainsäädäntö) mukaisesti. Seuraavassa kuvataan henkilötietojen käsittelyyn liittyvät asiat.

Tutkimuksen rekisterinpitäjä

Rekisterinpitäjällä tarkoitetaan tahoja, joka yksin tai yhdessä toisten kanssa määrittelee henkilötietojen käsittelyn tarkoitukset ja keinot. Rekisterinpitäjä voi olla korkeakoulu, toimeksiantaja, muu yhteistyötaho, opinnäytetyöntekijä tai jotkut edellä mainituista yhdessä (esim. korkeakoulu ja opinnäytetyöntekijä yhdessä).

Tässä tutkimuksessa henkilötietojen rekisterinpitäjä on:

Opinnäytetyöntekijä

Voitte kysyä lisätietoja henkilötietojenne käsittelystä rekisterinpitäjän yhteyshenkilöltä

Rekisterinpitäjän yhteyshenkilön nimi: Marjo Madden

Organisaatio: Laurea-ammattikorkeakoulu (opiskelija)

Puh. [REDACTED]

Sähköposti: [REDACTED]

Tutkimuksessa teistä kerätään seuraavia henkilötietoja

Nimi ja allekirjoitus tutkittavan suostumuslomakkeelle

Teillä ei ole sopimukseen tai lakisääteiseen tehtävään perustuvaa velvollisuutta toimittaa henkilötietojanne vaan osallistuminen on täysin vapaaehtoista.

Henkilötietojenne suojausperiaatteet

Allekirjoitettu tutkittavan suostumuslomake säilytetään lukitussa tilassa tutkijan arkistossa. Ainoastaan tutkijalla on pääsy tutkijan arkistoon.

Henkilötietojenne käsittelyn tarkoitus

Henkilötietojenne käsittelyn tarkoitus on suostumus tutkimukseen osallistumiseen.

Henkilötietojenne käsittelyperuste

Suostumus

Tutkimuksen kesto-aika (henkilötietojenne käsittelyaika)

Tutkimus päättyy viimeistään 30.6.2024.

Mitä henkilötiedoillenne tapahtuu tutkimuksen päättyttyä?

Tutkimuksen päättyttyä henkilötietonne hävitetään asianmukaisesti.

Tietojen luovuttaminen tutkimusrekisteristä

Tietoja ei luovuteta tutkimusrekisteristä tutkimusryhmän ulkopuolelle.

Henkilötietojenne mahdollinen siirto EU:n tai ETA-alueen ulkopuolelle

Tietojanne ei siirretä/siirretään EU:n tai ETA-alueen ulkopuolelle.

Rekisteröitynä teillä on oikeus

Koska henkilötietojanne käsitellään tässä tutkimuksessa, niin olette rekisteröity tutkimuksen aikana muodostuvassa henkilörekisterissä. Rekisteröitynä teillä on oikeus:

- saada informaatiota henkilötietojen käsittelystä
- tarkastaa itseänne koskevat tiedot
- oikaista tietojanne
- poistaa tietonne (esim. jos peruutatte antamanne suostumuksen)
- peruuttaa antamanne henkilötietojen käsittelyä koskeva suostumus
- rajoittaa tietojenne käsittelyä
- rekisterinpitäjän ilmoitusvelvollisuus henkilötietojen oikaisusta, poistosta tai käsittelyn rajoittamisesta
- siirtää tietonne järjestelmästä toiseen
- sallia automaattinen päätöksenteko nimenomaisella suostumuksellanne
- tehdä valitus tietosuojavaltuutetun toimistoon, jos katsotte, että henkilötietojanne on käsitelty tietosuojalainsäädännön vastaisesti

Voitte käyttää oikeuksianne ottamalla yhteyttä rekisterinpitäjään.

Tutkimuksessa kerättyjä henkilötietoja ei käytetä profilointiin tai automaattiseen päätöksentekoon**Henkilötietojanne ei käsitellä aineistoa analysoitaessa ja tutkimuksen tuloksia raportoitaessa**

Appendix 2 Prearranged questions for the developmental peer visit

What type of telemedicine is used?

How often are teleconsultations held?

- Is there a certain day or time reserved for teleconsultations?

What are the benefits and challenges related to telemedicine?

How are teleconsultations put into practice?

- Technology used, equipment needed by the nurse, equipment needed by the patient, patient identification, and data protection.

How is treatment device technology used during the teleconsultation?

How is the teleconsultation arranged and what should be considered before the consultation?

- Patient marketing and engagement, booking the appointment, patient guidance.

How is the patient's suitability for the teleconsultation assessed?

- Which patient groups or type of consultation is teleconsultation the most suitable for? When is teleconsultation not suitable?

How are difficult situations such as technical challenges handled?

What is considered during the teleconsultation? What about after the teleconsultation?

What kind of skills and training nurse needs?

What kind of feedback have patients given?

Appendix 3 Participant consent form

Tutkittavan suostumuslomake

Tutkimuksen nimi: Aiming for successful teleconsultation – a process description for diabetes nurses
 “Tähtäimenä onnistunut etävastaanotto – prosessinkuvaus diabeteshoitajille”

Tutkimuksen toteuttaja: Opinnäytetyötekijä
 Nimi: Marjo Madden
 Puh. [REDACTED]
 Sähköposti: [REDACTED]

Opinnäytetyön ohjaaja
 Titteli: TtT, yliopettaja
 Nimi: Mika Alastalo
 Laurea-ammattikorkeakoulu
 Puh. [REDACTED]
 Sähköposti: [REDACTED]

Minua [tutkittavan nimi] on pyydetty osallistumaan yllämainittuun tutkimukseen, jonka tarkoituksena on suunnitella ja kehittää diabeteshoitajien etävastaanottoa ja luoda valmis prosessinkuvaus diabeteshoitajien videovastaanotoista sekä hoitopuheluista.

Olen saanut tiedotteen tutkimuksesta ja ymmärtänyt sen. Tiedotteesta olen saanut riittävän selvityksen tutkimuksesta, sen tarkoituksesta ja toteutuksesta, oikeuksistani sekä tutkimuksen mahdollisesti liittyvistä hyödyistä ja riskeistä. Minulla on ollut mahdollisuus esittää kysymyksiä ja olen saanut riittävän vastauksen kaikkiin tutkimusta koskeviin kysymyksiini.

Osallistun tutkimukseen vapaaehtoisesti. Minua ei ole painostettu eikä houkuteltu osallistumaan tutkimukseen.

Minulla on ollut riittävästi aikaa harkita osallistumistani tutkimukseen.

Ymmärrän, että osallistumiseni on vapaaehtoista. Voin keskeyttää tutkimukseen osallistumisen tai peruuttaa suostumukseni koska tahansa syytä ilmoittamatta. Olen tietoinen siitä, että mikäli keskeytän (voin jatkaa sitä myöhemmin) tutkimuksen, keskeyttämiseen asti kerättyjä tietoja voidaan käyttää tutkimuksessa. Jos peruutan suostumukseni, minusta jo kerättyjä tietoja ei voida käsitellä enää osana tutkimusta, vaan ne hävitetään, mikäli niiden poistaminen aineistosta on edelleen mahdollista.

Allekirjoituksellani vahvistan osallistumiseni tähän tutkimukseen.

_____ / ____ . ____ . _____

Allekirjoitus: _____

Nimenselvennys: _____

Alkuperäinen allekirjoitettu tutkittavan suostumus sekä kopio tutkimustiedotteesta liitteineen jäävät tutkijan arkistoon. Tutkimustiedote ja kopio allekirjoitetusta suostumuksesta annetaan tutkittavalle.

Appendix 4 Participant information sheet - ideation workshop

TIEDOTE TUTKIMUKSESTA

Aiming for successful teleconsultation – a process description for diabetes nurses “Tähtäimenä onnistunut etävastaanotto – prosessinkuvaus diabeteshoitajille”

Pyyntö osallistua tutkimukseen

Teitä pyydetään mukaan tutkimukseen, jossa on tarkoitus suunnitella ja kehittää diabeteshoitajien etävastaanottoa. Olemme arvioineet, että sovellutte tutkimukseen, koska olette diabeteksen hoidon ammattilaisia ja työskentelette Tampereen yliopistollisessa sairaalassa. Tämä tiedote kuvaa tutkimusta ja teidän osuuttanne siinä. Perehdyttyänne tähän tiedotteeseen teille järjestetään mahdollisuus esittää kysymyksiä tutkimuksesta, jonka jälkeen teiltä pyydetään suostumus tutkimukseen osallistumisesta.

Vapaaehtoisuus

Tutkimukseen osallistuminen on täysin vapaaehtoista ja voitte myös keskeyttää tutkimuksen koska tahansa syytä ilmoittamatta. Mikäli keskeytätte tutkimuksen, teistä keskeyttämiseen mennessä kerättyjä tietoja voidaan käyttää osana tutkimusaineistoa.

Tutkimuksen tarkoitus

Tämän tutkimuksen tarkoituksena on suunnitella ja kehittää diabeteshoitajien etävastaanottoa ja luoda valmis prosessinkuvaus diabeteshoitajien videovastaanotoista sekä hoitopuheluista.

Tutkimuksen toteuttajat

Tämän tutkimuksen toimeksiantajana toimii Tays Keskussairaalan Sisätautien ja Endokrinologian poliklinikka. Vastuututkijana toimii Marjo Madden, sairaanhoitaja ja terveydenhoitaja AMK. Tämä työ toteutetaan osana Laurea-ammattikorkeakoulun Global Health and Crisis Management YAMK-tutkintoa ja toimii opinnäytetyönä.

Tutkimusmenetelmät ja toimenpiteet

Tutkimuksessa käytetään ideointityöpaja menetelmää. Ryhmätyöpajassa ideoidaan etävastaanoton toteutusta valmiiden aivoriihi mallipohjien avulla. Tutkija toimii työpajan fasilitaattorina. Työpajan jälkeen tutkija lähettää osallistujille raportin työpajasta.

Työpaja järjestetään Tays Sisätautien poliklinikalla 30.4.2024 klo 9. Tutkimukseen osallistuminen kestää n. 1 h.

Kustannukset ja niiden korvaaminen

Tutkimukseen osallistuminen ei maksa teille mitään. Osallistumisesta ei myöskään makseta erillistä korvausta.

Tutkimustuloksista tiedottaminen

Valmis prosessinkuvaus esitellään Tays diabetestiimin keskiviikon aamukokouksessa, jolloin teillä on mahdollisuus kommentoida ja tehdä muutosehdotuksia prosessinkuvaukseen. Tämän jälkeen valmis diabeteshoitajien videovastaanottojen ja hoitopuheluiden prosessinkuvaus annetaan Tays diabetestiimin käyttöön. Kyseessä on opinnäytetyö, joka julkaistaan avoimesti Theseus-tietokannassa.

Tutkimuksen päättäminen

Myös tutkimuksen suorittaja voi keskeyttää tutkimuksen erittäin painavasta syystä, josta tiedotetaan tarvittaessa erikseen. Osallistujille ilmoitetaan tutkimuksen tuloksista ja kehittämistyön etenemisestä.

Tutkimuksen aineistojen hävittäminen

Tutkija hävittää työpajassa kerätyn aineiston asianmukaisesti heti aineiston analysoinnin jälkeen.

Lisätiedot

Pyydämme teitä tarvittaessa esittämään tutkimukseen liittyviä kysymyksiä tutkijalle/tutkimuksesta vastaavalle henkilölle.

Tutkijan yhteystiedot

Opinnäytetyöntekijä

Nimi: Marjo Madden

Puh. [REDACTED]

Sähköposti: [REDACTED]

Opinnäytetyön ohjaaja

Titteli: TtT, yliopettaja

Nimi: Mika Alastalo

Laurea-ammattikorkeakoulu

Puh. [REDACTED]

Sähköposti: [REDACTED]

Tutkimuksen tietosuojaseloste: Henkilötietojen käsittely tutkimuksessa

Tässä tutkimuksessa käsitellään teitä koskevia henkilötietoja voimassa olevan tietosuojalainsäädännön (EU:n yleinen tietosuojastatus, 679/2016, ja voimassa oleva kansallinen lainsäädäntö) mukaisesti. Seuraavassa kuvataan henkilötietojen käsittelyyn liittyvät asiat.

Tutkimuksen rekisterinpitäjä

Rekisterinpitäjällä tarkoitetaan tahoja, joka yksin tai yhdessä toisten kanssa määrittelee henkilötietojen käsittelyn tarkoitukset ja keinot. Rekisterinpitäjä voi olla korkeakoulu, toimeksiantaja, muu yhteistyötaho, opinnäytetyöntekijä tai jotkut edellä mainituista yhdessä (esim. korkeakoulu ja opinnäytetyöntekijä yhdessä).

Tässä tutkimuksessa henkilötietojen rekisterinpitäjä on:

Opinnäytetyöntekijä

Voitte kysyä lisätietoja henkilötietojenne käsittelystä rekisterinpitäjän yhteyshenkilöltä

Rekisterinpitäjän yhteyshenkilön nimi: Marjo Madden

Organisaatio: Laurea-ammattikorkeakoulu (opiskelija)

Puh. [REDACTED]

Sähköposti: [REDACTED]

Tutkimuksessa teistä kerätään seuraavia henkilötietoja

Nimi ja allekirjoitus tutkittavan suostumuslomakkeelle

Teillä ei ole sopimukseen tai lakisääteiseen tehtävään perustuvaa velvollisuutta toimittaa henkilötietojanne vaan osallistuminen on täysin vapaaehtoista.

Henkilötietojenne suojausperiaatteet

Allekirjoitettu tutkittavan suostumuslomake säilytetään lukitussa tilassa tutkijan arkistossa. Ainoastaan tutkijalla on pääsy tutkijan arkistoon.

Henkilötietojenne käsittelyn tarkoitus

Henkilötietojenne käsittelyn tarkoitus on suostumus tutkimukseen osallistumiseen.

Henkilötietojenne käsittelyperuste

Suostumus

Tutkimuksen kesto-aika (henkilötietojenne käsittelyaika)

Tutkimus päättyy viimeistään 30.6.2024.

Mitä henkilötiedoillenne tapahtuu tutkimuksen päättyttyä?

Tutkimuksen päättyttyä henkilötietonne hävitetään asianmukaisesti.

Tietojen luovuttaminen tutkimusrekisteristä

Tietoja ei luovuteta tutkimusrekisteristä tutkimusryhmän ulkopuolelle.

Henkilötietojenne mahdollinen siirto EU:n tai ETA-alueen ulkopuolelle

Tietojanne ei siirretä/siirretään EU:n tai ETA-alueen ulkopuolelle.

Rekisteröitynä teillä on oikeus

Koska henkilötietojanne käsitellään tässä tutkimuksessa, niin olette rekisteröity tutkimuksen aikana muodostuvassa henkilörekisterissä. Rekisteröitynä teillä on oikeus:

- saada informaatiota henkilötietojen käsittelystä
- tarkastaa itseänne koskevat tiedot
- oikaista tietojanne
- poistaa tietonne (esim. jos peruutatte antamanne suostumuksen)
- peruuttaa antamanne henkilötietojen käsittelyä koskeva suostumus
- rajoittaa tietojenne käsittelyä
- rekisterinpitäjän ilmoitusvelvollisuus henkilötietojen oikaisusta, poistosta tai käsittelyn rajoittamisesta
- siirtää tietonne järjestelmästä toiseen
- sallia automaattinen päätöksenteko nimenomaisella suostumuksellanne
- tehdä valitus tietosuojavaltuutetun toimistoon, jos katsotte, että henkilötietojanne on käsitelty tietosuojalainsäädännön vastaisesti

Voitte käyttää oikeuksianne ottamalla yhteyttä rekisterinpitäjään.

Tutkimuksessa kerättyjä henkilötietoja ei käytetä profilointiin tai automaattiseen päätöksentekoon

Henkilötietojanne ei käsitellä aineistoa analysoitaessa ja tutkimuksen tuloksia raportoitaessa

Appendix 5 Workshop, client characteristics

When teleconsultation is appropriate? ++ Suitable + Suitable with consideration - Not suitable					
Client characteristics	Age	Language	Sensory, cognitive, and behavioural impairment	Environment	Client preference
Video consultation	Adolescence	Finnish	Hearing	Privacy, distractions, safety	Patient prefers video consultation
	Adults	Other	Vision		Patient prefers face to face consultation or treatment-related phone call
	Seniors		Motor		
Treatment-related phone call	Adolescence	Finnish	Hearing	Privacy, distractions, safety	Patient prefers treatment-related phone call
	Adults	Other	Vision		Patient prefers face to face consultation or client prefers video consultation
	Seniors		Motor		

Appendix 6 Workshop, technology

When teleconsultation is appropriate? ++ Suitable + Suitable with consideration - Not suitable			
Technology	Availability of technology - What kind of technical equipment or skills client will need?	Special equipment - What special equipment or services client will need?	Data privacy and security - How is date privacy and security considered?
Video consultation			
Treatment-related phone call			

Appendix 7 Workshop, type of consultation

When teleconsultation is appropriate? ++ Suitable + Suitable with consideration - Not suitable					
Type of consultation	First time visit	Checkup	Serial treatment	Device related visit	Youth clinic
Video consultation			Self-management support	Device starts (glucose meters, sensors, insulin pumps)	First-time visit
			Follow up after insulin pump start	Consultation on devices technical issues	Checkups
			Newly diagnosed with diabetes		
Treatment-related phone call			Self-management support	Device starts (glucose meters, sensors, insulin pumps)	First-time visit
			Follow up after insulin pump start	Consultation on devices technical issues	Checkups
			Newly diagnosed with diabetes		

Appendix 8 Workshop, teleconsultation checklist


When teleconsultation is appropriate? ++ Suitable + Suitable with consideration - Not suitable			
Teleconsultation checklist	Before a teleconsultation - How to discuss about teleconsultation with a client? - Which actions needs to be considered? - How to book the appointment and inform the client? - Which equipment and training diabetes nurse needs?	During a teleconsultation - Consultation description - What skills diabetes nurse needs to build rapport? - How to manage challenges or threats?	After a teleconsultation - What should be considered after the consultation? - How to keep the continuum?
Video consultation			
Treatment-related phone call			

Appendix 9 Workshop, SWOT analysis

Thoughts about telemedicine	Strengths - Positive characteristics	Opportunities - Clinical outcomes - Patient outcomes	Weaknesses - Barriers	Threats - What could go wrong?	Solutions - How to fix the problem?
Video consultation					
Treatment-related phone call					

Appendix 10 The teleconsultation process description - benefits, risks, and solutions

Diabeteshoitajan etävastaanotto

Hyödyt yksikölle	Hyödyt potilaalle	Videovastaanotto 	Hoitopuhelu
Vapauttaa työtilaa	Tuo vaihtoehtoja perinteisen vastaanoton rinnalle; mahdollisuus valita eri vaihtoehtoista	Mahdollistaa visuaalisen ilmaisen <ul style="list-style-type: none"> Diabeteksen laitehoidon seurantatietojen jakaminen näytöltä Kasvojen, ilmeiden ja eleiden huomioiminen 	Helppo käyttää – vaatii vähemmän teknisiä valmiuksia Vie vähiten resurssia ja esivalmistelu-aikaa
Säästää aikaa ja resurssia	Säästää matka -ajassa ja matkakuluissa, helpompi järjestää osaksi arkea	Vaatii hyvää teknistä osaamista osallistujilta - niin diabeteshoitajalta kuin potilaalta	Sopii, kun ei tarvitse ohjata mitään visuaalisesti
Helpottaa peruutusaikojen hallintaa	Tukee oppimista laitehoidon itsenäiseen säätämiseen	Tekniset valmiudet vaikea täysin selvittää etukäteen (ääni, video, yhteydet)	Perustuu ainoastaan kuuloaistiin – voi johtaa väärinymmäryksiin puolin ja toisin. Tarkkuutta!
Vastaanottoajan hallinta helpompaa, vähemmän häiriötekijöitä	Lisää tasa-arvoista hoitajan ja potilaan kohtaamista, "ei - kenenkään maalla" - voi vähentää jännitystä		

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Diabeteshoitajan etävastaanotto

Haaste 	Ratkaisu
Fyysinen tutkiminen ei mahdollista	Tarvittaessa mittaukset (RR, paino) valmiiksi tehtynä kotona/ terveysasemien omahoitopisteellä Ihon kunnosta kysyminen
Potilaan hoitoon sitoutuminen – tuleeko ennakkotehtävät tehtyä ja valmistauduttua ohjeiden mukaan	Potilaan ohjaukseen panostaminen Hyvä suunnittelu ja valmistautuminen Aikaa hoidon suunnitteluun
Tekniset ongelmat	Henkilökunnan koulutus; IT tuki, digihoitaja, hiljainen tieto Yhteistyö potilaan kanssa Tarvittaessa videovastaanoton hoitaminen loppuun hoitopuheluna, tai uuden ajan sopiminen
Vastaanottoajat lyhyempiä, vuorovaikutus etänä haastavampaa Hiljaisten hetkien täyttäminen liian nopeasti, ei jää riittävästi aikaa jaksamisesta ja emotionaalista terveydestä keskustelemiseen	Erityisen huomion kiinnittäminen avoimeen vuorovaikutukseen ja emotionaaliseen terveyteen Videovastaanoton aikana visuaalisten kuvien ja mittareiden hyödyntäminen keskustelun tukena – yhteisen kuvapankin kehittäminen
Etävastaanoton täytyy alkaa aikataulussa, muuten potilas ei välttämättä ole enää saatavilla	Varataan normaalille vastaanottopohjalle Potilaan ohjaus – odottaa rauhassa, jos etävastaanotto hieman myöhässä

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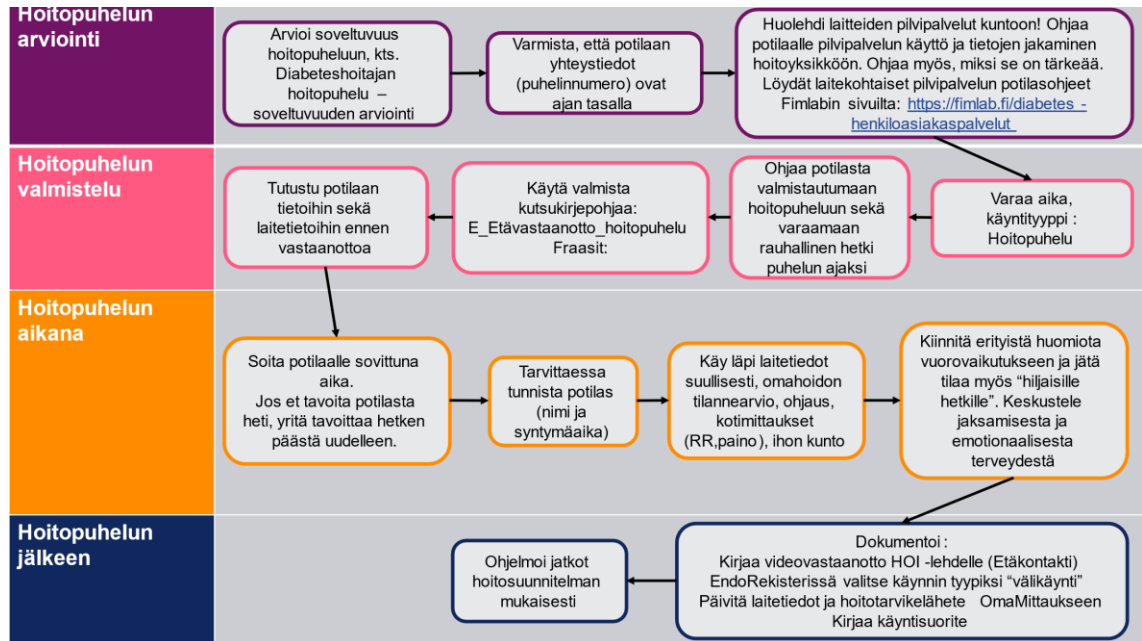
Appendix 11 Video consultation process description & suitability assessment tool



Diabeteshoitajan videovastaanotto – Soveltuvuuden arviointi

Täytyy olla! - Tekniset vaatimukset	Soveltuu	Soveltuu harkinnalla	Ei sovellu
Tekninen valmius: <ul style="list-style-type: none"> Diabeteksen laitetiedot ladattuna pilvipalveluun ja jaettuna hoitoyksikköön Verkkopankkitunnukset OmaTays Pöytätietokone, kannettava tietokone, tai tabletti (älypuhelimien näyttö on liian pieni laitetietojen jakamiseen) Riittävät tekniset taidot laitteiden ja ohjelmistojen käyttöön Puhelinnumero ajan tasalla potilastietojärjestelmässä 	Vastaanoton tyyppi: <ul style="list-style-type: none"> Uusintakäynti Sarjahoito omahoidon tukemiseksi Vastasarastuneen seurantakäynnin 1kk jälkeen Ikä: <ul style="list-style-type: none"> Aikuiset Nuoret/ opiskelijat vaihto-oppilaana ollessa Kieli: <ul style="list-style-type: none"> Suomen kieli Muu kieli, jota kaikki osallistajat puhuvat sujuvasti Ympäristö: <ul style="list-style-type: none"> Mahdollisuus yksityiseen, rauhalliseen tilaan 	Vastaanoton tyyppi: <ul style="list-style-type: none"> Sarjahoito insuliinipumpun aloituksen jälkeen (potilaan täytyy osata tehdä säätömuutokset itsenäisesti) Ikä: <ul style="list-style-type: none"> Nuoret (mahdollisuus rauhalliseen tilaan koulupäivän aikana) Ikäihmiset (tekniset vaatimukset täyttyvät, ei muistisairautta) Terveydentila: <ul style="list-style-type: none"> Aisti-, kognitiiviset- ja käytöshäiriöt, psyykkiset sairaudet (huolellinen yksilöllinen arviointi, avustajan tuki) 	Tekninen valmius: <ul style="list-style-type: none"> Tekniset vaatimukset eivät täyty Vastaanoton tyyppi: <ul style="list-style-type: none"> Ensinkäynti Laitehoidon aloituskäynti Laiteteknisen vian selvittely Insuliinihoidon aloituskäynti Kieli: <ul style="list-style-type: none"> Tulkkia vaativa käynti Terveydentila: <ul style="list-style-type: none"> Muistisairaus, näkö- tai kuulovamma Ympäristö: <ul style="list-style-type: none"> Ei mahdollisuutta yksityiseen, rauhalliseen tilaan Potilaan toive: <ul style="list-style-type: none"> Potilas toivoo hoitopuhelua, tai vastaanottoa paiknanpäällä

Appendix 12 Treatment-related phone call process description & suitability assessment tool



Diabeteshoitajan hoitopuhelu – Soveltuvuuden arviointi

Täytyy olla! - Tekniset vaatimukset	Soveltuu	Soveltuu harkinnalla	Ei sovellu
<p>Tekninen valmius:</p> <ul style="list-style-type: none"> Diabeteksen laitetiedot ladattuna piivipalveluun ja jaettuna hoitoyksikköön Puhelin Puhelinnumero ajan tasalla potilastietojärjestelmässä 	<p>Kliininen päätöksen teko:</p> <ul style="list-style-type: none"> Jos ei tarvitse ohjata mitään visuaalisesti (laitetiedot) <p>Vastaanoton tyyppi:</p> <ul style="list-style-type: none"> Uusintäkäynti Sarjahoito omahoidon tukemiseksi Vastasairastuneen seurantakäynnit 1kk jälkeen <p>Ikä:</p> <ul style="list-style-type: none"> Aikuiset Ikäihmiset (tekniset vaatimukset täyttyvät, ei muistisairautta) <p>Kieli:</p> <ul style="list-style-type: none"> Suomen kieli Muu yhteinen kieli, jota kaikki osallistujat puhuvat sujuvasti <p>Ympäristö:</p> <ul style="list-style-type: none"> Mahdollisuus yksityiseen, rauhalliseen tilaan 	<p>Vastaanoton tyyppi:</p> <ul style="list-style-type: none"> Sarjahoito insuliinipumpun aloituksen jälkeen (potilaan täytyy osata tehdä säätömuutokset itsenäisesti) <p>Ikä:</p> <ul style="list-style-type: none"> Nuoret (mahdollisuus rauhalliseen tilaan koulupäivän aikana) <p>Terveydentila:</p> <ul style="list-style-type: none"> Aisti-, kognitiiviset- ja käyttöhäiriöt, psyykkiset sairaudet (huolellinen yksilöllinen arviointi, avustajan tuki) 	<p>Tekninen valmius:</p> <ul style="list-style-type: none"> Tekniset vaatimukset eivät täyty <p>Vastaanoton tyyppi:</p> <ul style="list-style-type: none"> Ensikäynti Laitehoidon aloituskäynti Laiteteknisen vian selvittely Insuliinihoidon aloituskäynti <p>Kieli:</p> <ul style="list-style-type: none"> Tulkkia vaativa käynti <p>Terveydentila:</p> <ul style="list-style-type: none"> Muistisairaus, kuulovamma <p>Ympäristö:</p> <ul style="list-style-type: none"> Ei mahdollisuutta yksityiseen, rauhalliseen tilaan <p>Potilaan toive:</p> <ul style="list-style-type: none"> Potilas toivoo videovastaanottoa, tai vastaanottoa paikanpäällä

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