Digital communication with parents and their children in online healthcare

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Min Doktor

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Abstract

Swedish primary care is under a lot of pressure and struggle to keep up with the big patient flow. An alternative to visiting a physical primary care centre is to visit Min Doktor which is a digital healthcare centre offering doctor visits online that help patients with diagnosis, prescriptions and referrals. Today, Min Doktor's service is only treating people from the age of 18 but they are currently working on expanding the service to start treating children too. When considering children, the parent will seek care for the child rather than the patient seeking care for itself. The design of the service should be evolved to suit the new needs that will occur and make all users, both parents and children, enjoy seeking care through it and want to return to Min Doktor the next time they need care. With focus on children 1-5 years old, a literature study and a user centred design process with user studies and prototype testing were conducted. The studies and tests showed that it is important to involve the child in the care process but that the parents are not very willing to do that and worried about seeking care online for their children in general. The process resulted in a number of design guidelines about the design of the new service. These guidelines state that the service should, amongst other things, feel safe, professional and comforting, encourage the parents to include their children in the care seeking process, make the parents feel like it is possible to cover all information needed in the questions asked by the service including the general condition and also catch the child's interest and make the child understand that they seek care for him/her.

Keywords: Min Doktor, online healthcare, child-centred care, doctor-patient-child triad, user-centred design

Sammanfattning

Svensk primärvård är hårt pressad och kämpar för att klara av det stora patientflödet. Ett alternativ till att gå till en fysisk vårdcentral är att besöka den digitala vårdcentralen Min Doktor som erbjuder läkarbesök online och hjälper patienter med diagnos, recept och remisser. Idag behandlar Min Doktors tjänst enbart personer som är 18 år och uppåt men de arbetar just nu med att expandera tjänsten för att även kunna behandla barn. Om ett barn är sjukt kommer föräldern söka vård för barnet istället för att patienten söker vård för sig själv. Designen av tjänsten bör utvecklas för att fylla de nya behov som uppstår och göra så att alla användare, både föräldrar och barn, trivs med att söka vård genom tjänsten och vill återvända till Min Doktor nästa gång de är i behov av vård. Med fokus på barn mellan 1-5 år genomfördes en litteraturstudie och en användarcentrerad designprocess med användarstudier och prototyptestning. Studierna och testerna visade att det är viktigt att involvera barnet i vårdprocessen men att föräldrarna inte är särskilt villiga att göra det och att de är oroliga för att söka vård online för sina barn i allmänhet. Processen resulterade i ett antal riktlinjer kring designen av den nya tjänsten. Dessa riktlinjer säger bland annat att tjänsten bör kännas säker, professionell och trygg, uppmuntra föräldrar att inkludera sitt barn i vårdsökningsprocessen, få föräldrar att känna att all information som behövs täcks av frågorna som ställs i tjänsten inklusive allmäntillståndet och även fånga barnets intresse och få barnet att förstå att de söker vård för henne/honom.

Nyckelord: Min Doktor, online-vård, barncentrerad vård, doktor-förälder-barn triaden, användarcentrerad design

Acknowledgments

Table of contents

1 Introduction

This chapter presents an introduction to the area to be examined, as well as the purpose and restrictions of the project.

Swedish primary care is under a lot of pressure. The medical personnel work long hours and still struggle to keep up with the big patient flow [1,2]. According to studies made in North America [2] about half of all general practitioner visits could have been solved by an online meeting. McKinsey concludes in a report from 2016 that digitalisation of Swedish healthcare can save up to 180 billion SEK until 2025 and mentions "unnecessary visits" as one of the main saving points, where "distant consultations" is a big part [3]. This financial factor, together with the possibility to relieve the pressure on the physical primary care and make it available to the patients who really need to meet medical personnel in person, makes it of utmost importance that digital care giving solutions become available. One company providing such a solution is one of Sweden's largest online healthcare centres, Min Doktor, with over 25 000 treated patients (August 11, 2016).

1.1 Min Doktor

Min Doktor is a digital healthcare centre offering doctor visits online that help patients with diagnosis, prescriptions and referrals. The doctors connected to the service are all working at physical healthcare centres as their main occupation and are going online on the service when they have got extra time. Patients sign in on the website with their mobile BankID and start a new case by choosing one of the categories fitting their problem best (see figure 1). Each category contains a, by the company called, guide including a number of questions about the symptoms together with the possibility to upload photos of the symptoms (see figure 2). When the case has been fully entered and sent, a doctor who is online takes on the case. The waiting time for the patient to get their first answer from the doctor is on average 30 minutes, but never more than four hours. The patient's cases are saved on the page called *My cases* (see figure 3) and here he/she can enter any case and read about it, send and receive messages to and from the doctor handling the case, find and print referrals and the doctor can schedule a video meeting or phone meeting with the patient. Today, Min Doktor is treating people from 18 years old but the aim is to be a complete primary caregiver and treat patients of all ages.

Figure 1 A screenshot of the starting page after signing into Min Doktor's service.
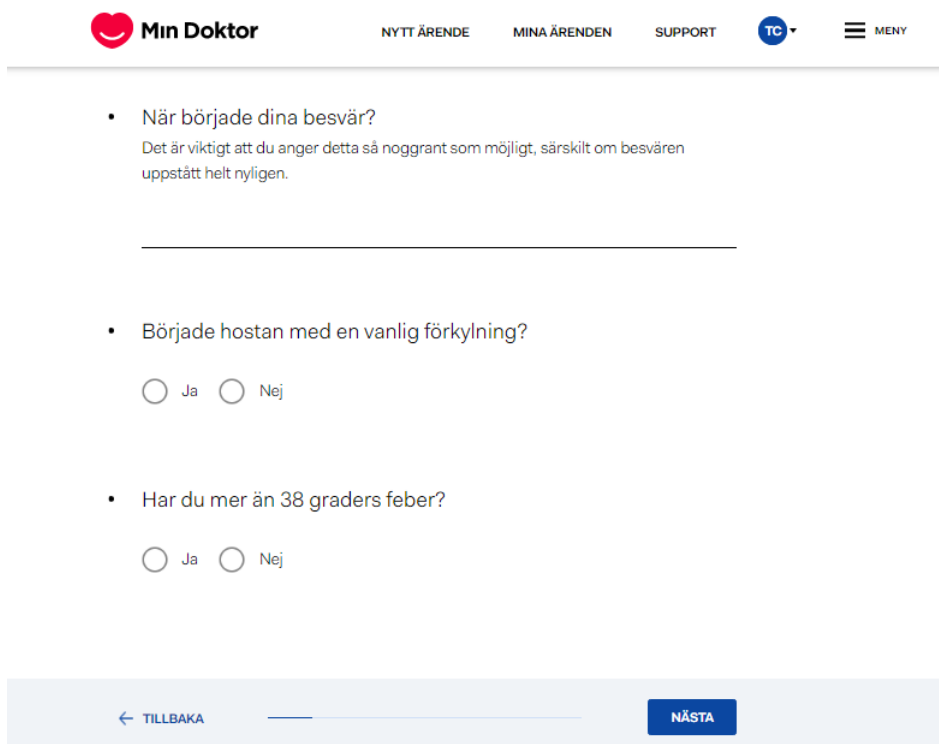
Figure 2 A screenshot from the service with an example of what a slide in a guide can look like.
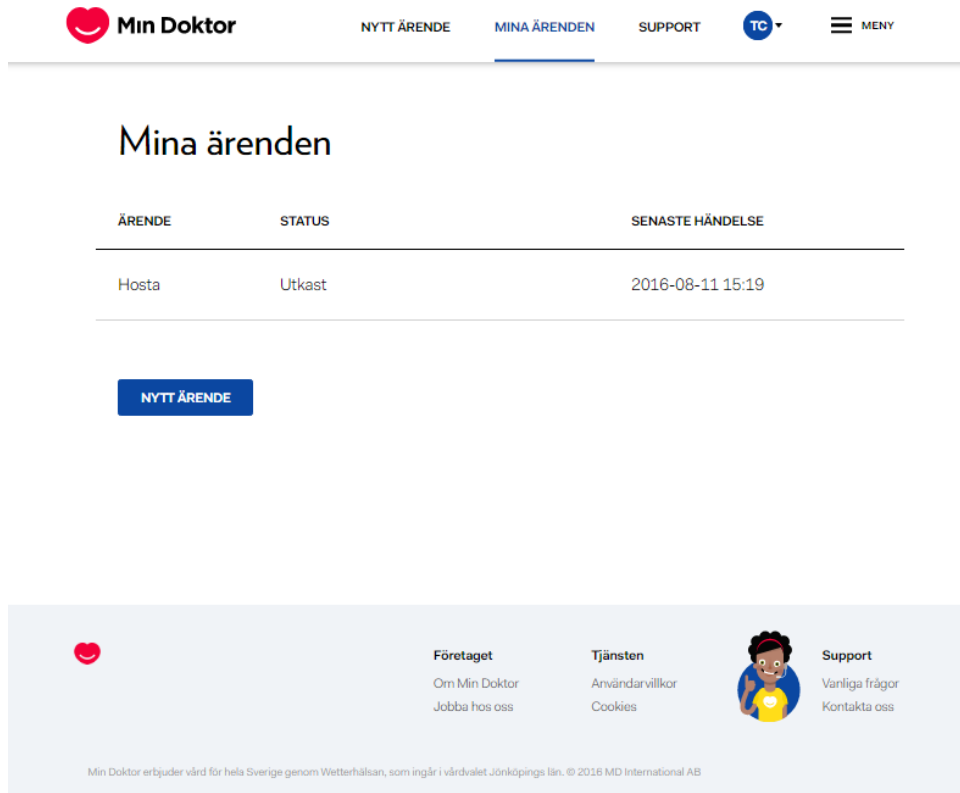
Figure 3 A screenshot of the "mina ärenden" (my cases) page from the service.

1.2 The project and purpose

Min Doktor is currently working to be able to launch a service for children under 18 years old. This launch comes with legal issues concerning sign ins and authentication as well as medical issues such as specific children's diseases which need to be added etc. In extent to that, there is also a design factor. Instead of having a user that is seeking care for itself, there will now be a parent seeking care for its child. The latter concern resulted in the purpose of this project, consisting of the following parts:

- Investigate what thoughts, feelings and worries are related to that kind of care seeking process for the families.
- Examine how the service should be evolved to suit the new needs occurring when the patient is a child who does not seek care for itself.

- Writing design guidelines on how the service could be designed to make all users, both parents and children, enjoy seeking care through it and want to return next time they need care.

1.2.1 Project limitations

Since children in ages 0-17 is a very large group with diverse needs, the project has focused on children aged 1-5. The age group was decided after discussions with the stakeholders from Min Doktor and the supervisor since young children are the most common caretakers [4] and their language is not as developed as older ones', hence there is a big communicational challenge when treating them which was considered interesting. Further, only the design concept has been considered, focusing on literature, legal aspect regarding children's care and the user needs and concerns. Not much time has been spent on the interface details such as colours and shapes of buttons etc. Finally, the legal aspects of authentication and medical issues have been left for the experts at Min Doktor to solve.

1.2.2 Report structure

This report will start by presenting some theory and research made in related areas. Then an overview of design thinking in general and the design process used in this project will be described, followed by two detailed sections presenting the two phases of the innovation process including both methods used and results gained in a chronological setup. The report ends with a discussion, a part about ethics related to the subject and a conclusion including future research possibilities.

2 Background

This section presents some background theory relevant to the project, such as guidelines used in healthcare today, how the communication between the doctor, a parent and a child is experienced when the child is the patient and some research based information on how to treat children in healthcare situations.

2.1 Child centred care

According to the Convention on Rights of the Child [5] (which is expected to become a Swedish law January first, 2018 [6,7]), everyone under 18 is considered a child. It also states that all decisions concerning any child should be made with the child's best in focus, and that the child's own opinion should always be heard. How much it is considered when making the decision should be decided based on the child's level of maturity [5]. This is also emphasized in the national board of health and welfare's guidelines on how Swedish paediatric care should be performed for children up to 6 years [8]. NOBAB (Nordic network for children's rights and needs in healthcare) [9] is a Nordic network working with children's rights in healthcare. They created a standard to protect children's rights in healthcare. This standard further emphasizes that both children and parents should be given information about illness, treatment and disease in an understandable way, as well as being enabled to participate in medical decisions. Children can and should therefore be involved when decisions are made about their healthcare. Further, studies have shown that there is a health-promoting value when children are actively participating in their own care [10].

When treating children, they almost always come with one or both their parents, meaning that there are people other than the actual patient and the doctor involved in the dialogue. According to Johansson [11], parents are very sensitive to how they and their children are treated in a hospital situation. Further, children are in an exposed situation as both the medical personnel and the parents are in a power position where they know a lot more than the child. To allow the child to participate in its own care, it is important that everything is explained in a way so that they can understand what is happening [11]. It can be hard for parents to let their children speak for themselves, as they tend to see themselves as experts on their children's needs [12].

There are different situations where children want to be included or not. To know whether the child want to be included, the parents or medical personnel must look at the child's needs and try to get a joint perspective on the situation with the child [4]. It is important to keep in mind that there is a difference between the child's own perspective and adults' perspective on what is best for the child [12].

2.2 The doctor-parent-child triad in the physical healthcare setting

A special communicational setting is created between the doctor, parent and child when a child is the patient, called the doctor-parent-child triad. According to a study made by Wassmer et al. [13] the children only contributed to 4% of the conversation during healthcare visits. One important factor regarding how much the child will contribute is how the adults are acting. They can have a supportive behaviour where they encourage the child to take part of the medical interview and where the medical personnel ask questions directly to the child and the parent take a step back to let the child answer by him/herself [8]. They can also have a non-supportive behaviour where the medical personnel direct the questions to the parent and the parent ignore the child's inputs and even interrupts if a question is directed to the child [8]. According to Tates et al. [8], the most common behaviour of the adults is non-supportive, but the medical personnel encourage the child to participate in the conversation more than the parents. Most often, the adults act more supportively and the child is included more when talking about medical history compared to when talking about the diagnosis and the treatment [8,14]. This is since during the physical examination the medical personnel can more easily address the child and get a direct response from him or her instead of the parent and the medical personnel have more control during this part of the interview [15].

Sometimes the reason why the adults stop acting supportive is clear, the child refuses to answer any questions, turns away or starts crying when addressed [8]. Still, the child is often left out of the conversation since the parent wants to keep in control of the situation and the parents are therefore mostly responsible for the children participating as little as they do. The medical personnel are aware of the importance of directly addressing the children but the parents feel like they are the ones who are responsible and this can result in a mismatch [15]. Not surprisingly, the more supportive the adults are, the more active the children are [8] and even though the children are not interacting much, when they do, they show that they can talk about aspects regarding the sickness relevant to the visit. They can manage their own learning process and give appropriate information to the healthcare staff [16]. According to Nova et al. [16], children as young as two years old can participate in the medical interview and in discussions about their health and treatment. Another difference between parents' and medical personnel's acting in healthcare situations

is that parents keep the same turn-taking pattern with their children even when they get older whereas medical personnel adjust more to the child's age [15].

Another aspect of the conversation is whether the behaviour is instrumental or affective. The patient has both the cognitive need to be informed, which can be connected to the instrumental, task-related behaviour, and the emotional need to be taken seriously which can be connected to the affective, socio-emotional behaviour. A balance between these two factors will result in a good and effective communication. There has been an assumption about a joking relationship (affective behaviour) between the medical personnel and the child but the most common behaviour is instrumental, which will increase even more for older children. Some behaviour is still affective though, especially in the medical history segment, where the healthcare staff is joking and laughing with the child to relieve tension. [14]

After repeated visits to the doctor, it is likely that the child creates a mental model of the situation and an image of him/herself as a patient. If the child is then ignored or not taken seriously too many times, the mental model may be that the child's task is to be quiet and passive and that he or she will never be heard or understood. [16]

2.3 Practical aspects regarding how to involve children in healthcare

To be able to involve the child in its care and avoid the obstacles mentioned in earlier sections, some practical aspects will be described.

What is said and how it is said is very important to children. If they do not understand they might become uninterested and feel unsafe [17,12]. It is also important to really listen to what they have to say and to let the conversation take the time the child needs, otherwise they will lose their trust in the doctor [17,12]. The child needs to feel seen [11]. It is important to take the child's age and cognitive development into consideration [14].

To achieve this, it is important to adapt the communication to a level that suits the child's level of maturity. Johansson [11] suggests that short sentences with familiar words are easier for children to understand and that they answer better if they are asked one, concrete question at a time. Further, she states that it is important to ask again rather than trying to guess what the child meant and to avoid yes- or no-questions since they make it hard to know whether the child understood the question or not. It can also be helpful to try to use open-ended questions to allow the child to express itself [12]. Guided participation where the parents help guiding their children through a conversation or story is one method that can encourage the child to participate [18].

16

It is also important that the doctor listens to the parent's concerns and explains why it is important to involve the child, otherwise the parent could be dissatisfied leading to bad communication [15]. However, the parents usually know their child best and the doctor should use that expertise as well [8].

2.4 Key take away points from the literature study

The background theory is based on a thorough literature study made in the beginning of this project. The purpose of the literature study was to get a deeper knowledge about how the healthcare situation for children looks today, what problems and obstacles can occur, to what extent Min Doktor's service should feel like a physical visit to a primary care centre and how children are and should be treated in healthcare settings. From this theory, a number of important key points were extracted. These key points were considered and used throughout the whole innovation process.

- A child's opinion about its own care should always be heard according to the Convention on Rights of the Child [5].
- There is a health-promoting value when children are actively participating in their own care [8].
- To allow the child to participate in its own care, it is important that everything is explained in a way so that they can understand what is happening [11].
- The child needs to feel seen [11].
- It is important to take the child's age and cognitive development into consideration and adapt the communication to a level that suits the child's level of maturity [11].
- Guided participation where the parents help guiding their children through a conversation or story is one method that can encourage the child to participate [18].
- It is important that the doctor listens to the parent's concerns and explains why it is important to involve the child [15].
- Children as young as 2 years old can participate in the medical interview and in discussions about their health and treatment [16].
- The parents usually know their child best and the doctor should use that expertise [8].
- The parent and the medical personnel can have either a supportive or a non-supportive behaviour towards the child and the most common behaviour is non-supportive [8].
- It can be hard for parents to let their children speak for themselves, as they see themselves as experts on their children's needs [12]. The parents want

to be in control of the situation and are therefore mostly responsible for the children participating as little as they do [15].

- The more supportive the adults are, the more active the children are [8].

3 Method

This chapter presents the general method used in the project at an overview level. The details about methods used and the results can be found in chapter 4.

3.1 Design thinking

The purpose of design thinking is solving problems through design. The belief is that the result from a design process will prove a better solution to the problem than the one already existing, or if a solution does not exist – find an entirely new one. The scientific method of problem solving includes a process of analysis to find a single solution to a highly-defined problem. In contrast to that, design thinking is a process including analytical, synthetic, divergent and convergent thinking to create a big number of possible solutions and then narrow these down to one "best fit" solution. In figure 4, the design thinking process is illustrated with the lines showing the many different ways and turns the process can take. [19]
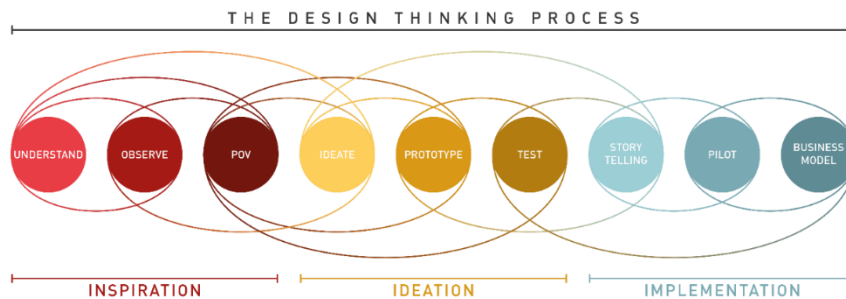
Figure 4 The design thinking process. Picture retrieved from interactiondesign.org [19].

3.2 The design process practiced in the project

The design thinking process can be performed in a number of different ways with a number of different methods to reach the same end point [19]. In this project, the

design process was based on a flow described in the book *Interaktionsdesign och UX* by Mattias Arvola [20]. In this book, three phases, closely related to the design thinking process, are described, *the concept phase* [20, pp. 39-102], *the elaboration phase* [20, pp. 103-140] and *the detailing phase* [20, pp. 141-154]. The process together with the literature study is illustrated in figure 5. Here, the concept phase relates to the inspiration part in figure 4 and the elaboration phase to the ideation part. The detailing phase would have related to the implementation part but is not included in figure 5 and the reason for this is described below in the section regarding that phase.
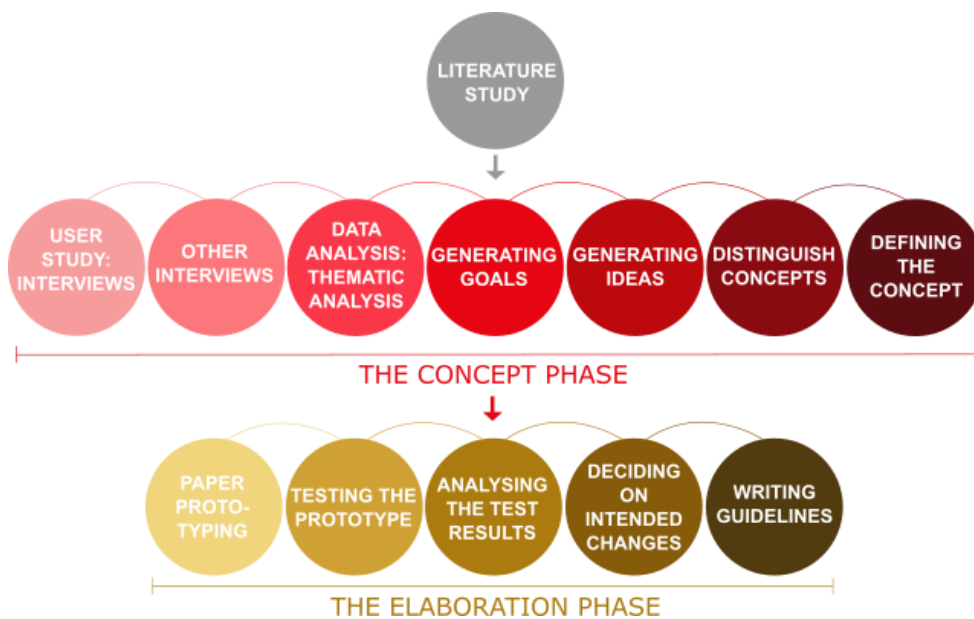
Figure 5 The design process practiced in the project, with its different phases and parts.

3.2.1 The concept phase

The purpose of the concept phase is to understand the problem and users, to figure out what needs to be produced and why [20, p. 7], see figure 1. In the first part of the concept phase, user studies are executed to define what, how and why people know, feel and do things as of today [20, p. 76].

In this project, the user studies performed were qualitative interviews with nine parents having one or more children in the ages 1-5. To get further insight in how healthcare works today, interviews were also conducted with a nurse working at a primary care centre, the medically responsible at Min Doktor and a pedagogue working at Lund University Hospital. The interviews are described further in section

4.2 Interviews. To understand the data collected during all interviews, a qualitative data analysis was performed using thematic analysis and an affinity diagram, see section *4.3 Data analysis*.

The same things as in the first part of the concept phase is to be defined in the second part, but with focus on how the service should be in the future when the product or service is ready to be used [20, p. 76]. Firstly, a number of goals are defined based on the user's and the stakeholder's needs [20, pp. 76-81]. Then, as many ideas as possible are generated and concept proposals developed [19,20].

In this project, the goals were found with a modified version of the ideation method called brainstorming (see *4.4 Generating goals*) and were based on both the insights from the data analysis and the key takeaway points that can be found in section *2.4 Key takeaway points*. The ideation was made with several brainstorming sessions based on the different goals that had been defined, see *4.5 Generating ideas*. The ideas were then sorted in a simple form of an affinity diagram where some different concepts could be distinguished and finally one concept was chosen and described in detail, see *4.6 Distinguish concepts* and *4.7 Defining the concept*.

3.2.2 **The elaboration phase**

In the elaboration phase the designers have an idea of what should be developed but do not know in detail what the design will be like [20, pp. 103-104], see figure 5. At this stage, the functions and the content will be defined and structured and the way a user will interact with the product or service and the interface should be decided [20, pp. 104-130]. This will end up in one or more simple prototypes that will be tested and analysed to refine the concept [20, pp. 131-137].

In this project, a paper prototype representing one possible solution to the concept was created, see *5.1 Prototyping*. It was then tested during five testing sessions with users and inspected by the stakeholders and the supervisor, see *5.2 Testing the prototype*. The test results were analysed, see *5.3 Analysing the test results*, and a number of intended changes to the prototype were decided, see *5.4 Deciding on intended changes to the prototype*. Finally, guidelines on what to think about when designing the new service were written to Min Doktor based on the results from all parts of the project, see *5.5 Creating guidelines* and *5.6 Guidelines*.

3.2.3 **The detailing phase**

The purpose of the detailing phase is to produce an interactive computer based prototype and define the design specifications [20, p. 141]. This phase was not considered in this project and hence will not be further described.

3.3 User-centred design

In this project, all parts performed were based on *User-centred design (UCD)*. This term describes a design process where the end-users influence how the design evolves. They can be a part of the development and the design on many different levels. On the lowest level, the designers involve the users in specific parts of the process by asking them about their needs. On the highest level, the users are involved as partners with the designers throughout the whole design process. In this project they were involved on a fairly low level, participating only in the interviews and the prototype testing, as described. [21]

An interactive product or service is not valuable unless it is used. If it is not useful it has no value. This is why user-centred design is important, to ensure the product or service is meaningful to the actual users. Every phase of the design process can be seen as an iteration process with five steps:

- Plan the process with the user in centre
- Understand and specify the usage situation
- Specify the usage and business requirements
- Produce design solutions
- Evaluate against the requirements

When the last step has been passed, the process can iterate back to one of the earlier steps if the requirements are not met. [20, pp. 9-10]

Norman [22] has suggested six principles to follow when working with user-centred design:

"**Discoverability.** It is possible to determine what actions are possible and the current state of the device.

Feedback. There is full and continuous information about the results of actions and the current state of the product or service. After an action has been executed, it is easy to determine the new state.

Conceptual model. The design projects all the information needed to create a good conceptual model of the system, leading to understanding and a feeling of control. The conceptual model enhances both discoverability and evaluation of results.

Affordances. The proper affordances exist to make the desired actions possible.

Signifiers. Effective use of signifiers ensures discoverability and that the feedback is well communicated and intelligible.

Mappings. The relationship between controls and their actions follows the principles of good mapping, enhanced as much as possible through spatial layout and temporal contiguity."

These principles were considered throughout the whole innovation process, especially in the prototyping parts, and could be used even though the focus was not on the design of the interface.

4 The concept phase

This section presents the detailed methods used and the results obtained throughout the concept phase of the design process.

4.1 Informed consent

When conducting any kind of user study, the participants should be informed about the purpose of the study, what is expected from them, how the data will be used and their right to withdraw at any time during the study. This information, approved by the participant, is called an informed consent and can be either written or verbal. [23]

In this project, three different informed consents were used; in the interviews with the parents, in the interviews with the medical personnel and when testing the prototype with the parents. They were all written and based on the template provided by University of California Irvine Office of Research (UCI Office of Research) [24] but with some of the headings removed to better fit the level of the studies conducted. The informed consents can be found in Appendix B.

4.2 Interviews

The first step of the design process was to conduct user studies and other interviews to learn how the healthcare situation for children works today (see figure 5).

Interviews are a way of hearing people's own stories and learn about their own thoughts and feelings [25,26]. There are two main types of interview strategies; quantitative and qualitative interviews. Quantitative interviews focus on closed questions with fixed answers to choose from which make them easy to interpret and analyse, whereas qualitative interviews consist of open-ended questions where the interviewees describe their experiences in their own words which might give a deeper understanding [25,26]. To the interviewee, qualitative interviews often feel like just having a conversation [25]. Because of that, these interviews allow the researcher to get a better insight in the interviewee's life since they often feel more comfortable and are allowed to describe in their own words [25]. However,

qualitative interviews may become biased as it in some sense depend on two people interacting socially [25]. The researcher might lead the interviewee in a certain direction, or the interviewee might feel that there is an expected outcome [25]. Another limitation is that the spontaneous and varying answers make the data harder to interpret and generalise [26]. Despite of that, qualitative interviews were considered the most appropriate approach in this project since, in the early stages of the project, there was a need to understand how the different parties in a healthcare situation experience the situation as it works today.

There are several different kinds of qualitative interviews, where semi-structured interviews is the most common method. They are built around a list of question, but also allow the researcher to ask further questions based on what direction the interview is taking [25]. Furthermore, the researcher can clarify or ask follow-up questions if the interviewee did not understand the question, which gives the researcher more flexibility [26]. The downside of semi-structured interviews is that the outcome will differ from one interview to the next, making the data harder to analyse [26]. Structured interviews, for example surveys, do not allow for the researcher to go outside the predefined questions but makes the data analysis part quicker and easier [25]. Unstructured interviews are built around themes rather than specific questions and is often hard to analyse afterwards [25]. In this project, only semi-structured interviews were used as that method helps the researcher to stick to the topic but allows for the interviewees not to feel limited in their answers.

4.2.1 Data management

Another important aspect to consider is how to collect and manage the data from the interviews. One common way is verbatim transcription which can be described as the word-for-word reproduction of verbal data, from audio or video recordings, to written words. This is however not always the most suitable method when considering the cost of both time and resource consumptions, which both are significant factors. It has been shown that written field notes taken during or immediately after an interview can be superior to verbatim transcription and the need for the latter should therefore always be questioned. Nevertheless, audio recordings of the interviews should be considered for a number of reasons. The recording can help the researchers analysing the nuances of the conversation such as voice, tone and specific language and also assist in filling in blank spaces in the field notes. Hence, a combination of field notes and audio recordings were used to collect the data in this project. [27]

4.2.2 User study with parents

To get an understanding of how the future users experience primary healthcare today and what their view is on online healthcare for children, nine interviews were

performed with parents who had one or more children between 1-5 years old. Five mothers and four fathers were interviewed. Some participants also had children outside the age group in focus. The interviewees were found by posting at Min Doktor's Facebook-page. The informed consent for these interviews can be found in appendix B.1. The parents worked as proxy for their children, meaning that they talked in the child's place [28]. Some studies have shown that children's and parents' views might disagree, especially in subjective matters, whereas other studies show that a parent is often a good proxy for the child in medical surveys since they do know a lot about their child's health and that the child and the parent often agree [28]. However, it is important to consider.

4.2.2.1 Preparing the interviews

Firstly, the areas of interest for the interview were discussed and decided, with a few topics in focus. Then an interview guide was created, containing several open-ended questions about these areas. The questions were carefully formulated to make sure they were as clear as possible without leading the participant in a specific direction. According to Doody and Noonan [25] it is of utmost importance to carefully plan the interviews, since it will help the interviewees answer the questions properly and help the project members to keep the interview focused on the right subject.

When creating the interview guide, two main areas were in focus. The first part was about how the parents seek care for their children today, who they turn to, when they seek care, if they prepare their children in any way, how they get treated at the hospital, how the doctor/medical personnel involve the child and what their and their children's thoughts and feelings about the different parts are. The participants were asked to try and recall a specific visit at a care unit, if possible, since this is a common method to help the interviewee remembering details [29]. This also made them remember details about other visits. The second part of the interview was about Min Doktor, whether they had used it or not, how they felt or would feel about seeking care online both for themselves and for their children, what possibilities they saw in the service and what kind of problems they thought that they would encounter. A few questions were also asked about their children's digital competence, if they used smartphones, tablets or computers today. The detailed interview guide can be found in appendix C.

To make sure all questions were easy to understand and answer and that the interview did not take too long, two pilot interviews were performed before the first real interview with a parent. The interviewees were one man and one woman, both with children in ages 1-5 and both working at Min Doktor. To further improve the interviews, the questions were revised and discussed after each interview, which is important when being a novice [29]. All interviews were performed either at the interviewee's house or workplace or at a neutral place such as a café, whichever suited the interviewee best. This is common practise to make the interviewee feel as comfortable as possible [29].

4.2.2.2 Conducting the interviews

Each interview started with the interviewee signing the informed consent form. The aim of the interview was then explained, as well as the roles of the project members. One of the project members was always interviewing while the other was taking field notes, to allow the interviewer to fully focus on asking questions. To make the results consistent, the same person always had the same role during all of the interviews. All interviewees who agreed to be recorded were also recorded. Further, the interviewee was made sure that it would be anonymous and that the aim of the study was not to judge anyone, but simply to get a better understanding in general, which is important to reduce the risk of biased answers [25].

During the interview the interviewer kept a neutral position, careful not to put any judgement into questions and answers, and made sure to keep all focus on the interviewee. The guide was used as support rather than a schedule, the interviewee's answers were leading the direction of the interview [26]. A focus during the interviews was to try to understand why the interviewee did or thought about things in a certain way, but without asking "Why?" straight out, since this might feel slightly offensive [25]. This was partly done using probing questions such as "Can you develop your thoughts further?", "What did you mean when you said…?" and "Is there anything more to it?" [25,26].

After the interviews, the notes were rewritten and clarified while still fresh in mind. Also, the most important impressions from the interview were written down [26].

4.2.3 Other interviews

To get a wider view on how different parties experience the healthcare today, a few other persons were interviewed too. Firstly, a nurse from a primary care unit was interviewed to learn how medical personnel act when the patient is a child, if they have any special tricks to involve them and how the interaction is between parent, child and medical personnel. Secondly, the medically responsible at Min Doktor was interviewed to learn more about the service, how it works both from a doctor's and a patient's perspective and a little bit about what he thought about the parents' concerns. Lastly, a pedagogue from the playing therapy department at Lund University Hospital was interviewed to learn more about children in hospital environments in general and how they work to prepare and educate children about their health.

4.3 Data analysis

To extract information from the interviews, a structured way of analysing the data is needed (see figure 5). Since the interviews were of qualitative nature, it was

decided to do the data analysis in a qualitative way as well. The purpose of a qualitative analysis is to make sense of the data and discover what it reveals [30]. According to the National Institute for Health Research [31] there are three broad levels of analysis that can be used: content analysis, thematic analysis and grounded theory and since thematic analysis suits novices [32] it was chosen for this project.

Braun and Clarke identify six steps of thematic analysis [23]:

1. Familiarising with the data.
   With this step they suggest to read and re-read the data and making notes when doing so.
2. Generating initial codes.
   The entire dataset should be coded and by codes they mean labels that "identify a feature of the data (...) that appears interesting to the analyst".
3. Searching for themes.
   In this step the codes (and related data) generated will be gathered into an initial group of themes for further analysis.
4. Reviewing themes.
   The initial themes are reviewed to check whether they relate to the data and then a thematic "map" of the analysis is created.
5. Defining and naming the themes.
6. Producing the report.

Another rather similar method to organise and understand the data is described in *Interaktionsdesign och UX* by *Mattias Arvola*. It is called affinity diagram and Arvola identifies seven steps in this process [20, pp. 52-54]:

1. All project members read through the data, marking important parts.
2. Every person reads through his or her markings and write them down on sticky notes. Every note is coded with the source of the marking.
3. All notes are structured and fixed on the wall.
4. The notes are then moved and categorised into different groups by identifying observations relating to each other. This will continue until no more note needs to be moved.
5. The project members discuss the meaning of the groups, what binds the notes together.
6. The groups or categories are named and can be grouped together in themes or further split into subcategories.
7. Lines can be drawn between themes, categories and subcategories to get an overview of the data.

4.3.1 Thematic analysis and affinity diagram

In this project a mix of thematic analysis and affinity diagram was used to analyse the data. The project members read through all of the summaries from the parent

user study together, making notes in the margins of important comments. If any data was unclear or ambiguous, the audio recording of that interview was used to clarify to make sure the project members did not draw any wrong conclusions. All the margin notes were then read again and coded onto sticky notes together with their source and, if relevant, the age of the child mentioned. To further clarify where the data came from, colour coding was used. Four different kinds of information were distinguished, whether the data was about the child's thoughts and feelings or not and whether it was about Min Doktor or not.

Since the project members were novices regarding this type of method, everything was done together to avoid inconsistency in the coding. When all the coding was done, the sticky notes were fixed onto the wall, one at a time, trying to fit each new note to one of the already existing groups of notes on the wall or otherwise creating a new group. The different groups of notes were continuously discussed, changed and moved around to put closely related groups nearby each other and to make sure that the groups were in chronological order. When all notes were fixed onto the wall and no more changes needed to be done, the themes, categories and subcategories were named. In figure 6, a picture illustrating what the affinity diagram looked like

Figure 6 The final affinity diagram from the data analysis of the interview data to illustrate what the diagram looked like.

can be seen. Here follows the themes and categories, for a full description including the subcategories, see appendix D.

- Before healthcare visits
  - 1177

- o Booking a visit
- o Willingness to seek care for children
- o Practical aspects
- o Preparing the child
- o Other
- During the healthcare visit
  - o The visit
  - o The medical personnel
- Involvement of the child in healthcare visits
  - o How it is experienced today
  - o The child's perspective
  - o The parent's perspective
- Children in general
  - o The child's feelings during the healthcare visit
  - o Children's competence
  - o Children's digital competence
- Opinions about Min Doktor
- General tips

4.3.2 Insights

All of the notes on the wall were read through again and a summary of all the insights from each of the different categories were written down for further understanding and easier interpretation of the findings.

The following sections describe a summary of the most important insights from each category. For a full description of all insights, see appendix D.

4.3.2.1 Before healthcare visits

Most parents use 1177 to get advice on their children's medical condition. They find it comforting to get advice on whether they should visit a primary care unit or not, as well as getting advice on how to help their children from home and avoid unnecessary visits to the emergency ward, especially in weekends.

When they need to book a visit, they find it hard and complicated. One parent even said that he/she had a sense that they did not want to schedule a visit and another one said that whether an appointment is booked or not depends on communicative skills. Especially, most parents find it annoying that they have to call at a certain time of the day. Many parents also think that availability is the main problem and feel like their children always become ill during evenings and weekends. However, most parents do not hesitate to seek care for their children.

Several parents mentioned that they want to avoid to go to the emergency ward with their children because of the inconvenience of sitting in the waiting room with other

sick children. They prefer not to have to go to the primary care unit either, since it is inconvenient to leave home with sick children in general. They want quick help.

Most parents think that it is important to prepare their children prior to a visit at the primary care unit. They try to de-dramatize it and make it sound like something cool. Some parents read a book to their children about a boy visiting the doctor. The parents who do not prepare their children prior to a healthcare visit mainly think that it is unnecessary to make it more dramatic and make the children unnecessarily worried.

4.3.2.2 During healthcare visits

Some parents are happy with healthcare in general and some express that they are satisfied with their own primary care unit in particular because it is easy to get appointments and they are treated well by the medical personnel. Others feel like they are a burden to the healthcare system when they seek care and that it is hard to get information and follow up.

Most parents feel seen by the medical personnel during the visit and feel like their worries are taken seriously. In general, they also think that the medical personnel are good at adapting to treating children and involving them in the visit. However, some parents feel like the medical personnel do not take their knowledge and worries seriously, especially when the medical personnel are stressed out or tired.

4.3.2.3 Involvement of the child in healthcare visits

The medical personnel involve the child by charming and comforting the child, as well as showing medical instruments and explain what will happen. One parent feels like all important questions are directed to him/her rather than the child itself. Another parent encourages its child to speak for itself by reminding it what has happened and let him/her tell the doctor in his/her own words. Some parents find it very important that the child is involved in the visit since it makes him/her feel more comfortable and safe.

Children mostly appreciate when they are involved, it makes them calm. Several parents believe that their children would appreciate being involved in the filling out of the guides when using Min Doktor. One parent think that it would be necessary to be able to take a break if the children should be involved. However, in general, the parents would have filled out the guides by themselves because it is quicker and they feel like they know better than their children how they are. They would probably have posed questions to the child before they sat down by the computer rather than involving them during the filling out of the guides.

4.3.2.4 Children in general

Children mostly think that it is fun and exciting to visit a primary care unit and are proud and want to talk about it afterwards. They are not afraid of the medical

personnel and are happy to help during the visit. Some children are however scared of hospitals, and in particular, most children are afraid that something will hurt.

Most children can answer specific, closed-ended questions and they can only describe their current condition. They have a hard time sitting still unless something is catching their attention. They dislike when unexpected things occur. Some children are more likely to answer questions from the medical personnel than from their parents since they know that it is more serious and they want to behave in front of a new person.

Parents find it hard to rate the severity of their children's diseases and the child cannot relate how sick they are to prior illness.

Some parents think that their children would understand that there is a doctor "on the other side of the screen" when using Min Doktor. Others think that they are too young to understand and that they would have waited for the "real" visit if they tried to explain how the service works to them. Most children are familiar with smartphones and tablets and learn quickly how to use them, but some parents restrict the use.

4.3.2.5 Opinions about Min Doktor

Most parents would consider using Min Doktor both for themselves and for their children. The main advantages they see are that it is possible to do other things while waiting for replies, that there is no need to take time off from work and that they do not have to schedule an appointment or wait in telephone queues. It makes healthcare more available and comfortable. However, some parents are worried since they think that in physical care visits, the medical personnel can see things that they cannot, especially regarding the child's general condition. Further, they would mostly seek care for their children regarding simple conditions where it is possible to collect data such as photos, temperatures etc. that clearly describe the symptoms.

4.3.2.6 General tips

Most parents mention that it is very important for the child that they get a gift after visiting the doctor. Another parent thinks that filming their child would help the doctor judge its general condition when seeking care online. It is also important to consider that the child might not be present when the parent seeks care online, since, depending on severity, the child might be at the day care centre.

4.4 Generating goals

The next step of the design process was to generate goals for the future product (see figure 5). According to Arvola [20, p. 76], there are three different types of goals

that can be formulated during a design process: effect goals, product goals and result goals.

The effect goals describe what effects the final product will create for the users and they will be connected to the purpose of the project, the reason why the project was started. They should be specific, measurable, accepted and realisable. The effect goals also have a subcategory called affordances which are qualities that the users will experience when using the product. They can be practical, social, aesthetic, organisational, technical or ethic. The result goals are based on the effect goals and tell what will be achieved when the project is finished. That includes what types of activities that should be performed, when things will be done, what will be delivered and to what cost. These should be realistic, distinct and measurable. [20, pp. 76-80]

The product goals describe more specific features of the product compared to the effect goals and should be aligned with the product vision [33]. They should also be easy to understand, achievable, actionable and measurable [33]. This kind of goals are often defined after a concept has been chosen, however, some critical criterions about the product could be defined already at this early stage in the process if they are well motivated [20, pp. 80-81].

Result goals define what should be achieved when the project is finished [20, p. 80]. In the innovation process of this project, no new product but rather a concept of an improved product would be the result. The result goals were hence defined as slightly modified parts of the purpose of this project which can be found in the *Introduction* chapter (chapter 1):

- The concept of the service should be evolved to suit the new needs occurring when the patient is a child who does not seek care for itself.
- The concept of the service should be designed to make all users, both parents and children, enjoy seeking care through it and want to return next time they need care.

Since these result goals were extracted from the purpose which was defined in the beginning of the project, the focus when generating goals was on effect goals (including affordances) and product goals.

4.4.1 Ideation

To find the goals, some kind of ideation needed to be done. Ideation is defined as the process of generating, developing and communicating new ideas [34]. A method called brainstorming is often set as the key tool for ideation and it includes a few rules that will enhance the ideation if followed. Here follows some of them:

- There are no bad ideas, the purpose is to create as many new ideas as possible, not to judge them.
- Unrelated ideas should still be written down, but saved for later discussions.

- Volume is important which means that time should not be wasted on examining any particular idea in depth.
- No distractions should disturb or interrupt the ideation, phones should be turned off and doors locked.
- Ideas should be specific if possible, containing as much data as possible to make it useful. [34]

The brainstorming process is then performed as follows: The group starts with a question or problem that needs to be solved. The question should be determinate to facilitate the idea generation but not too determinate since that could limit the creativity. Every participant will, during 10 minutes, write down as many ideas as he or she can come up with. When the time is out, these ideas are read out loud to the group and everyone can write down more ideas that they think of when hearing the other participant's ideas. [20, pp. 94-95]

The goals for this project had to be truly based on the insights from the user studies and the key takeaway points presented in the background chapter of the report. Not all of the goals from the ideation had to be good but they should be somewhat correct and connected to real data. Because of this, the ideation performed to find the goals became a modified version of brainstorming to attempt to continue to stay close to the data.

4.4.2 Brainstorming session

The seven pages with insights from the user study were printed out and the project members got one copy each. Both members read through their copy separately and wrote down ideas of goals in the margins while reading. Then the copies were switched and the members did the same procedure again but now reading the ideas from the other member as well to create even more ideas, all the time with the key takeaway points in mind. Up until this stage, no division was made between different types of goals. Both effect goals and product goals were allowed to be defined to not limit the creativity.

4.4.3 Functional analysis

When all goals were assembled, they were organised and sorted in a way inspired by the functional analysis described by Arvola [20, pp. 95-96]. A functional analysis is a way to organise which functional requirements should be connected to the finished product and in Arvola's method, the functions are marked with either Necessary (N), Desirable (D), Unnecessary (U) or Unnecessary but Fun (UF). In this project, the method was used to organise goals instead of functions. The project members marked all of the goals individually with either N, D, U or UF, and the markings were then compared and discussed until the project members agreed about

the chosen marking. Some goals got two markings since not one specific marking could be chosen. After that, the goals were sorted into fifteen different categories primarily based on type of goal (effect goals, affordances and product goals) and secondarily based on the content or theme of the goal. In the following sections, the most important goals together with their markings are presented. Which goals to present were based partly on their marking and partly on how much they related to the purpose of the project. For the whole list of goals, see appendix E.

4.4.4 Effect goals

This section presents the effect goals. The header of each part of the table is the category presented, the letter in the left column is the marking from the functional analysis and the text to the right is the goal.

	PARENTS WILLINGNESS TO SEEK CARE AND RETURN TO MIN DOKTOR
N	Parents feel encouraged to seek care independent of severity (unless too severe)
N	Parents feel that it was worthwhile to seek care independent of whether treatment is needed or not
N	No one feels like a burden to Min Doktor
D	Parents feel like they are taken seriously independent of severity without getting even more worried
D	All parents should feel respected regardless of how they fill out the guides (with or without their child)
	PARENTS' UNDERSTANDING ABOUT INVOLVEMENT
N	All parents understand why it is important and feel encouraged to include their children in the whole process
N	All parents understand that the involvement of the child will not affect the care process
	CHILDREN'S UNDERSTANDING AND EXPERIENCE
N	Children understand that they seek care for them
D	Children feel prepared for the next step during the whole process
D/UF	Children feel like they get to show stuff themselves and help the doctor
	PARENTS' FEELINGS ABOUT THE CARE SEEKING PROCESS
N	Parents feel like they can easily keep track of what has happened and what will happen next during the whole process
N	Parents feel like it is possible to cover all information needed in the guides
	PARENTS' EXPERIENCES OF THE VISIT

D	Parents feel like their knowledge about their children is taken seriously

PARENTS' EXPERIENCES OF THE SERVICE	
D	Parents feel like the doctor knows how their child's general condition is

GENERAL BENEFITS	
D	Raise children's awareness of their own health

4.4.4.1 Affordances

This table presents the affordances, which, as mentioned, are a part of the effect goals. In the left columns, the affordances for all users are listed, and in the right columns, specific affordances for children are listed. The letters mark, just like in the previous table, the marking from the functional analysis.

FOR ALL		**FOR CHILDREN**	
N	Comforting	N/D	Fun but still serious
N	Easy to use and understand	D	De-dramatizing
N	Professional		
N	Safe		
N	Take into account that all children are different		
D	Easy, effortless and not time consuming to involve child		

4.4.5 **Product goals**

This section presents the product goals. They are presented the same way as the effect goals; the header of each part of the table is the category presented, the letter in the left column is the marking from the functional analysis and the text to the right is the goal.

AVAILABILITY	
N	Usable both from smartphones, tablets and computers
N	Possible to fill out in pieces
D	Always available

HELPING PARENTS	
N	Clear to parents that Min Doktor will advise quickly when not to seek care through them (emergency)

UF	Advise parents on how to explain things to their children

PARENTS' INVOLVEMENT OF THE CHILD

N	Allow for different levels of involvement of the child

THE CHILD CENTERED PART OF THE SERVICE

N	Children can be involved without using the devices themselves

CHILDREN'S FEELINGS AND EXPERIENCES

N	Catch children's interest
D	Rewarding for children

GENERAL

N	Collect as much "hard data" as possible
N	Questions are easy to answer

4.5 Generating ideas

When all goals were defined a new ideation part of the project begun (see figure 5). The purpose of this ideation was to create as many ideas as possible about everything from small function details to whole concepts. This time, the ideation was based on the goals. To make it easy to stay close to the goals, all goals were printed and the copy was cut into pieces with one goal category with its related goals on each piece of paper. One brainstorming session was held for each category to make the problem enough determinate. This resulted in fifteen sessions in total that all had the same setup but with different time spans depending on the number of goals in the category. Firstly, as many ideas as possible were written down individually on sticky notes during 10-15 minutes. Then the ideas were read out loud and fixed on a large paper sheet. Lastly, during 5-10 minutes, more ideas were written down individually inspired from the first ideas and fixed on the paper sheet continuously.

To get a better overview of all ideas they were all fixed on the wall, sorted in a simple form of affinity diagram (see figure 7). There were seven categories horizontally aligned: The homepage, Choosing guide, My pages/Healthbook, The case outside the guide, General and Tips to Min Doktor. Each horizontal category, except Tips to Min Doktor, was further divided into two vertical categories: Desirable and Unnecessary. The project members decided together which category each idea would fit into.

Figure 7 A picture of the affinity diagram created after the ideation. This is to illustrate what it looked like, the results can be found in the following sections.

4.6 Distinguish concepts

The next step was to find and choose which concepts to work further with (see figure 5), based on the desirable-parts of the categories. A concept is a vision that represents an overview of the future product [20, p. 7]. After the ideation and the sorting, it was clear that four different concepts could be distinguished;

- The whole care seeking process is inspired by gamification and allows the child to go through the process as if it was a game, answering the questions by pushing different buttons with relevant metaphors. The parent would answer more questions after the game and verify the child's answers.
- The guides are like fairy-tales with a lot of text for the parent to read out loud to the child to catch the child's interest and make it clear for the child what is going on.
- The care seeking process with filling out the guides is mainly done by the parent. There are however elements in the service inviting the child to participate too and helping the child to understand what is going on.
- In excess of the child friendly guides, there is a part of the service called *Children's room* which is meant to educate children about health and healthcare.

To decide what concepts to keep working with, the project members related back to the goals created. The concept chosen was the third one, where the parent fills out the guides and there are elements inviting the parent to involve the child. This concept is in line with more goals than the other concepts, for example; "Allow for different levels of involvement of the child", "Children can be involved without using the device themselves", "Catch children's interest" and "All parents feel encouraged to include their child". It also seemed to be the concept that best fulfilled the affordances such as "Professional", "Take into account that all children are different" and "Fun but still serious for the child". To further inspire the parent to let their children learn more about their health and getting used to Min Doktor's service, it was decided to work more on the *Children's room* as well.

The decision to not continue with either of the other concepts was based on two aspects. The first one is connected to user centred design where every new design solution should be evaluated against the requirements (see section *3.3*). When considering the first two concepts, these did not match the goals to the same extent as a combination of the other two. They would probably not feel as professional, serious and safe and it would be more time consuming to involve the child. The other aspect was that it seemed wiser to focus all resources on one concept and improve it as much as possible instead of splitting the resources on concepts that likely would not be a part of the final result anyway.

4.7 Defining the concept

After choosing which concepts to work with, they were defined in further detail, once again based on the goals (see figure 5). The future implementation of the concept strives to fulfil as many of the goals as possible. As mentioned, the parents are in charge when filling out the guide to allow them to fill out the guides without their children if they prefer and to make them feel safe. However, since several goals and affordances are about involving the children and making it easy to involve them in the process, the service should invite the child and remind the parents to involve their children. This should be done by creating child-friendly elements such as animated figures that are present throughout the guides. The figures should invite the child to participate and make the service and process understandable to children.

The children's room should further invite the children to the service and contain educational games, puzzles and information to de-dramatize the care visit and make the service fun but still serious, accordingly with the affordances. It should include different kinds of activities to make sure that all children will find something that they like. Further, it should contain tools to prepare the child for the different steps of the process such as sample taking.

5 The elaboration phase

This section presents the detailed methods used and the results obtained throughout the elaboration phase of the design process

5.1 Prototyping

The first step of the elaboration phase was to create a prototype (see figure 5). A prototype is a draft of either the whole future product or service, or a determinate part of it. It represents a design concept and let other people, for example future users, take part of, test and evaluate the concept. The reason to work with prototypes before building the actual product is that it is more or less impossible to know exactly which requirements the future product will have before it exists. Prototyping is a relatively cheap and fast method to avoid building the whole product or service just to realise it was all wrong or did not work as expected. Prototyping was used as a tool to create one possible implementation of the concept created in the project. The prototype was primarily used to evaluate the concept. [20, pp. 103-104]

Prototypes can be either a simple paper based prototype with a low level of details (Lo-Fi) or interactive computer based prototype with a high level of details (Hi-Fi). The first prototype made in a design process is often a paper prototype which will represent the screen (if the service, as in this case, is a web page) with static screen elements. The user testing the prototype will point their fingers on the paper screen and the test leader or designer will act as the computer and lay down new screen images in front of the user depending on what button they press. The paper prototype should not be perfect and it should be obvious that the designers have not put too much effort in creating it. It is then easier for the user to criticise it and contribute with useful comments. [20, pp. 12, 131-134]

According to Arvola [20, p. 15], prototype can be either temporary or evolutionary. Temporary prototypes can be used when only one idea needs to be tested and when the prototype will be discarded afterwards. However, in this project, a version of evolutionary prototype has been used. An evolutionary prototype acts like the first version of the service and instead of discarding it after testing it, it will be further developed, changed and refined.

In this project, only one paper prototype was made and instead of drawing a refined prototype, the intended changes were written down to be used when developing the guidelines.

Prototypes can have different levels of details on different aspects or parts of the prototype and it can be either vertical or horizontal. Vertical prototypes describe the functions in a detailed way, as they are supposed to look and work, but only visualise a few of the functions of the future product. Horizontal prototypes look like they have all functions on the surface but do not describe any functions in detail and suits better for demonstrations than for tests with users. A mix between these two types is called a T-prototype. They are horizontal but with a few vertically described functions, representing a few legs on the T. [20, pp. 12-13]

Since the purpose of the project was to create guidelines to a service that makes families feel comfortable and safe using it, all functions needed to be tested throughout a whole care seeking process and evaluated to achieve a trustworthy result that truly captures the families' feelings about the service. All relevant functions were therefore prototyped but only one of them could be reached from the start page and the rest followed in a specific, predetermined flow. Before starting to draw the prototype, Min Doktor's service was tested in a number of different ways in Min Doktor's test environment, both from the user's and the doctor's perspective. This was to learn more about the flow in the service as it works today and to learn what to base the prototype on.

The prototype was created based on the concept, using ideas from the affinity diagram together with new ideas forming during the prototyping and looking at screenshots of Min Doktor's service as it looks in a desktop environment today. The medical questions in the prototype were retrieved from guide drafts from Min Doktor. Often one or many sketches of the interface is done before describing all functions but since this prototype was based on an already existing service and since the focus was on the content and the functions rather than the design of the interface, it was not needed. [20, p. 111]

A lot of effort was put on finding clever ways to make the parents want to involve their children without forcing them but by making it feel natural and make them understand why it is important that the child is involved. This was kept in mind during the creation of the whole prototype and is in line with the goals that state that it should be easy and effortless to involve the child and that all parents understand why it is important to involve the child, feel encouraged to do so and are not afraid that it will affect the care process. Another important factor was that the children's parts of the service should not be overwhelming, since there are situations where the child cannot be included for some reason. This is in line with the goals about parents feeling respected regardless of how they choose to fill out the guides and allowance for different levels of involvement of the child.

The prototype was 21 screens long and made out of A4 pages to imitate a computer screen. The following sections presents the most important elements of the prototype and in appendix F the prototype is presented in detail.

5.1.1 Register a child and show active patient

Before seeking care for a child, the child needs to be registered and connected to a parent. To do this, the topmost tab, "Lägg till en person under 18 år" (add a person under 18) (see figure 8), is chosen and the parent will fill out the information needed about the child. A new "Lägg till en person under 18 år"-tab is appearing if the user wants to register another child. All persons connected to the account (both parent and children) have their own tab with their name on, forming a sticky menu always visible at the top, to make it easy to switch between persons (see figures 8, 9, 10 and 11).
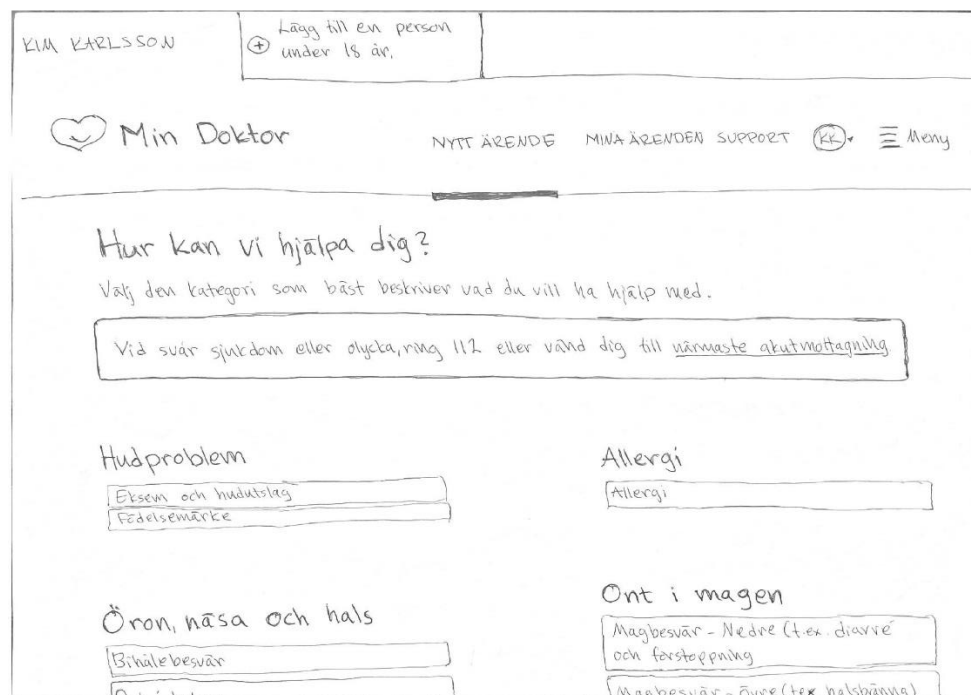

Figure 8 The first page after signing in to the service from the prototype.

5.1.2 The animated doctor

The animated doctor (see figure 9 and 10) was created to catch the child's attention and make it easy to involve the child. It appears for the first time on the starting page after signing in and registering the child (see figure 9), and then appears to the right

on every page throughout the whole care seeking process. It informs and explains what will happen next in a child-friendly way and encourages the child to participate along the way. The doctor needs to have an audio voice since most children in the age group considered in the project cannot read, but it should not speak unless the user clicks on it, which makes sure that the user is in control of the tool. The animated doctor aims to fulfil the goals discussed in the previous section, as well as making the child understand that they seek care, feel like they get to help the doctor, prepare them for the next step in the process and raising the child's awareness of its own health. Further, it aims to be fun and de-dramatizing for the child without making it too unserious.
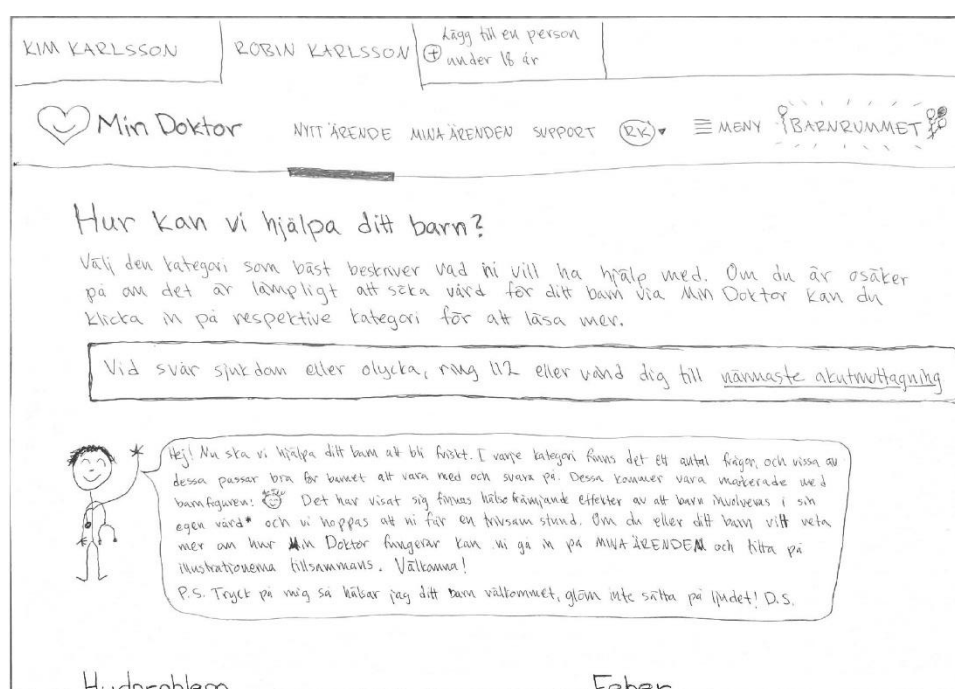

Figure 9 The first page after registering a child from the prototype.

5.1.3 **The baby head symbols**

The baby head symbols are placed on the left side of questions that the project members found appropriate for children to help their parents to answer (see figure 10). This was created as a help and a reminder for the parents to further encourage them to involve their children. This further fulfils the goals about involvement previously discussed, as well as using the parent's expertise about their own children and adapting to different communication levels of children.

5.1.4 The general condition

Since most parents were worried about how the doctor could evaluate the child's general condition online, this was considered an important part to focus on in the concept. It was decided that this should be its own section in each guide, clearly saying that it is there to catch the child's general condition (see figure 10). Extra questions should be added to make the parent feel like it is thoroughly checked out, even though the doctors working in the service might not find it necessary. This aims to fulfil the goals about general condition, as well as the affordance stating that it should be comforting.

Figure 10 The general condition page from the prototype.

5.1.5 The save/cancel buttons

Norman's goals presented in chapter 3 [22] states that feedback, discoverability and mappings are important when working with design. Currently, Min Doktor's tool automatically saves the drafts of the guides without notifying the user. To enhance the feedback from the system, as well as showing the user that it is possible to take a break (accordingly with the goals about filling out the guides in pieces), two buttons were added to the bottom of the page, save and cancel (see figure 10). They enhance the discoverability of the possible options and the system provides feedback when pressing either button since the user then ends up at a landing page

describing what happened. Since the buttons are commonly used in other situations as well, it will be a kind of mapping for users. Furthermore, there should be a question mark symbol next to the buttons which the user can press to achieve more information about what the buttons do.

5.1.6 The how it works-timeline

Norman [22] further states that it is important that the user gets a good conceptual model of the system. The goals also state that the user should easily be able to keep track of what has happened and what will happen next and that the child should feel prepared for the next step. To fulfil these goals, a timeline was added to the "My cases" page (see figure 11). It is meant to visually illustrate to the user what different steps the process consists of, as well as seeing where they are in the care process. It should be easy to overview and contains meaningful drawings to allow the child to understand as well, and further encourage parents to involve their children.
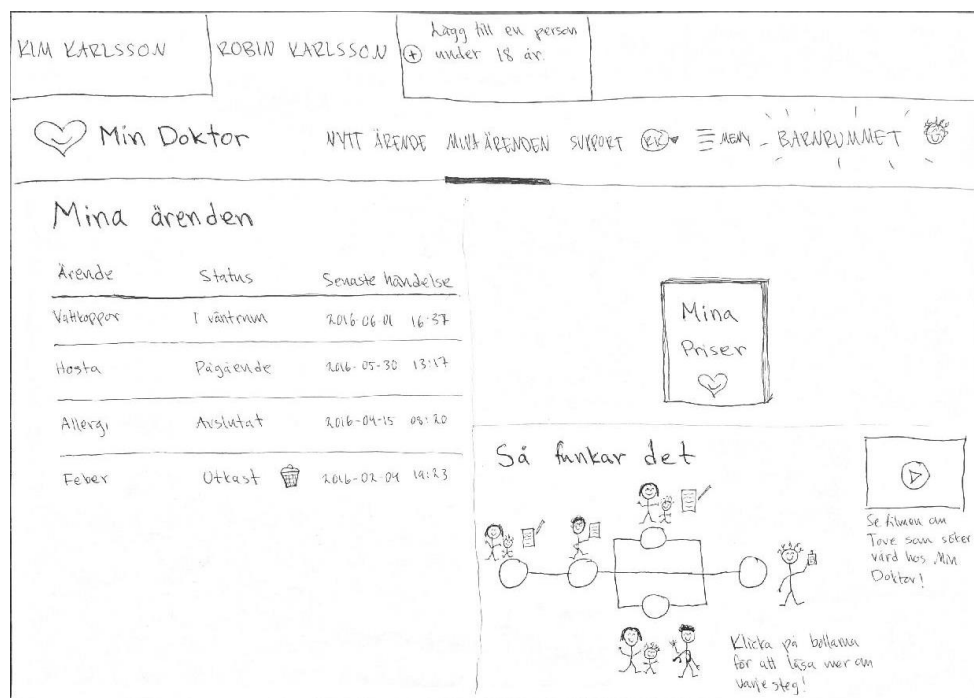

Figure 11 The "Mina ärenden"-page (my cases) from the prototype.

5.1.7 The digital price

All parents interviewed in the project stated that it was very important for the child to get a gift after a care visit. This resulted in the goal that it should be rewarding

for children to use the service and in the prototype, a digital price that the child could choose in the end of the guide was added. All prices were collected in an album called "Mina priser" (my prices) (see figure 11).

5.1.8 The children's room

The aim of the children's room is to educate the child in a fun way. The children's room page is presented in figure 12. Behind the door the child can find movies about other children going to a sample taking central to prepare for and de-dramatize sample taking. The bookshelf contains several different parts where the child can discover a doctor's toolbox, learn about different diseases from the illustrations in the "Children's health book", play games, do drawings in a colouring book and take care of a teddy bear with different diseases and complications. It was decided that the children's room should be placed outside the care seeking process so that it does not interfere with the filling out of the guides. This was important since, again, not all parents will involve their children and it should work for all users. Further, it makes the parent feel like the service is more professional and safe if games are not a part of the actual care process, as discussed in the previous section about choosing a concept.

Figure 12 The children's room page from the prototype.

5.1.9 **Other considerations**

All questions should be very clear and easy to answer and free text answers should be avoided since the user might find it hard to express what they think. Extra options were added to questions where it might be hard to pick a specific answer. For example, questions about symptoms got an "Other" alternative where the parent can fill in a free text answer, and yes/no-questions got a "Do not know" alternative to avoid putting too much responsibility on the parents (see figure 10).

Several goals were hard to fulfil since they had to do with things that were hard to accomplish through the design, such as "always available" and "no one feels like a burden to Min Doktor". These goals are mostly effectible by the activity level and the social skills of the doctors working in the service. However, they were still listed since they were thought of by and important to many parents.

5.2 Testing the prototype

When the prototype is finished it needs to be tested (see figure 5). The participants testing the prototype should be as representative for the future user group as possible. It is also important to try to cover the possible variations between the users. For the researchers, there are four different roles to play; a test host welcoming the participant and giving an introduction to the test, a test leader giving instructions and reminding the participant to think out loud during the test, a person acting the computer and finally an observer taking notes during the test. [20, p. 134]

Before the test starts an informed consent needs to be accepted and the test needs to be explained to the participant (see appendix B.3). It is important to explain how a paper prototype works, that the participant will use a think out loud technique and also to make sure that the participant understands that it is the design and not the user that is tested. The researchers also need to make sure the participant approves of being video recorded if that is a part of the test. [20, pp. 134-136]

The test starts with a short introduction of the design, not more information than the design group believes that the future users will have. After that, the test leader will start giving tasks to the participant. The task should focus on what the participant wants to achieve without describing how to get there. During the test it is important for the researchers not to show any reactions on the participant's performance, but only remind him or her of thinking out loud. [20, pp. 136-137]

After the test, a discussion to gather the participant's thoughts and impressions can be made. This is to understand what the participant thought was good, bad, hard to understand, could be better and likewise. [20, pp. 137-138]

5.2.1 **Testing on future users**

In this project, five test sessions were performed, with six different people since one test was made on a couple. All participants had children aged 1-5 years old accordingly with the future users. To get a more diverse outcome, three of the participants had been interviewed during the parent user study and three of them were new. One of them had used Min Doktor's service for adults before. Since only two people were working in this project they had to play more than one role each. Both project members welcomed the participant and gave him or her an introduction to the test. Then one person acted both the test leader and computer and the other one was responsible for the video recording and the note taking.

For the new participants a thorough introduction to the project and what had been done so far was made. After that the procedure was the same for all participants. The informed consent was handed over to be signed, the test leader showed the paper prototype and explained the test plan and encouraged the participants to talk out loud during the test. The test leader also made sure that the participant understood that it was the prototype and not the participant that was tested, and that he or she was indeed fine with being video recorded.

As mentioned before, the focus of this project was not on the interface and the graphical design of the product but rather the functions and the feelings the product would create. The prototype was still tested with tasks for the participants to complete, but the focus was on the discussion and their thoughts about the product rather than on how and if they solved their tasks. The purpose with the tasks was to get them through the prototype, to get their first impression of it and show them how the service is supposed to work. The first part where the participant performed specific tasks with the prototype was video recorded and during the second part with the discussion, notes were taken.

5.2.2 **Task flow**

The tasks were given one at a time, sometimes small tasks were given while solving other tasks. If they were not able to solve the task, they were helped by the project members. The general idea of the test was, as mentioned, to let the user try seeking care digitally using the service and they were asked to sign in, register their child and seek care for chicken pox. They were then given some tasks related to "Mina ärenden" (my cases) to see how that worked and to evaluate the timeline. Finally, they ended up in the children's room. The Children's room was explained further since the functions there were not prototyped. Then a discussion in two parts was held, the first part included questions and discussion points about specific functions in the prototype and the second part more general questions about the participant's thoughts, feelings and experience of the prototype. In some sessions these parts were

clearly separated and in some sessions they were mixed. For all details about the task flow and the discussion points, see appendix G.

5.2.3 **Inspection by supervisor and stakeholders**

An alternative to test the prototype with users is to do an inspection with 3-5 inspectors [20, pp. 138-139]. In this project one inspection was done with the supervisor and one with the stakeholders at Min Doktor. During the inspections the prototype was shown and slightly discussed and their thoughts and opinions were noted.

5.3 Analysing the test results

When all tests were conducted, the results needed to be analysed (see figure 5). According to Arvola [20, p. 138] the easiest way to analyse the prototype tests is if the notes are gathered on index cards. This way each part of the notes can be connected to a certain component of the design. The new solutions can then be explained on new cards and fixed onto the corresponding part of the paper prototype.

In this project, all video recordings were watched and all events or comments connected to a certain page number of the prototype were written down together. In that way the different design components could easily be compared between the different test sessions. After that the prototype was looked through, one page at a time, and the outcomes from the tests were summarised on sticky notes and fixed on the corresponding page. Then the notes from the discussion part of the test session were read and relevant parts written down on sticky notes, either fixed on a corresponding page of the prototype or fixed on the first page if it was a more general comment. Finally, the same procedure was done with the notes from the inspections.

The results from the tests and the inspection were summarised and sorted into categories presented in the following sections.

5.3.1 **Regarding involvement of the child in general**

The service felt safe and the test participants felt like it was enough childish and child friendly. The childish parts were positively received because they indicated that Min Doktor is aware that it is a children's case. It was good that the service was directed to grownups but with parts inviting the children, it provided a serious feeling and the child friendly parts would be good if they needed to ask their child something. Most of the parents would still have wanted to fill out the guides

themselves since it would be more efficient and it was not very clear why the service wants them to involve their child. One participant would have involved the child without the service suggesting him/her to do so. Most children would probably enjoy being involved, understand what was happening and think that it was interesting and fun from the age of three or four years old, but some would not be able to sit down for that long.

5.3.2 Register a child

During the inspection with the stakeholders they explained that it was not necessary to focus on how to register a child in the concept of this project, hence this was left out in the rest of the project.

5.3.3 The animated doctor

The animated doctor was considered a good idea and it was not disturbing the parents who did not want to involve their child. One participant would have appreciated if the child parts could be switched off. When the doctor is to the right on the screen it seems easy to ignore it and start answering the questions alone before involving the child. This was not desirable for the parent wanting to involve the child but could be good for parents answering the questions on their own. One parent added that no important information should be in the doctor's speech balloon since they were so easy to ignore and another one suggested to put the doctor above the questions instead (to make it less easy to ignore).

One suggestion was that the speech balloon would only appear when holding the mouse over the doctor and another parent thought that when using a smartphone, it would be better if there was a small button to press to make the doctor talk since it would be too easy to click on the doctor by mistake.

5.3.4 The baby head symbols

Most participants did not consider the purpose of the baby head symbols when going through the prototype. Some thought that the questions with the symbol were illogically selected. Some thought that they were unnecessary, that the parents know when it would be appropriate to involve their child. Some, both parents and stakeholders, thought it would be better to have advices on how to pose the questions to the children on the symbols instead.

5.3.5 The general condition

Most participants did not notice the text about general condition but when mentioning it in the discussion part many of them thought it was a good idea, some did not care whether this part existed or not and one thought that he or she maybe would not have sought care at Min Doktor if their child's general condition was bad. Someone mentioned that the general condition is the most important thing the doctor registers. Some suggestions on what more to ask about were; if the child is more tired than usual, how the parent noticed that the child was ill, if the child pees normally, how the child's mood is, if the child is playing as usual. Some also desired a free text box.

5.3.6 The Save/Cancel buttons

Everyone understood that they could click on the "Save" button when taking a break but one person would have just walked away from the computer without pressing anything. Most participants desired some kind of information or confirmation after pushing one of the buttons and one suggested to, instead of the question mark symbols, have more text directly on the buttons, for example "Save and continue later".

5.3.7 The "How it works" timeline

Most of the participants thought that the timeline should be underneath the case list instead of to the right. One parent did not understand which way the timeline was going and suggested that it could be arrows instead of just lines between the circles. It was considered good that more information was appearing when clicking on the circles. It was nice that the timeline shows where in the process this specific case is.

5.3.8 The digital price

The thoughts about a digital price were quite diverse, some thought it was a good idea and that the children would understand that it is only a virtual price and be happy, others thought that the children would be disappointed since they would not get a physical gift.

5.3.9 The children's room

Not all parents understood that they should visit the Children's room but when finally doing so, most of the parents were positive about preparing the children

before sample taking and thought that educational games are good. Everything that can help the parent explain the healthcare situation to the child is good, but there may be a bit too much different things to do in the book shelf. Some participants mentioned that it would be good if The children's room could be accessed without the parent being signed in with their BankID because otherwise they may not have wanted their children to play on the site by their own.

5.3.10 **Authentication**

Some parents were worried about the authentication in the service. They wondered how the service would know that the child was really theirs and they thought that both parents should be able to manage the child's cases. They were also worried about where the information they provided about their child would be logged and where it would end up. Hence, the parents would like it to be clear how all of these parts work and why Min Doktor is safe.

5.3.11 **Other concerns**

Participants thought that explanations and extra information provided from a question mark symbol is always good, also information about different symptoms or diseases.

Often, the participants seemed to think that there was too much text on the pages. The reason could be that it looks different on a paper prototype but it was noticed that the participants skipped parts of the texts and hence missed out on somewhat important information.

A suggestion on the first page of the guide with information about the disease was to add some example pictures of the symptoms that can occur, when having chicken pox in this case.

One participant did not feel like sending pictures of his or her child through the service.

Some parents wanted examples of what could be added or uploaded in the end of the guide where there is a free text square and a document uploader.

Some participants mentioned that they would have wanted to know the approximate time for receiving an answer on the landing page after sending the guide to the doctor.

Other design aspects were covered during the inspection with the supervisor and stakeholders, for example about feedback and that the service should be usable on a tablet as well as a computer screen.

5.4 Deciding on intended changes to the prototype

When all of the insights and results from the testing had been written down on sticky notes, every page of the prototype was evaluated and decisions about the functions, based on the results but still accordingly with the goals, were made (see figure 5). These decisions were written down as intended changes to the prototype since no new prototype was created. The key changes are presented in the following sections. For the full presentation of the intended changes, see appendix F.

5.4.1 **Involvement of the child**

Since it was not very clear to the parents why they should involve their children, in the intended changes to the prototype, this has been placed in focus on the first page of the service. Instead of providing the information in the doctor's speech balloon, a short text in a box is placed together with an animated family on the first page stating that the tool is developed to be used together with children accordingly with the convention of rights of the child and that it has health promoting value to involve the child.

5.4.2 **The animated doctor**

The animated doctor is no longer presented on the first page, but when entering the guide. A box pops up explaining the animated doctor and the baby head symbol. Instead of the doctor's speech balloons containing text, they are smaller and contain only three dots. The text occurs when pressing the speech balloon. Further, a megaphone symbol is added and when pressed, the doctor speaks out loud.

It was considered to put the doctor above the questions but since not all parent wanted to use it and since the information box pops up explaining the doctor in the beginning, it was decided to leave it to the right.

5.4.3 **The baby head symbols**

The baby head symbols are, instead of just marking appropriate questions for children to answer, clickable and present advices to parents on how to explain things or ask questions to the child and tips to make it easier to answer the questions correctly.

5.4.4 **The general condition**

The header of the page about general condition needs to be clearer. A tip is also added, explaining that the user can upload a video describing the child's general condition at the end of the guide.

5.4.5 **The Save/Cancel buttons**

The question marks on the save- and cancel buttons are removed and instead, the names of the buttons are clarified to "Save and continue later" and "Cancel and discard draft".

5.4.6 **The "How it works" timeline**

To make it more mobile friendly, the timeline is moved to be placed underneath the cases instead of to the right. It now also consists of only four circles with arrows between them, each circle holds more information but the steps are now easier to follow.

5.4.7 **The digital price**

The digital price is replaced by a confetti rain together with a fanfare. It only appears when pressing either the doctor's speech balloon or the megaphone.

5.4.8 **The children's room**

To further encourage the parents to visit the children's room, a button is added at the bottom of the landing page after sending the case to Min Doktor that leads the parent to the children's room. The user is no longer required to be signed into the service to be able to use the children's room. To make the design consistent, the animated child describing the room has the same kind of speech balloon and megaphone as the animated doctor. A movie describing the care seeking process in a child-friendly way can be watched through a TV hanging on the wall. Further, the colouring book is removed, the teddy bear is moved to a chair and the rest of the activities are placed on one shelf each.

5.4.9 **Authentication**

The authentication itself is outside the scope for this project, as discussed earlier in the report. However, one change was made to make the parents feel more informed and safe. When the user reaches the part of the guide where he or she is supposed to upload pictures, there is a hyperlink underneath the uploader that describes to the user where the information ends up and what security measures are taken from Min Doktor.

5.4.10 **Other concerns**

The amount of text on each slide has been reduced by making the animated doctor's speech balloons clickable as described above, and by replacing the information on the first page by a short note instead of a long text. A button (where applicable) is added to the introductory description of the disease in the beginning of the guide. If pressed, one or more pictures of the symptoms of the disease or likewise are presented, to inform the user of what it might look like. Suggestions about what kind of information could be added by the user at the end of the case is added, as well as information about an estimated waiting time after sending the case to the doctor.

5.5 Creating guidelines

When all intended changes had been decided and all other parts of the project were finished, it was time to create guidelines (see figure 5). The aim was to create few, succinct guidelines including the whole core of the design proposal with motivations, guideline specifications and solution suggestions. The motivations and guideline specifications were based on the key take away points from the background theory, the insights from the interviews, the goals and the prototype test results. The solution suggestions were based on features of the prototype. To define the guidelines, the data was considered in the following order. Firstly, the goals were considered and grouped into suitable guidelines. The guidelines were then motivated and further specified using these goals together with the key take away points from the literature study and the insights from the interviews. After that, the test results were considered and one more guideline was added. Finally, solution suggestions connected to each specific guideline were added, extracted from the description of the prototype. All suggestions are based on what Min Doktor's homepage design looks like today, and serve as an extension of that design. To illustrate and clarify the solutions, digital prototypes were made showing some of the suggestions. These prototypes were partly created using illustrations and mock-ups retrieved from the designers at Min Doktor.

The guidelines are meant to be independent from the rest of the report, meaning that they can be extracted from the report and used when designing the service without having read the full report.

5.6 Guidelines

In this section, the six guidelines are presented. They are summarising the key components for Min Doktor to consider when creating a good design for an online healthcare centre that will make families with children 1-5 years old want to use the service and come back. For each guideline, a text with motivations and guideline specifications is presented. Some solution suggestions connected to the specific guideline are described in the end of each guideline to get an example of how it can be implemented.

Guideline 1: It is clear to the parents what conditions are suitable to seek care for using Min Doktor's service.

Motivation and specifications

Several parents expressed that they would not use Min Doktor's service if the child was very ill. They also seemed worried that Min Doktor could not help them with diseases where the parents thought the symptoms were too hard to evaluate and judge themselves, such as cough sounds. To encourage these parents to still use the service, it needs to be clear what conditions are suitable to seek care for using the service and to make the parents feel like they will be guided along the way and actually get help in the end. It also needs to be clear when to go to the emergency ward.

Further, in the traditional health care setting, parents felt like they were a burden to the health care system when seeking care for simple conditions and felt like the visit was unnecessary if they did not need treatment, both for wasting the doctor's and their own time. They had also experienced, in the traditional health care setting, that they were patronised by the medical personnel when seeking care for a simple complaint. It needs to be clear that all patients are equally important to Min Doktor and that no disease is too small to seek care for. It is important to state what conditions are suitable for the service without putting judgement to which are more or less important.

Solution suggestions

The text on the "Nytt ärende" (my cases) page is more descriptive, letting the user know that it is not crucial which category to choose, something like: "Välj den kategori som bäst beskriver vad ni vill ha hjälp med. Det gör ingenting om ni inte väljer helt rätt kategori från början, våra läkare kommer att se till att ni får rätt vård" (Choose the category that suits your symptoms best. It is okay if you do not

choose the correct category to start with, our doctors will make sure that you get the right care).

Citations from other users are present in the margins on the homepage, describing what kind of problem they sought care for and how satisfied they were with the service. These could include examples from many different categories and also both cases that ended with some kind of treatment and cases that ended with nothing more than advices from the doctor.

Guideline 2: Parents feel safe using the service.

Motivation and specifications

Most parents were worried that the doctor can see things that they cannot see for themselves and that, by seeking care online, the doctor would miss out on important information, especially regarding the general condition of their child. To make the parents feel more comfortable, it is important to make them feel like they can cover all information in the guides (including the general condition) as well as making it clear that it is possible for the doctor to ask for complementary information.

To minimize the possible stress and worries connected to the service, the user should be able to easily keep track of what has happened and what will happen next during the whole care seeking process. It is also important that the parent feel confident when registering a child to begin with, since most parents expressed that they were worried about the authentication, how data will be treated and similar.

To make the parents feel even safer using the service, the questions need to be easy to answer and understand to avoid that they feel stupid or unable to answer. The questions need to be clear enough to make the parent feel like it is not possible to make mistakes when filling out the guides. As much measurable data as possible should be collected such as temperature and pictures, since this creates a feeling that the interpretation of the symptoms are left for the doctor instead of for the parent.

Solution suggestions

On the first page of each guide, where applicable, it is possible for the user to see pictures of the symptoms connected to the disease.

More answering alternatives should be added to the questions. To the yes/no-questions, a "Do not know" alternative is added to minimise the parents' feeling that it is possible to give a false answer. To the multiple-choice questions, an "Other" alternative with a free text box is added for the same reason. This enlargement of answering alternatives makes it possible to replace some of the free text answer questions with multiple-choice questions which are easier to answer.

One page in each guide is devoted solely to the child's general condition. It has a header with the words "General condition" and a text explaining that these questions are meant to help the doctor understand the child's general condition. Some of these questions might not be needed from the doctor's point of view but are still there to make the parent feel like the general condition is truly considered. Example of types of questions to include:

- Fever, temperature and date?
- Body ache?
- Apetite?
- Urinating normally?
- Alert?
- Playing?

At the end of this page, there is a tip that the parent can upload a video of the child at the end of the guide to allow the doctor to further evaluate the general condition.

On the page where pictures of the child's symptoms should be uploaded, there is a hyperlink "How do I know that this is safe?" which leads to an explanation about the security systems of Min Doktor and how personal information is treated.

On the page for other information, one additional uploader is added where it is possible to upload more pictures, videos or documents. There is also a text with examples of what could be relevant information to write or upload, like general condition video, previous journals, self-tests etc. This is to move responsibility to understand what more information can be added from the parents.

Below the saved cases on the "Mina ärenden" (my cases) page there is an illustrated timeline describing the whole care seeking process at Min Doktor (see figure 13). When entering one of the cases, the same timeline can be found but with a marking showing where in the process the case is right now making it clear what may happen next. More details about the timeline is presented in guideline 4.
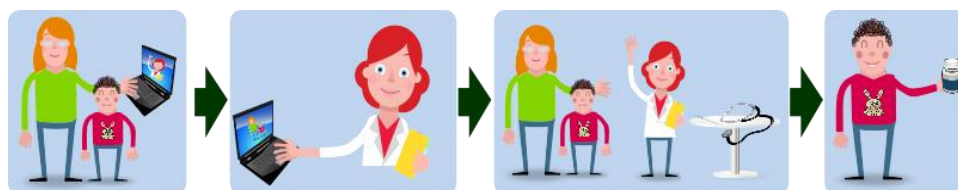
Figure 13 The digital prototype of the timeline. The first square shows the parent and child filling out the guides together. The second square shows the doctor receiving the information on the other end. The third square shows the parent and child visiting a sample taking central and the last square shows the child with the medicine that will make him/her healthy again.

Guideline 3: Parents feel encouraged but not forced to involve their children when using the service

Motivation and specifications

Accordingly with the Convention of the Rights of the Child [5] the child's own opinion should always be heard in healthcare situations. There is also health promoting value when children are actively participating in their own care and how active the child is depends a lot on how supportive the adults are [8]. Despite this, most parents expressed that they would not include their children when seeking care online since it would be more effective, easier and feel safer to fill it out themselves. Hence, it is important to make parents understand why it is important to involve the children and to make it easy and effortless to do so, as well as making sure to the parent that involving the child will not affect the care process. However, it is still important that the parent who is in charge of how the service is used is allowed to choose for himself/herself to what extent the child should be included. Since the children considered are so young, it should be possible to involve them without them using the device themselves. All family situations are different, as well as all children, so the service should be adaptable to the specific family's needs.

Two other concerns the parents had regarding involving their children when using the service was that their children will not sit down for that long and that they do not always know how to explain medical related things to them. Hence, the guides should be possible to fill out in pieces and include some kind of advices to the user on how to explain things to children.

Solution suggestions

Already on the "Nytt ärende" (new case) page it can be seen that this part of the service is directed towards care seeking for children. A small animated family symbol is placed above the categories (see figure 14) with the text "I enlighet med FN:s barnkonvention är detta verktyg utvecklat för att användas tillsammans med ditt barn. Att involvera barnet i vårdprocessen har dessutom hälsofrämjande effekter. Välkomna!" (Accordingly with the Convention on Rights of the child, this tool is developed to use together with your child. Further, to involve your child in the healthcare visit has health-promoting values. Welcome!).

There are two main features added to the guide aiming to encourage involvement of the child; the animated doctor and the baby head symbols (see figure 14). When entering a guide, a text box pops up describing the functions and purpose of these two.

The animated doctor is placed to the right of the questions in the guides. The purpose of this doctor connected to the parents (for the purpose connected to the children, see Guideline number 4) is to be a simple and easy way for the parents

to involve the child but still easy to ignore for parents who do not want to involve the child. The illustration includes a speech balloon containing three dots that expands to a big speech balloon filled with text when clicked, and a megaphone symbol that when clicked will make the doctor speak out loud to the child, saying the exact same thing as the text in the speech balloon. This is to allow the parents to choose whether they want the doctor to speak directly to their child or if they would rather want to give the information to their children themselves and adapt it to fit their child's level of maturity. The placement of the doctor is debatable. It was placed to the right to not disturb parents who do not want to involve their child, but the information in the speech balloon should be given to the child before starting to fill out the questions and hence it could be more logical to put it above or to the left of the questions.

The baby head symbols are placed next to questions, presenting tips and advices to the parents when clicked, making it easier to fill out the guides and involve their child. These tips could be on how to explain things or ask questions to the child or making it easier for the user to answer the questions correctly.
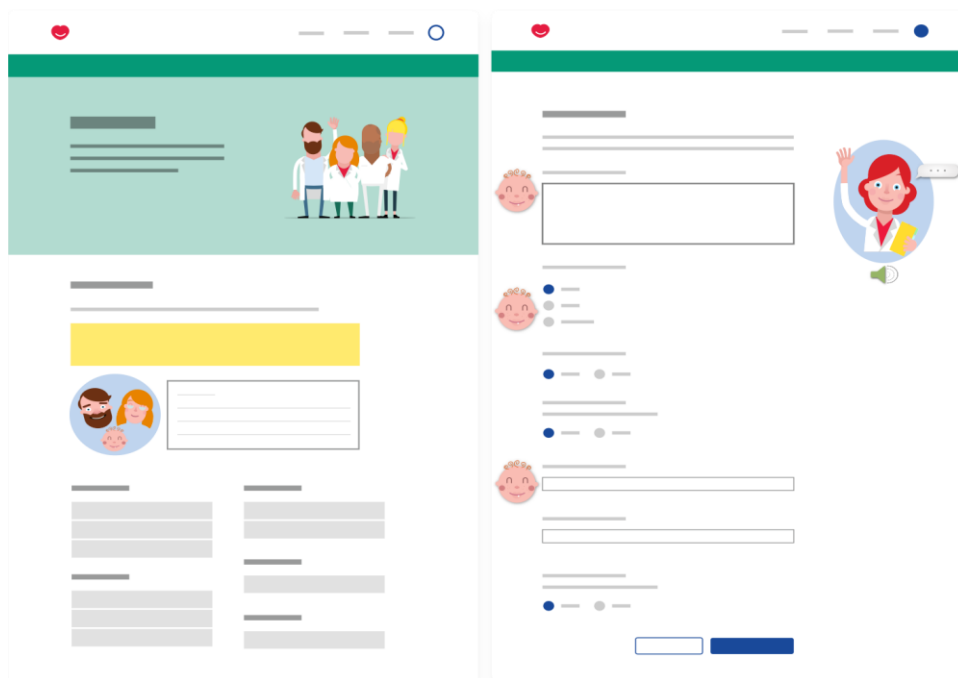
Figure 14 To the left is the "Nytt ärende" (new case) page with the animated family together with the explanatory text box. To the right is a page from a guide showing the animated doctor with the speech balloon and the megaphone, and the baby head symbols.

One further feature in the guides is added to make it clear to the parent that it is possible to save the guide in the middle and fill it out in pieces. It is two buttons

on the bottom of the page, "Spara och fortsätt senare" (save and continue later) and "Avbryt och släng utkast" (cancel and discard draft).

If the parent for some reason do not have the possibility to or do not want to involve the child, it should still be possible for the child to understand what Min Doktor is and to learn about health, medicine and diseases. This can be done in "Barnrummet" (the children's room) which is a new tab in the menu on top of the page. Details about "Barnrummet" (the children's room) can be found in Guideline 4.

Guideline 4: Children should be enabled and encouraged to participate in their own care.

Motivation and specifications

Most parents said that if the child should participate, there needs to be something catching their interest in the service. To keep the child's interest and to allow them to truly participate, parts of the service should be fun and adapted to children [11]. To raise children's awareness of their own health and hence get a health promoting value [8] when using the service, it is important that the child understand that they are seeking care for him or her. To achieve this, the service should still be serious even though it is child friendly and fun.

It is important for children to feel seen during care visits [11] and the parents expressed that children appreciate when the doctor asks them to show them things, allow them to actively participate and rewarding them afterwards. The service should strive to achieve this too and let the children show stuff, help the doctor and be rewarded for doing so.

Several parents said that their children need to be prepared for what is coming next in all kinds of situations and especially situations connected to the hospital since some children think they are scary. This is why it is very important to make it easy for the child to overview the process and to prepare for and de-dramatize hospital related things (like sample taking).

Solution suggestions

The purpose of the animated doctor (see figure 14) connected to the children (for the purpose connected to the parents and a more detailed explanation of the illustration, see Guideline 3) is to catch their interest, make them understand what is going on and that they are seeking care for real and to allow them to actively participate and help the doctor. The doctor will tell the child in a simplified, nice and child-friendly way what information the doctor needs on every page and what the child can do to help the parent give that information to the doctor. Some examples:

- Now your mum/dad needs to look in your mouth to see if you have any rash. Open your mouth wide!
- Now you can help your mum/dad to check your temperature!

- Now you need to help you mum/dad to take some pictures to send to me!

The sentences can be reformulated to remove mum/dad and thus avoid having to know what kind of relationship the adult and the child has.

After the guide has been sent to the doctor, a confetti rain will appear on the screen and the doctor will praise the child for helping the parent.

To help the child understand how the service works and that a real doctor is waiting on the other end, the timeline on the "Mina ärenden" (my cases) page has illustrations appealing to children (see figure 13). Each illustration on the timeline can be enlarged and when enlarged a text appears too with further information and explanations about that step, helping the parent explaining it to the child. A small child-friendly movie to show the care seeking process, show how the doctor gets the information and to make the child understand that this is for real, can be found in "Barnrummet" (the children's room) which will be further described below.

"Barnrummet" (the children's room) is a new tab in the menu on the homepage (see figure 15). This room can be accessed without the parent being signed in to let the child play with it without the parent needing to watch. The room includes the following:

- A little animated child with a speech balloon and megaphone symbol in the same style as the animated doctor is standing on the floor, welcoming the child and explaining the different parts of the room.
- A door which leads to a room with a few short movies. They will show what will happen if the child receives a referral from Min Doktor, how the sample taking works and other children who have done a sample taking and what they thought of it. The purpose of this is to prepare the child and de-dramatize these things.
- A television on the wall shows the movie about how the service and the care seeking process at Min Doktor works.
- A teddy bear is sitting on a chair and has different diseases and problems. The child can take care of the teddy bear and try different solutions to its problems, and thus learning how they are treated and what the child should do when he/she is ill.
- Finally, there is a bookshelf with four shelves in the room. The first shelf has a book on it, called "Barnhälsoboken" (children's health book) with illustrations teaching the child about different diseases and other things like the different parts of the body and likewise. The second shelf has a doctor's toolbox on it where the child can play with the different tools to de-dramatize hospital related things. The third shelf has a puzzle and the fourth other educational games that are not specified in detail.
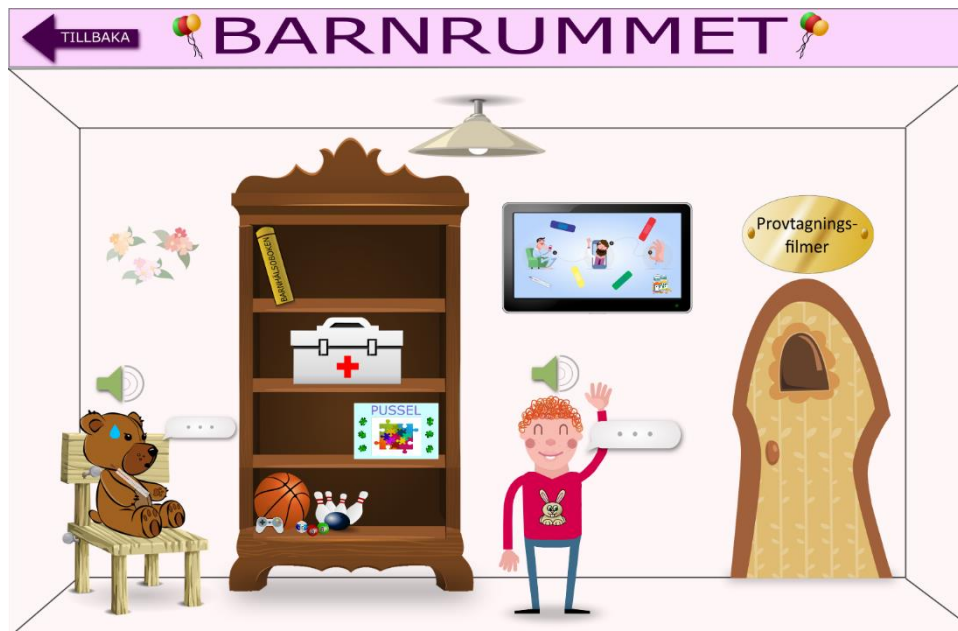
Figure 15 "Barnrummet" (the children's room,) from the left: the teddy bear, the bookshelf, the animated child and the television and finally the door.

Guideline 5: The service should always be available.

Motivation and specifications

Almost all parents interviewed in the project expressed that they felt like their children always became ill during evenings and weekends. They also felt like Min Doktor's main advantage compared to traditional health care was the availability. Due to this, it is of great importance that the service is truly always available, to take full advantage of this. Further, it needs to be available from everywhere and from all devices, since not everyone has a computer.

Solution suggestions

No design solutions were found to this guideline but it is still important to consider when managing this type of service.

Guideline 6: Plenty of tips, information and feedback should be available to the user.

Motivation and specifications

According to both parents, stakeholders and supervisor, tips, feedback and information are key components to feel safe using the service. The tips should be about how to explain or ask things to the child. Information about what different components and medicine related things mean and how the service works.

Feedback about what will happen next in the process and what happened when a certain button was pressed and likewise is comforting and makes the user feel in control of the service.

Solution suggestions

The baby head symbols described in Guideline number 3 will provide tips and advices to the parent.

Small clickable question marks should be added next to to buttons, questions or other things that may be hard to understand for a new user. For example, on the "Mina ärenden" (my cases) page, next to "Status" (status), there should be a question mark explaining what the different statuses mean.

After pushing "Spara och fortsätt senare" (save and continue later) and "Avbryt och släng utkast" (cancel and discard draft), or finishing filling out a guide or something similar, a landing page should appear, clearly explaining what has happened and what will happen next. For example, after sending the answers, there should be information about the approximate answering time among other things.

There should always be as much information as possible, especially about medical related things. For example, if a patient has received a referral, it should be possible to see what kind of referral it is without clicking on it. There should also be a tip to go to "Barnrummet" (the children's room) to watch movies to prepare the child before sample taking or likewise.

6 Discussion

This section will discuss some of the main issues of this project. Further, there are several ethical aspects to consider when working with healthcare issues in general, they will be explored separately in chapter 6.

In the project, a literature study and a user-centred design process has been performed, to be able to create design guidelines describing what key things for Min Doktor to consider when designing their future service for children. The literature study provided valuable background information as well as guided the project in a specific direction when starting working with the design process, focusing on getting the children involved in the care seeking process. The literature study is discussed further in section 6.1. In the design process, the purpose of the project was to be fulfilled. Firstly, that was to investigate what the users, meaning both the parents and the children, thought about seeking care digitally and how they experience healthcare today. The user studies performed in this study were very valuable and provided great insight in how it works today. The greatest issue was the lack of interviews with children. This is discussed further in section 6.2 below. The second part of the purpose was to examine how the service should be evolved to suit the new needs occurring when seeking care for children online. This was done based on both the insights from the interviews and the literature study, and the different steps towards a concept were thoroughly performed, creating a good mental image of what the service should look like. This is discussed further in section 6.3. Finally, the design guidelines were created based on all previous work in the project, providing an overview of the most important insights of the whole project. Hopefully, they will be valuable for Min Doktor in their future design work, as well as inspirational for others who consider doing research in similar areas. In section 6.4 the project limitations are discussed.

6.1 Literature study

There is not much research made in the area of digital care visits in general, especially for children. In the beginning of the project, a lot of time was spent on looking for articles regarding the subject, with no luck. Instead, alternative areas were researched, which are presented in the theory part of the report. There are many related areas which would be interesting to further look in to, for example be

children's digital competence and how they use digital devices today as well as other companies working with digital care in different ways. The lack of research in the area of digital care visits further emphasizes the importance of looking in to these subjects.

6.2 User studies

One of the main issues faced in this project was how to actually gather information about how a healthcare visit works when a child is ill. It was solved by interviewing parents, but they can only tell what they believe the child experiences (the parents worked as proxy for their children, as described in section *4.2.2 User study with parents*). Further, it might be hard to remember all details if it has been awhile since the last visit. Several attempts were made to be able to observe real healthcare visits at primary care units but without luck since all the primary care units contacted were very busy. Further, another kind of user study was tried out to capture parents' and children's thoughts and feeling when they are in the care seeking process - a diary study. A diary study is a method used to receive people's first hand thoughts on things in their daily environment which cannot be obtained in a traditional interview setting by writing down answers to questions, just like a diary [35]. In this project, the diary consisted of a few questions that were to be answered soon after a visit at a primary care unit, to capture the immediate feelings and thoughts while they were still fresh in the participant's mind. Unfortunately, not enough data was collected in this study to be used for further research. This is probably since the diary was not sent to that many people and children do not get ill that often. If it would have been sent to more participants, maybe it would have proven interesting.

The ideal test setting would have been to test the prototype when the child is actually ill, but as mentioned before, it is hard to get to meet children when they are ill. One idea was to try to meet the families parallel to a "real" care visit and let them test the prototype meanwhile, but it was considered too hard to practically make it happen. The testing then became hypothetical, which might have influenced the results. Children were not involved in the interviews and testing parts of this project due to two main factors. Firstly, the service is mostly directed towards the parents since children in the age group considered in this project are too young to seek care by themselves. Secondly, in the testing part, it was considered to involve children but after some discussion it was considered too complicated for a child to imagine being ill and testing a paper prototype of a web page. Maybe the results would have been improved if a hi-fi prototype was created which looked more like the actual service, but the problem that the child has to imagine to be ill would still remain.

6.2.1 **Interviews**

The interviewees were, as mentioned, found using Min Doktor's Facebook page. This means that most of them were familiar with Min Doktor before and somewhat positive to the concept, even though most of them had not used the service themselves. Further, all interviewees were highly educated and the majority were listed at private primary care units. Both of those factors may have influenced the final results, since the user group was very homogenous. The first factor could have been avoided if other channels were used to find interviewees but the second factor was a coincidence which was not discovered until the actual interviews were performed. In the future, users with different backgrounds and socioeconomic status should be studied as well since different groups may have different needs, worries and priorities.

Another issue to consider in the interview situation is that parents are proxy to their children. Since the children in the age group considered in this project are very young, it seemed hard to do the interviews in another way. However, in the future, it would probably have been valuable to talk to children and get their first hand experiences of healthcare situations to make them feel comfortable and to learn more about their fears and worries to know what parts to focus on from a child's point of view. In the beginning of the project, the idea was to focus on how to allow children to fill out parts of the guides themselves, but as the user studies went on the focus was moved towards the parents' feelings and their willingness to involve their children at all, hence not much time was spent on trying to interview children.

The small amount of medical personnel interviewed is another issue. In the beginning, the aim was to interview equally as many parents as doctors, but it turned out to be really hard to find interested doctors and nurses who were willing to participate. A lot of effort was put into finding interviewees for that part with little luck. The results might had been improved by more interviews with medical personnel, but it would probably not have changed it that much since the focus in this project has been on the experience of the user on the patient side of the service, not the medical side.

6.3 Ideas, concept and design guidelines

One of the main sources of information in the project was the interviews with parents. When analysing the raw material from the interviews, the coding of the data was made together by the two project members since both were novices and not used to handling interview data. This may have influenced the results since a common view on the data was created rather than each project member having its own inputs. However, at some point there would have been a need to create a common view anyway.

Another discussion point is that just one concept was prototyped, and that the design was based on Min Doktor's current tool. The choice to create just one concept was, as mentioned before, based on that the project members wanted to put all effort into one concept as well as the fact that the chosen concept seemed to be the one that best suited the needs in terms of balancing seriousness and child friendly parts. This was one of the hardest parts of the project, to create a tool that feels safe to use and still invites children without feeling too childish. Further, the concept included several separate elements such as the doctor, the children's room and the baby head symbols, which could be seen as different concepts as well which were incorporated into the main concept. To base the prototype on Min Doktor's current tool was a way to use an environment that was familiar to the users as well as making it possible for Min Doktor to get a sense of how they could relate the outcomes of the project to their actual service as it looks today. Since the final result in the project is design guidelines, the prototype can be seen as an example of an implementation of those, which is another reason to base the prototype on Min Doktor's current tool. The paper prototype worked well as a method, it allowed the project members to test the concept and provided valuable insights to what worked and not. As mentioned earlier, a paper prototype makes the test participant feel like he/she can criticise it since not too much effort is put into creating it [20, pp. 131-134]. Another advantage with the paper prototype was that the test participants did not focus on the details too much but rather the functions as such, which was also the aim of the testing. However, since the concept was very wide, the paper prototype was slightly restrictive since it did not allow for the test participant to choose any function but only to follow a strict test schedule. Some of the other disadvantages with paper prototypes mentioned in literature is that they do not allow to evaluate details of the design, nor response time to certain features and similar [36]. Since neither the details or the response times were of interest in this project, these were not considered limitations.

Throughout the project, there have been insights and goals that this project has not been able to fully solve, such as "no one should feel like a burden to Min Doktor". They all had in common that they were about the attitude of the whole webpage and the feeling Min Doktor as a company creates for the user and were considered to be outside the boundaries of the project, since they involve a lot of factors that do not have to do with the design of the children's service alone. They were still presented in the report and used in the design guidelines since they were considered a very important part of the result.

6.4 Project limitations

During the user studies, it became obvious that authentication and the matter of which adults the child is connected to in the service is very important to the parents. Despite this, it was a reasonable limitation not to look at this specific problem since

it was not solvable by or related to the design of the service and would be better solved by experts at Min Doktor.

The size of the age group considered in the project seemed to be good, even though all children are different they seemed to experience similar needs. Further, the service should be designed for a wide age group and not only for children of a specific age. However, the children in the age group chosen might be slightly too young to actively participate in the care process according to some parents. Hence, it would be interesting to look at older children too since that might provide different insights and the children might also be able to participate in interviews and testing.

7 Ethical aspects

This section discusses the ethical aspects of treating children online, related to Min Doktor and how the children should be involved to fulfil the Convention on rights of the Child, as well as user studies as a method.

7.1 Min Doktor related aspects

As always when working with medical issues, there are several ethical aspects related to the project. Min Doktor works hard to give equally as good or better care than at a primary care centre and follows all laws and rules necessary regarding both care and storage of personal information. Except for relieving the pressure on primary care centres, it also allows people to seek care more carefully. Some people might not be able to afford to take the day off to visit a primary care centre, or live in rural areas and have hours to drive to the closest primary care unit. Digital care will make the daily life of a lot of people easier, as well as shorten waiting times for the ones who really need a physical visit at a primary care unit.

As mentioned before, there is also an issue related to how the authentication of a patient will work when the patient is a child. This is however not just a problem for digital healthcare centres but also for physical primary care centres, the difference is however that the doctor gets to actually see the patient in a physical care visit. This could lead to parents seeking care for themselves through their children or adults registering other people's children. This is important to be aware of when considering what kind of diseases are appropriate to treat online. Min Doktor is very restrictive with prescribing antibiotics and drug classed medicines to make sure not to contribute to increased antibiotics resistance or drug abuse.

7.2 Involvement of the child

One of the main focuses of this project was to involve the child in its own care. This is of course impossible to control when the care visit takes place online. This project can hopefully be a stepping stone towards including children in digital care visits and create awareness of how important it is to involve children and why. If children

are not involved, it may result in decreased awareness of their own health. Further, during the interviews some parents said that their children are afraid of hospitals and doctors. Online care visits may feel better for the child, but then they will also never get used to being in hospital environments. To not enhance the fear of hospitals of children, educational elements are important parts of the service.

7.3 User studies

When performing user studies, especially regarding medical situations, it is of great importance to keep all information confidential. To make sure no information could be traced back to a specific person involved in the project, all data was coded with numbers instead of names. Also, it was neutralised so gender would not be mentioned to further increase the level of confidentiality. The informed consent-forms were very important to make sure that the participants were aware of what the information would be used to and that everything would be confidential, as well as that they were able to quit the study at any point and the data collected from their user studies would then not be used.

Since the focus of the user studies was not the medical data of the participants but rather their thoughts and opinions about healthcare, the confidentiality measures taken were considered enough for this project. Specific diseases or symptoms mentioned during the interviews were not considered when designing the concept but solely used as a tool to help parents remember details about healthcare visits.

As mentioned before, no children were interviewed in this project. If children are to be interviewed in further studies in the area, further ethical aspects would need to be considered such as how to explain what the study is for, how to involve the parents and how to talk to the child in general.

8 Conclusion

The study was set out to explore how a service offering digital care visits for children should be designed on a conceptual level for children 1-5 years old. Since digital care visits in general, and for children in particular, is a rather new concept, the area is unexplored. However, it is important that a bigger part of the primary care visits become digital since the physical primary care is under a lot of pressure, which makes this study of great importance. It aims to promote discussions and further research about the issues and possibilities related to the subject.

The purpose of the project was to

- Investigate what thoughts, feelings and worries are related to that kind of care seeking process for the families.
- Examine how Min Doktor's current service should be evolved to suit the needs occurring when the patient is a child who does not seek care for itself.
- Writing design guidelines on how the service could be designed to make all users, both parents and children, enjoy seeking care through it and want to return next time they need care.

A thorough literature study concluded that, in any healthcare situation, it is important that the child's voice is heard to and that the child should actively participate when seeking care. That further suggests that the service needs to be adapted to suit children's needs and invite the child to participate. The literature study also indicates that, in physical care visits, parents are responsible for the children participating as little as they do. Hence, it is important to make the parents understand why the children should be involved.

To learn what thoughts, feelings and worries the users had, interviews with parents were performed. They got to share their experience from the traditional healthcare as well as their thoughts about online healthcare. The main outcome from the interviews were that parents tend to not want to involve their children when seeking care online but that they think that the children would probably have thought it was fun to be involved. Further, they were worried about whether all information could be covered by filling out questions online and that they would not be able to judge symptoms as well as a doctor. The details and results from the interviews can be found in sections 4.2 and 4.3.

To be able to create design guidelines, a concept was found and tested with a paper prototype. The concept was created using ideas (see section 4.5) based on the key

points from the literature study (see section 2.4) and goals extracted from the interview data (see section 4.4). Details about the concept, the prototyping and the testing can be found in sections 4.6-7 and 5.1-4. The design guidelines were created using all information extracted throughout the project, and are to be considered when Min Doktor is designing a service offering digital care visits for children. They summarise the core of the project and suggest how to create a design that makes families enjoy the care seeking and come back to the service. The design guidelines are:

1. It is clear to the parents what conditions are suitable to seek care for using Min Doktor's service
2. Parents feel safe using the service
3. Parents feel encouraged but not forced to involve their children when using the service
4. Children should be enabled and encouraged to participate in their own care
5. The service should always be available
6. Plenty of tips, information and feedback should be available to the user

Further motivations and solution suggestions can be found in section 5.6.

8.1 Future research

As mentioned in the beginning of the report, there are some restrictions to this project. The main restriction is that only the group of children 1-5 years old was considered. To create a tool for children of all ages, further research and user studies need to be done with families that have older children.

Another restriction was that the legal aspects such as authentication were not in focus when creating the concept and the prototype. During the testing of the prototype, several parents mentioned that they were worried about how that would work. This might be a key issue to address to make parents willing to use the service at all and needs to be explored further.

Even though children have been in focus during the project, all interviews and tests have been performed with parents. It would be of great interest to interview children about their experience of healthcare and online healthcare, as well as testing the service with both the child and the parent when the child is actually ill. This might reveal other interesting aspects.

There are several other areas that would be interesting to explore in the future. Children's digital behaviours is one of them, maybe children could even be in charge of the service themselves from a young age and be supported by their parents. It would also be interesting to look at how digital care visits actually affect the primary care units in terms of number of visits or similar. Finally, some kind of user study

exploring what kinds of users the service appeals would be of great value to be able to broaden the user group.

References

[1] Olofsson, C. & Åkesson, H. (2010). Välfyllda arbetsdagar som inte räcker till. *Läkartidningen, 107*(48), 3016-3017. Retrieved August 1, 2016, from http://www.lakartidningen.se/Functions/OldArticleView.aspx?articleId=15504

[2] Sveriges läkarförbund. (2015). Sverigeronden i Skåne. Retrieved August 1, 2016, from https://www.slf.se/upload/Lakarforbundet/For_press/Sverigeronden_Sk%C3%A5ne_r apport2015.pdf

[3] McKinsey&Company. (2016). Digitizing healthcare in Sweden. Retrieved July 6, 2016, from http://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/digitizing-healthcare-in-sweden

[4] Söderbäck, M. (2014). Barn och unga i vårdmiljöer. Söderbäck, M. (Ed.), *Kommunikation med barn och unga i vården* (pp. 15-20). Stockholm, Sweden: Liber.

[5] UNICEF. (2014). Fact sheet: A summary of the rights under the Convention on the Rights of the Child. Retrieved April 6, 2016, from http://www.unicef.org/crc/files/Rights_overview.pdf

[6] UNICEF. (2016). Gör barnkonventionen till lag. Retrieved June 20, 2016, from https://unicef.se/projekt/gor-barnkonventionen-till-lag

[7] Wickström, A. (2016). Statens offentliga utredningar [SOU 2016:19]. Retrieved August 1, 2016, from http://www.regeringen.se/contentassets/7bcd0fe8815345aeb2ff0d9678896e11/barnkon ventionen-blir-svensk-lag-sou-2016_19.pdf

[8] Socialstyrelsen. (2014). Vägledning för barnhälsovården. Retrieved April 6, 2016, from http://www.socialstyrelsen.se/publikationer2014/2014-4-5

[9] Söderbäck, M. (2014). NOBABs standard [PowerPoint]. Stockholm, Sweden, retrieved August 1st, 2016, from http://nobab.se/images/nobabprodukter/Presentation_Nobabs_standard.pdf

[10] Tates, K., Elbers, E., Meeuwesen, L. & Bensing, J. (2002). Doctor-parent-child relationships: a 'pas de trois'. *Patient Education and Counseling, 48*(1), 5-14. http://dx.doi.org/10.1016/S0738-3991(02)00093-9

[11] Johansson, A. (2013). Att möta och kommunicera med barn och deras föräldrar. Fossum, B. (Ed.), *Kommunikation, samtal och bemötande i vården* (pp. 377-398). Lund, Sweden: Studentlitteratur.

[12] Söderbäck, M. (2010). *Barn och ungas rätt i vården*. Stockholm, Sweden: Allmänna Barnhuset.

[13] Wassmer, E., Minnaar, G., Abdel Aal, N., Atkinson, M., Gupta, E., Yuen, S. & Rylance, G. (2004). How do paediatricians communicate with children and parents?

Acta Paeditricia, 93(11), 1501-1506. Retrieved April 5, 2016, from http://www.lub.lu.se/soksystem-och-verktyg/lubsearch [Lund University seach tool].

[14] Tates, K., Meeuwesen, L., Bensing, J. & Elbers, E. (2010). Joking or decision-making? Affective and instrumental behaviour in doctor-parent-child communication. *Psychology & Health, 17*(3), 281-295. http://dx.doi.org/10.1080/08870440290029548

[15] Meeuwesen, L. & Tates, K. (2000). 'Let Mum have her say': turntaking in doctor–parent–child communication. Patient Education and Counseling, 40(2), 151-162. http://dx.doi.org/10.1016/S0738-3991(99)00075-0

[16] Nova, C., Vegni, E. & Moja, E. A. (2005). The physician-patient-parent communication: A qualitative perspective on the child's contribution. *Patient Education and Counseling, 58*(3), 327-333. http://dx.doi.org/10.1016/j.pec.2005.02.007

[17] Harder, M. (2014). Kommunikation med barn vid hälsobesök inom barnhälsovård. Söderbäck, M. (Ed.), Kommunikation med barn och unga i vården (pp. 62-74). Stockholm, Sweden: Liber.

[18] Söderbäck, M. (2014). Barn och ungas delaktighet. Söderbäck, M. (Ed.), Kommunikation med barn och unga i vården (pp. 34-44). Stockholm, Sweden: Liber.

[19] Kellingley, N. (2016). Design thinking, essential problem solving 101 - it's more than scientific. Interaction design foundation. Retrieved August 1, 2016, from https://www.interaction-design.org/literature/article/design-thinking-essential-problem-solving-101-it-s-more-than-scientific

[20] Arvola, M. (2014). *Interaktionsdesign och UX*. Lund, Sverige: Studentlitteratur.

[21] Abras, C., Maloney-Krichmar, D. & Preece, J. (2004). User-centered Design. Bainbridge, W. (Ed.). *Encyclopedia of Human-Computer Interaction.* Thousand Oaks, CA: Sage Publications. Retrieved August 2, 2016, from http://www.e-learning.co.il/home/pdf/4.pdf

[22] Norman, D. (2013). *The design of everyday things*. New York, NY: Basic Books

[23] Blandford, A. (n.d.). Semi-structured qualitative studies. Soegaard, M. & Friis Dam, R. (Eds.), *The Encyclopedia of Human-Computer Interaction (2nd ed.)* [Online book] (ch. 52). Interaction Design Foundation. Retrieved August 2, 2016, from https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/semi-structured-qualitative-studies

[24] [Webpage about informed consent]. (n.d.) *Drafting the informed consent form*. Retrieved August 2, 2016, from http://www.research.uci.edu/compliance/human-research-protections/researchers/drafting-consent-form.html

[25] Doody, O. & Noonan, M. (2013). Preparing and conducting interviews to collect data. *Nurse Researcher, 20*(5), 28-32. Retrieved August 2, 2016, from http://journals.rcni.com/doi/pdfplus/10.7748/nr2013.05.20.5.28.e327

[26] Woods, M. (2011). Interviewing for research and analysing qualitative data: An overview. [PowerPoint]. College of Health and Social Sciences, Massey University, Palmerston, New Zealand. Retrieved August 2, 2016, from http://owll.massey.ac.nz/pdf/interviewing-for-research-and-analysing-qualitative-data.pdf

[27] Halcomb, E. & Davidson, P. (2006). Is verbatim transcription of interview data always necessary? *Applied Nursing Research 19*(1), 38-42. http://dx.doi.org/10.1016/j.apnr.2005.06.001

[28] Sakshaug, J. (2014) Proxy reporting in health surveys. Johnson, T. (Ed.) *Handbook of Health Survey Methods* (pp. 367-381). Published online: John Wiley & Sons, Inc. http://dx.doi.org/10.1002/9781118594629

[29] Baxter, K., Courage, C. & Caine, K. (2015). Understanding your users: A Practical Guide to User Research Methods (2nd Ed.). Waltham, MA: Elsevier Inc. Retrieved August 2, 2016, from https://books.google.se/books/about/Understanding_Your_Users.html?id=l9-cBAAAQBAJ&redir_esc=y

[30] Goodrick, D. & Rogers, P. (2010). Qualitative Data Analysis. Joseph, W., Hatry, H. & Newcomer, K. (Eds.), *Handbook of practical program evaluation (3d Ed.)* (pp. 429-453). San Fransisco, CA: Jossey-Bass. Retrieved August 2, 2016, from http://www.themedfomscu.org/media/Handbook_of_Practical_Program_Evaluation.pdf

[31] Lacey, A. & Luff, D. (2009). Qualitative Research Analysis. [Folder]. National Institute for Health Research (NHS) Design Service for the East Midlands, United Kingdom. Retrieved August 2, 2016, from https://www.rds-yh.nihr.ac.uk/wp-content/uploads/2013/05/9_Qualitative_Data_Analysis_Revision_2009.pdf

[32] [FAQ page about data analysis] (n.d.). School of Pshychology, The University of Auckland, Auckland, New Zealand. Retrieved August 2, 2016, https://www.psych.auckland.ac.nz/en/about/our-research/research-groups/thematic-analysis/frequently-asked-questions-8.html#41663f5798010827566a5f658efd7613

[33] [Webpage about product goals]. (2016). Retrieved August 2, 2016, from https://www.aha.io/roadmapping/guide/product-strategy/what-are-product-goals-and-initiatives

[34] Kellingley, N. (2016). Ideation for design - preparing for the design race. Interaction design foundation. Retrieved August 1, 2016, from https://www.interaction-design.org/literature/article/ideation-for-design-preparing-for-the-design-race

[35] Iida, M., Shrout, P., Laurenceau, J-P. & Bolger, N. (2012). Using Diary Methods in Pshychological Research. Cooper, H., Camic, P., Long, D., Panter, A. T., Rindskopf, D. & Sher, K. (Eds.) APA handbook of research methods in pshychology, vol 1: Foundations, planning, measures and psychometrics (pp. 277-305). Washington, DC: American Psychological Association. Retrieved August 3, 2016, from http://www.columbia.edu/~nb2229/docs/Iida,%20Shrout,%20Laurenceau%20&%20Bolger%20(2012).pdf

[36] Rettig, M. (1994). Prototyping for tiny fingers. Communications of the ACM 37(4), 21-27. http://dx.doi.org/10.1145/175276.175288

Appendix A Work distribution and time plan

A.1 Work distribution

Almost all parts of the project have been done in cooperation between the two project members. During the interviews, one project member was responsible for the contacts with parents and the other one was responsible for rewriting notes. Further, parts of the report have been written separately but thoroughly discussed and read through by both project members.

A.2 Project plan and outcome

The project plan created in the start of the project consisted of the following tasks:

- Literature study
- Find families to work with
- Plan interviews and field studies
- Perform interviews and field studies
- Create a concept
- Low fidelity prototyping and testing
- Improving the first concept
- High fidelity prototyping
- If there is time, implement parts of the concept in Min Doktor's tools
- Create design guidelines to Min Doktor
- Report writing and creating a presentation

In the beginning of the project, it worked out well when combining literature studies with searching for interviewees and planning of field studies. It then showed that the plan was too ambitious, the data gathering and analysis took far more time than expected, as well as the ideation steps towards a lo-fi prototype. This was probably because the project members were novices in the area, so they did not know how many rounds of data analysis and ideation were needed to create a first concept. However, these steps were executed carefully and methodically and a very detailed

first concept was created, prototyped and tested. Since this first part took a lot longer than expected, there was simply not enough time to create a complete hi-fi prototype, only a handful, descriptive digital slides were created to show the main features of the solution suggestions. On the other hand, since the focus was not on the actual interface details, a hi-fi prototype might not have given more information or feedback. This also led to that no parts were implemented or tested in Min Doktor's tool.

Appendix B Informed consent

This appendix includes the informed consent forms used in the different user studies of the project. The forms are in Swedish since that is what was used in the actual studies.

B.1 Interviews with parents and diary study

B.1.1 Syftet med studien

Studien ingår i ett examensarbete vid Lunds Tekniska Högskola i samarbete med Min Doktor. Syftet är att få en inblick i hur ett vårdbesök för barn, 1-5 år, tillsammans med minst en förälder eller annan anhörig ser ut, samt barnets och förälderns upplevelser och preferenser kring situationen. Vidare kommer förälderns inställning till alternativa sätt att söka vård att undersökas.

B.1.2 Proceduren

Studien är tvådelad och det är helt valfritt vilken eller vilka delar du/ni vill medverka i. Den första delen består av en intervju på max en timme. Om barnet är närvarande under intervjun är det upp till dig som vårdnadshavare att besluta om barnet ska medverka. Den andra delen består av en dagbok med några ledfrågor som ska fyllas i så snart som möjligt efter ett vårdbesök.

B.1.3 Kompensation

Som tack för ditt/ert deltagande kommer du få ett presentkort på Apoteket värt 500 kronor. Du/ni kommer inte bli kompenserad för eventuella övriga utgifter såsom resor.

B.1.4 Avhopp från studien

Du/ni kan när som helst under studien välja att avsluta din/er medverkan och eventuellt insamlat material från dig/er kommer då inte att användas.

B.1.5 Sekretess

Allt som sägs under intervjun och allt material som samlas in från dagboken kan komma att användas, om du/ni inte säger någonting annat. Du/ni kommer vara helt anonyma och inget material kommer kunna kopplas till dig eller din familj.

B.1.6 Kontaktinformation

Om du har frågor och funderingar eller vill lägga till någonting är du välkommen att kontakta oss via e-mail.

Sally Wiezell: sally.wiezell@mindoktor.se

Tilda Claeson: tilda.claeson@mindoktor.se

B.1.7 Frivilligt deltagande

Jag intygar härmed att jag frivilligt ställer upp på följande

- En intervju enligt ovan
- där frågor får ställas till mitt barn
- En dagboksstudie enligt ovan

Datum _____ ort _____ Namnförtydligande _____

B.2 Interviews with medical personnel

B.2.1 Syftet med studien

Studien ingår i ett examensarbete vid Lunds Tekniska Högskola i samarbete med Min Doktor. Syftet är att få en inblick i hur ett vårdbesök för barn, 1-5 år, tillsammans med minst en förälder eller annan anhörig ser ut, samt läkarens tankar kring en sådan vårdsituation.

B.2.2 Proceduren

Studien består av en intervju som tar max en timme. Om du tillåter det kommer ljudupptagning ske under samtalet.

B.2.3 Kompensation

Som tack för ditt/ert deltagande kommer du få ett presentkort på Apoteket värt 500 kronor. Du/ni kommer inte bli kompenserad för eventuella övriga utgifter såsom resor.

B.2.4 Avhopp från studien

Du/ni kan när som helst under studien välja att avsluta din/er medverkan och eventuellt insamlat material från dig/er kommer då inte att användas.

B.2.5 Sekretess

Allt som sägs under intervjun och allt material som samlas in från dagboken kan komma att användas, om du inte säger någonting annat. Du kommer vara helt anonym och inget material kommer kunna kopplas till dig eller de eventuella personer du nämner under intervjun.

B.2.6 Kontaktinformation

Om du har frågor och funderingar eller vill lägga till någonting är du välkommen att kontakta oss via e-mail.

Sally Wiezell: sally.wiezell@mindoktor.se

Tilda Claeson: tilda.claeson@mindoktor.se

B.2.7 Frivilligt deltagande

Jag intygar härmed att jag frivilligt ställer upp på följande

- En intervju enligt ovan
- Ljudupptagning under intervjun

Datum_____ Ort _____ Namnförtydligande _____

B.3 Testing the prototype

B.3.1 Syftet med studien

Studien ingår i ett examensarbete vid Lunds Tekniska Högskola i samarbete med Min Doktor. Examensarbetet undersöker hur en framtida barntjänst hos Min Doktor skulle kunna utformas på bästa sätt. Tidigare studier har berört användarnas upplevelser av vården och deras önskemål. Denna studie kommer att utvärdera ett första konceptförslag.

B.3.2 Proceduren

I studien kommer en pappersprototyp att testas av föräldrar och innehållet diskuteras och utvärderas. Testningen kommer att filmas av försöksledarna för att kunna användas för att göra förbättringar av konceptet.

B.3.3 Kompensation

Som tack för ditt/ert deltagande kommer du få ett presentkort på Apoteket värt 500 kronor. Du/ni kommer inte bli kompenserad för eventuella övriga utgifter såsom resor. OBS! Deltagande i flera studier inom samma examensarbete ger inte flera presentkort.

B.3.4 Avhopp från studien

Du/ni kan när som helst under studien välja att avsluta din/er medverkan och eventuellt insamlat material från dig/er kommer då inte att användas.

B.3.5 Sekretess

Allt som sägs under utvärderingen kan komma att användas, om du/ni inte säger någonting annat. Du/ni kommer vara helt anonyma och inget offentliggjort material kommer kunna kopplas till dig eller din familj.

B.3.6 Kontaktinformation

Om du har frågor och funderingar kring denna blankett eller något annat rörande studien är du välkommen att kontakta oss via e-mail.

Sally Wiezell: sally.wiezell@mindoktor.se

Tilda Claeson: tilda.claeson@mindoktor.se

B.3.7 Frivilligt deltagande

Jag intygar härmed att jag frivilligt ställer upp på följande (skriv under med namnteckning på samtliga rader som du går med på):

- Utvärdering enligt ovan
- Filmning under intervjun

Datum _____ ort _____ Namnförtydligande _____

Appendix C Interview guide for parental interviews

This appendix presents the interview guide used for the parental interviews. As mentioned in the report, it was used as a guide and not a schedule, hence not all questions were asked in each interview.

The interviewee was presented with information about the project and the aim of the study and the roles of the project members (one interviewer and one taking notes), without telling the participant that the project is about creating a digital care seeking service for children. The informed consent form was handed over and signed by the interviewee.

C.1 Introductory questions

- Have you heard of Min Doktor?
- What is your main occupation?
- Do you live alone or with a partner?
- How many children do you have and how old are they?
- Are they at home or at a day care centre?

C.2 Healthcare today

Does your child/children have any long term diseases or issues? Do you visit the primary care centre more often than others?

Did you seek care for your child recently?

C.2.1 A specific healthcare visit

Based on your last healthcare visit for your child (or any healthcare visit you remember clearly)

- What did you seek care for?
- Why did you seek care?
- How did you contact the healthcare centre? (1177, phone etc.)
  - Do you use that way of contact most often? Have you tried another way?
  - What do you think about the different contact methods?
- Describe the visit.
- What did you think about it?
- Was something especially good or bad about it?
- Did the doctor turn to the child? In what way/in what situation?
- Would you have wished that the doctor involved the child more/less?
- Do you think that your child would have wished to be more involved in the conversation?
- Do the visits usually work like this one or did you experience other visits as better/worse?

C.2.2 General about healthcare

- Do you usually prepare your child before a healthcare visit? In what way?
- How does your child feel before and during a healthcare visit?
- How does your child usually act during a healthcare visit? (For example during the last visit)
- Did you notice if the medical personnel have methods to get your child's attention or to explain things to the child?
- Does it work?
- Would you have wanted them to do something differently?
- Do you have any special tricks?
- Do you have something more to add about seeking care for children today?

C.3 Min Doktor

C.3.1 If they have used the service

- How do you think the service works today?
- Did you get help?
- What was good/bad?
- Would you recommend the service to your friends?

C.3.2 About Min Doktor

If they have not used the service, they are provided with a short explanation about how it works. Then a little bit more information about the project is presented.

- Would you consider using the service for your child? Why/why not?
- Would you be more or less likely to use the service for your child than for yourself?
- How would you have wanted to fill out the guides, with or without your child?
- Do you think that your child would have wanted to (and be able to) answer questions directed to it?
- Do you think some questions would be easier than others? What kinds?
- Are there some questions where you would have had a hard time answering without involving your child?
- What would have been easy/hard with a service like this? Can you think of something that would make it easier?
- Do you think that your child would have understood that it is an actual doctor on the other side that gets the answers?
- From what age do you think they would understand?

C.4 Children's digital competence

- Does your child use smartphones or tablets?
- For what?

Appendix D Insights from interviews

In this appendix, all categories and insights from the interviews are presented. The insights are presented for each category. MP is short for medical personnel. The numbers in parenthesis are the ages of the children, for example (3.5, 4) means that parents with children of 3.5 and 4 years old have had that opinion.

D.1 Before healthcare visits

D.1.1 1177

D.1.1.1 Positive
Most parents find it comforting to call 1177 to get advice on whether they should visit a primary care unit or not. They also like it because it allows the parent to help their children from home, to confirm their own suspicions, to get advice on which primary care unit is on call and to look at images on the webpage. The biggest advantage is to not have to make an unnecessary visit to the emergency ward in the weekend. One parent believes that the advice from 1177 is better than from the reception at the primary care unit since they are not forced to schedule a visit. There is no difference between calling 1177 or visiting their webpage. Contacted 1177 more often with the first child, as they did not know what to look for.

D.1.1.2 Less positive
The quality of 1177 depends a lot on who answers the phone. Sometimes it takes hours before they call back, which is too long.

D.1.2 Booking a visit

It is hard and complicated to get a visit at a primary care unit and specifically, it is annoying that you have to call at a certain time of the day. One parent had a sense that the personnel in the reception are not very willing to book a visit, and another parent thought that it was very hard to communicate with the personnel in the reception and that it depended on communicative skills whether you would get an

appointment or not. Another parent experience that the main issue is the availability, she feels like her children always become ill during evenings and weekends.

D.1.3 Willingness to seek care for children

One parent feel like healthcare visits are unnecessary if no treatment is needed. Parents never hesitate to seek care for their children, but for themselves they feel like a burden whenever they seek care.

D.1.4 Practical aspects

Parents do not want to go to the emergency ward with their children because it is inconvenient, especially it is inconvenient to sit in the waiting room with children and also because the parents would rather be at home with their sick children. One parent was not happy when he/she could not take his/her child to the closest emergency ward since they had no children's unit. Furthermore, it is inconvenient to take the children to a primary care unit. When children are ill, all parents want is to get quick help.

D.1.5 Prepare the child

D.1.5.1 Important
Many parents think that it is important to prepare their child to and de-dramatize the healthcare visit (2.5-5).

D.1.5.2 How?
This is done by trying to make the visit sound like something cool and exciting (3.5), telling them what will happen during the visit and sometimes the medical personnel's names (if known) (5). Another trick is reading a book about a boy visiting a healthcare unit (1.5, 3.5).

D.1.5.3 Not very important
Some parents do not think it is important to prepare their children prior to a primary care unit visit. One parent think that it is unnecessary since his/her child is not worried (3.5) and another parent thinks it is better to just act like it is not a big deal (3).

D.2 During healthcare visits

D.2.1 The visit

D.2.1.1 Positive

Some people are happy with healthcare in general. Some people express that they are satisfied with their own primary care unit in particular, because it is easy to get appointments and they experience that the medical personnel at their primary care unit put extra effort in to make the visitor's experience better. One parent had low expectations to begin with but was surprised of how well it worked.

D.2.1.2 Negative

Some people feel like a burden to the healthcare system if they seek care and they are also worried that the medical personnel think that they exaggerate their condition. One person thinks that it is hard to express everything during an appointment. Another person think that what is lacking is follow up of for example test results and felt like she needed to push herself to get some answers. It is also troublesome not to get to meet the same doctor each visit. Finally, one person finds the whole process of care seeking complicated.

D.2.1.3 Other

Due to the infection risk, one family got to come in through the backdoor. The most important things are to get calmed down right away and to be taken seriously from the very beginning, whether a visit or treatment is needed or not.

D.2.2 The Medical personnel

D.2.2.1 Positive

Most parents feel seen by the MP during the visit. In particular, one parent felt seen because the doctor mostly turned to him/her. They also feel like their worries are taken seriously and they have big trust in the MP even though they are stressed out, especially if they explain why. Further, most parents think that the MP are good at adapting to children and taking their children's words enough but not too seriously. When the MP act calmly, the children feel safe.

D.2.2.2 Negative

Some parents do not feel seen by the MP and experience that they do not take the problem or the parent's knowledge about their child seriously. Some parents feel like the MP think that they are too anxious about their children and one parent felt patronised when he/she followed another doctor's advice. Another parent felt like the MP had not looked through the journal prior to the visit. Several parents

experienced tired and stressed out MP which does not feel confidence inspiring. One parent also finds it annoying when the MP play with and arouse the children too much.

D.2.2.3 Deeper knowledge

Some people are understanding that the MP need to prioritise more severe cases, sometimes it is even comforting since that means that one's own child is probably not that ill. One person feel like the most unemotional doctors are the ones with biggest knowledge.

D.3 Involvement of the child in healthcare visits

D.3.1 How it is experienced today

The MP try to charm (1.5, 3.5) and comfort the children by using the child's name (2), show it the medical instruments (4.5), sing songs together with the child (2) and divert the child's attention by talking about other things than the visit (3.5, 4.5). One parent experiences that all important questions are directed to the parents (3.5) and another parent experience that no direct questions are asked to the child (2). One parent encourages its child to speak for itself by reminding them what happened and so on (3.5). Another parent think that it is hard not to interrupt the child (5).

D.3.2 The child's perspective

D.3.2.1 Positive

Children appreciate when they are involved (3.5, 3.5). It makes them calmer and they get something positive out of the visit (3). Some children like talking to adults in general (4.5) and afterwards they feel proud and important (3.5). Several parents think that their children would think that it was fun to be involved in filling out the guides for Min Doktor (4.5, 8) and that it would have been exciting to talk to the MP (3). One parent thinks that most children from 3 years could be involved in filling out the guides (3.5). Another parent thinks that its child could sit with the parent and fill out the guides (3).

D.3.2.2 Negative

One parent think that the child does not want to be the centre of attention during the primary care visit because it is scared of adults and unknown things in general (2.5). Another parent does not think that her son cared to be involved when he was 2 years old, but a little bit more 6 months later.

D.3.3 The parent's perspective

D.3.3.1 Pro

Some parents think that it is very important that the MP involve the child (3.5, 5, 8) and that the child is in focus (4.5, 8). The reasons for that is that the children feel more safe (8), they get to practise talking to adults (3.5) and it makes them feel more comfortable telling the MP how they feel and show them things (5). Several parents think that the MP are good at involving the child (3, 8). One parent finds it important that the MP tell the child in an easy language what is going to happen and why (5). One parent had filled out the guide with the child as long as it would have been possible to take a break (2.5). Another one would have needed to ask questions to the child about pain while filling out the guide (8).

D.3.3.2 In between/neutral

Several parents think that the MP are good at knowing how much to involve the child (3.5, 3.5, 4.5). The amount of involvement should be different depending on what condition the child is experiencing (4.5). Children should be involved from 3-4 years old (5). One parent think that it is okay not to involve the child if the MP are in a rush (3.5). Another parent wants to be involved in deciding how the MP behave toward the child (2.5). One parent would ask questions to its child while filling out the guide if needed (3.5, 5). Some parents say that they would have asked their children about their condition before they sat down by the computer to fill out the guide (3.5, 4.5) and one of them thinks that it would have been redundant to have specific questions to the child in the guides (4.5).

D.3.3.3 Against

Several parents would have filled out the guides without their children because they feel like they know better than their children how they are (3.5, 8), because it is ineffective to sit down with the child (8) and because sometimes the child is a bit sneaky (2, 3.5). One parent thinks that when the child is 7-8 years old they can start filling out the guides together (1.5, 3).

D.4 Children in general

D.4.1 The child's feelings during the healthcare visit

D.4.1.1 Positive

Children think that it is fun and exciting to visit the primary care unit and are proud and want to talk about it afterwards (3-8). They do not think that the medical personnel are scary and are happy to show off and help (3-4.5).

D.4.1.2 Negative

Children are scared of hospitals in general and in particular they are scared that something will hurt (1.5-8). One child thinks that it is exciting before they arrive to the primary care unit but then becomes shy as they meet the medical personnel (3.5). Another child thinks that it is troublesome and "insulting its integrity" to visit the primary care unit (3.5). One parent mentions that the child becomes worried if the parent is worried (3).

D.4.2 Children's competence in general

D.4.2.1 Abilities

Children can answer straightforward yes or no-questions (2.5) and specific, closed-ended general questions (3.5-4.5). Children can only describe their current condition, they do not have any sense of time (2.5). It is possible to reason with children to make them willing to cooperate (3.5), but it is not possible to trick children into being compliant (3). Children do not sit down for long unless there is something catching their attention (3.5). They are restless so it is good to have something to do if they are home during the days (4.5). Some children like watching "doctor-programs" (4.5).

D.4.2.2 Behaviour

Children dislike when unexpected things occur (2.5-3.5) and are worried when they meet new people (1.5). If the child is shy it is better to "ignore it" rather than putting it in the centre of attention (2.5). Children do not want to admit that they are ill (3.5). Children start thinking that things are embarrassing and childish when they are 8 (8).

D.4.3 Children's competence related to healthcare visits

D.4.3.1 Abilities

Parents find it hard to rate the severity of their children's diseases (3.5). Children have difficulties rating pain and general condition (5). Children can answer questions about pain (3-3.5) and talk about physical but not psychological feelings (8). Some children answer questions from medical personnel better than questions from parents since they understand the severity of the situation (3.5). Other children answer equally to both (2.5 and 8). Children can play with toys at home but do not do it in a healthcare situation (3.5).

D.4.3.2 Behaviour

Children's behaviour during a healthcare visit varies from time to time (3.5). Some children are very shy during the whole visit (1.5-2.5) and some are just shy in the

beginning (3) then they get used to the attention (2.5). Others are not shy and like talking to the medical personnel (3.5). Other behaviours are: Children start to cry as soon as they reach the primary care unit (1.5), the child stays in the background during the visit (3), the child behaves during the visit (4.5).

D.4.4 Children's digital competence

D.4.4.1.1 Positive about understanding

Some parents think that their children would have understood that there is a doctor on the other side of the screen (2.5, 4.5, 5). One parent believes that children from 3 years old would understand a simulated healthcare visit. One child understands instant messaging (3) and its parent believes that children from 2-2.5 years would understand that.

D.4.4.1.2 Negative about understanding

The child would not have understood that it was a real healthcare visit, it would have wondered when to go to visit "the real" doctor (3.5). Another parent was not sure if the child would have understood that there was a doctor on the other side (3.5). Games and reality are not really separable in this age, so it would have been hard to know whether the child had understood that it was a real healthcare visit or not (3.5).

D.4.4.1.3 Usage

Children use iPod Touch and iPads to play games (3.5, 3.5) and watch movies (2.5, 3.5) and can use the computer but it is much harder (3.5, 4.5). One parent believes that from 3 years old children can navigate and drag things along the screen (3.5) but children does not understand the concept of collecting points (3.5). Children learn quickly where to push buttons etc. in games (3). They are also very used to the internet so a simulated healthcare visit might not be that strange to them (3.5). Some children do not use iPads to play games because the parent will not let them (3).

D.5 Opinions about MD

D.5.1 Positive

Most interviewees would consider seeking care through Min Doktor because it is possible to do other things while waiting for replies and answer when it suits oneself, there is no need to leave the house or take time off work, it is nice to not have to schedule an appointment and sit in telephone queues. Further, it is good that there is no time pressure so it is possible to sit calmly at home and think through each answer thoroughly. Finally, it is available and comfortable. With children, it is nice

not to have to go away with sick children (1.5, 3.5) and to be at home since the child's temper varies a lot (2.5). Another parent thinks that other parents tend to seek care more often than needed. Min Doktor is good to calm down the parents. It is also good that it is possible to fill out the guide in pieces. Some parents think that Min Doktor would have been good if they had not been satisfied with their regular primary care unit, further, if it is for simple conditions (1, 8), if the parent itself can describe the symptoms (8) and if it is possible to take some kind of data on the symptoms, like a photo, temperature etc. (3.5).

D.5.2 Neutral

One parent does not think that there is any difference between visiting Min Doktor or a regular primary care unit. Another parent would use Min Doktor for herself but just use it for her/his children if the regular primary care unit was closed because it is hard to judge children's general condition (1.5, 3.5). Finally, one parent was satisfied with the help he/she got from Min Doktor but experienced that they could only help because his/her symptoms were easy to diagnose.

D.5.3 Negative

Some parents are sceptical to Min Doktor for children because it is hard to judge breathing sounds or coughs if one is not a professional (1.5, 3.5, 8) and because they think that the MP can see things that parents cannot see for themselves (3.5, 3.5). One parent would have missed the personal meeting because in personal meetings answers are given straight away and it is possible to hear nuances in the MP's voices (1). Another parent interprets the conversation between the child and the MP as a check of general condition which he/she believes they could not achieve at home (1.5, 3.5).

D.6 General tips

Many parents think that it is good with toys during and presents after a healthcare visit (1.5-8). One parent thinks that children from 2 years old appreciate presents (1.5, 3). Another parent does not believe her/his child needs bribes (5). The MP told one family to sit in the waiting room one day when they were not going to visit the MP so that the child would get used to the environment (1.5). One parent thinks that it could have been good to film the child at home if it is worried in a healthcare situation, although some children act a bit strange in front of a camera (1.5, 3.5). Another parent says that they could probably film the child and send to Min Doktor if needed but it would have felt a little bit strange (1.5, 3.5). One parent

thinks that the Min Doktor tool could be similar to an ordinary healthcare visit, the child in focus at first and then questions to the parents (3.5). If the child points at the computer screen the parent could help them navigate with the mouse (3.5). One parent believe that children's tablet skills should be used (3.5). Another parent would like to go to the closest sample-taking unit (1.5, 3.5). It is also important to consider that depending on what the issue is, the child can be at home or at a day care centre when the parent is seeking care (4.5). A picture of the MP would make the situation more realistic (1.5, 3.5). Avoid text for children (4.5). It is important with rewards for children (4.5).

Appendix E Goals

This section contains a table with the complete list of the goals created based on the literature study and the insights from the interviews. They were sorted into categories and classified with four different levels of necessity; necessary (N), desirable (D), unnecessary (U) and unnecessary but fun (UF). MD stands for Min Doktor.

E.1 Effect goals

The bolded headers in the table are the categories. The left column is the classification and the right column is the goal.

PARENTS' WILLINGNESS TO SEEK CARE AND RETURN TO MD	
N	Parents feel encouraged to seek care independent of severity (unless too severe)
N	Create a feeling that it was worthwhile to seek care independent of whether treatment is needed or not
N	No one is a burden to Min Doktor
D	Parents feel like they are taken seriously independent of severity without getting even more worried
D	All parents should feel respected regardless of how they fill out the guides (with or without their children)
PARENTS' UNDERSTANDING ABOUT INVOLVEMENT	
N	All parents understand why it is important and feel encouraged to include their children in the whole process
N	All parents understand that the involvement of the child will not affect the care process
CHILDREN'S UNDERSTANDING AND EXPERIENCE	
N	Children understand that they seek care for them
D	After the visit, children understand that they visited the doctor
D	Children feel prepared for the next step during the whole process
D/UF	Children feel like they get to show stuff themselves and help the doctor

PARENTS' FEELINGS ABOUT THE PROCESS

N	Parents feel like they can easily keep track of what has happened and what will happen next during the whole process
N	Parents feel like it is possible to cover all information needed in the guides
D	Parents feel like the doctor knows their medical history and otherwise understand why not

PARENTS' EXPERIENCE OF THE VISIT

D	Confirm parents' suspicions
D	Parents feel like their cases get attention immediately
D	Parents feel like their knowledge about their children is taken seriously
UF	Make parents feel like the doctor puts extra effort in

PARENTS' EXPERIENCE OF THE SERVICE

D	Parents feel like the doctor knows how their child's general condition is
UF	Parents/children feel like they have the same doctor every time

GENERAL BENEFITS

D	Raise children's awareness of their own health
UF	Relieve the pressure on the public healthcare system
UF	Create a feeling that one is doing society a favour when choosing MD

E.1.1 Affordances

The left column are the affordances that apply for all users (parents and children) and the right column are the affordances that are important for children. Each column is separated in two parts, where the left part is the classification and the right part is the affordance.

FOR ALL		FOR CHILDREN	
N	Comforting	N/D	Fun but still serious
D	Quick	D	Easy going atmosphere
N	Easy to use	D	De-dramatizing
N	Easy to understand	D	Make the child feel important
N	Professional	D	Positive
N	Non-stressful	UF	Cool
N	Safe	UF	Exciting

N	Undemanding	UF	Make the child feel proud
N	All children are different		
D	Easy and not time consuming to involve children		
D	Equal treatment to all users (regardless of communicative skills, academic and ethnical background, gender, severity of case)		
D	Objective		
UF	Personal		

E.2 Product goals

The bolded headers in the table are the categories. The left column is the classification and the right column is the goal.

AVAILABILITY	
N	Can be used from anywhere
N	Usable both from smartphones, tablets and computers
N	Possible to fill out in pieces
D	Always available
UF	Quick reply
HELPING PARENTS	
N	Clear to parents that MD will advise quickly when not to seek care through them (emergency)
D	Clear which symptoms to pay attention to
UF	Advise parents on how to explain things to their children
UF	The parent should be able to influence how the doctor treats the child
PARENTS' INVOLVEMENT OF THE CHILD	
N	Allow for different levels of involvement of the child
D	Usable together with children without them being in focus
THE CHILD CENTERED PART OF THE SERVICE	
N	Children can be involved without using the service themselves

D	The whole care process is adapted to children
D	Adapted to fit children's communicative skills
D	Digital environment that is familiar to children

CHILDREN'S FEELINGS AND EXPERIENCES

N	Catch children's interest
D	Doctors should not seem scary
D	Rewarding for children

GENERAL

N	Collect as much "hard data" as possible
N	Questions are easy to answer
D	Suit children up to 6-7 years
D	Quality should not depend on which doctor takes the case
UF	The service exceeds expectations

Appendix F Detailed prototype description

This appendix describes the first prototype as well as the intended changes for each page.

The first prototype is presented in words, motivating the design choices, and pictures together with the intended changes for each page to make it readable and easy to understand. The parts of the design not described below belong to Min Doktor's current design of the service (as the design in the project was based on that) and all questions in the guides are written by the medical experts at Min Doktor if nothing else is mentioned. Since the stakeholders at Min Doktor thought that the focus should not be on registering a child, the descriptions of the intended changes do not start until page 6. If there is no description of any intended changes on a page, no changes need to be made. The prototype is in Swedish since the current service is in Swedish.

In the end of each description, a short note on what the user does to come to the next page is presented to create an understanding of the flow of the prototype.

F.1 Page 1

Min Doktor's starting page as it looks today.

The user presses "Logga in" (sign in) or "Träffa läkare" (meet doctor).

F.2 Page 2

The Log in-page as it looks today.
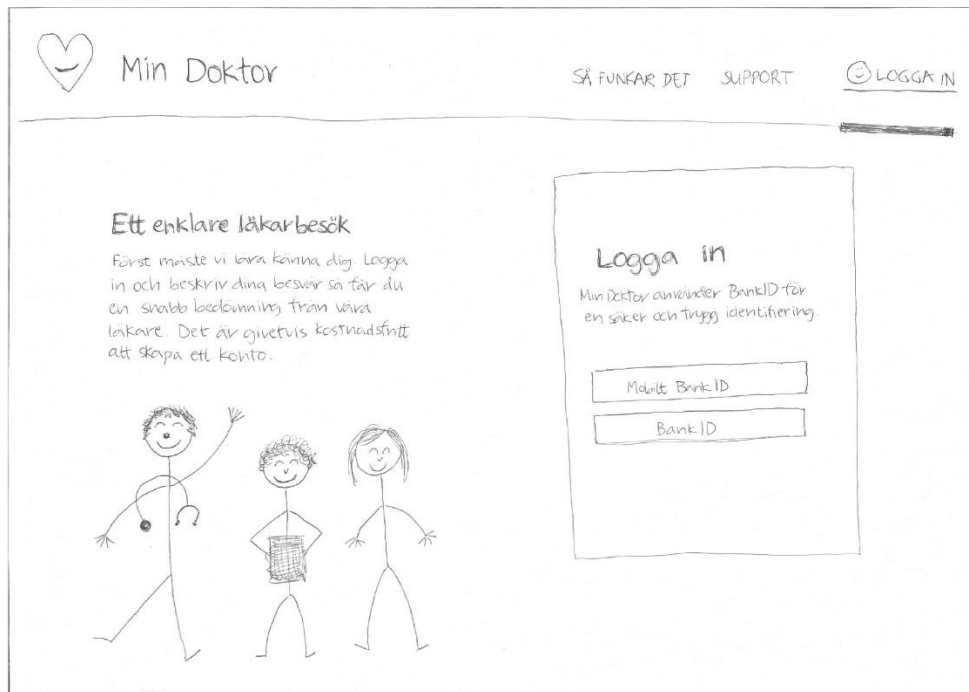
The user chooses which way to authenticate.

F.3 Page 3

A sticky menu is added to the top of the screen to make it clear who's page the user is on. To be able to seek care for a child, the child has to be added to the account by pressing rightmost tab "Lägg till en person under 18 år" (add someone under 18 years old). The choice to have a sticky menu where children are added was made to make it discrete since not all users have children. The sticky menu follows throughout the service if nothing else is indicated.

The user presses "Lägg till en person under 18 år" (add someone under 18 years old).

F.4 Page 4

This is a landing page to give feedback to the user based on their last click. The text is formulated to create a safe feeling and it explains what the service can be used for except to seek care. The citations on the sides are from happy users explaining their experience and are added to create a feeling that the service is used and works.
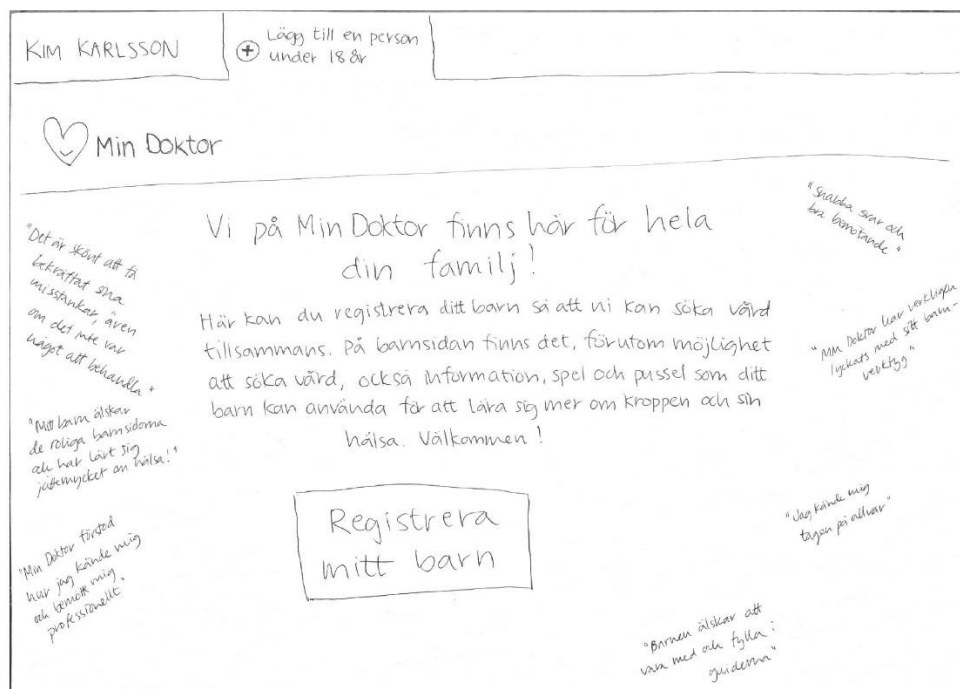
The user presses "Registrera mitt barn" (register my child).

F.5 Page 5

Here the parent fills out the information needed about the child. Since the details about authentication in children's pages are not decided yet, this page was made up with some details considered interesting. The project members thought that the gender of the child could be of medical interest. The thought on adding what relation the adult has to the child was that the animated doctor would be able to say mum or dad rather than adult or parent later on in the service.

The user presses "Registrera".

F.6 Page 6

The children's starting page is similar to the adult's but with a few changes and new features. Firstly, a text was added to create a feeling that the service wants to help the user find the right guide for its symptoms and to make him/her stay in the service even though he/she might feel unsure if it is possible to seek care via Min Doktor. Secondly, the "Närmsta akutmottagning" (closest emergency ward) text is made a hyperlink, and when pressed it shows a map of the surrounding area with night open primary care centres and emergency centres, where the closest one is marked with a larger icon to make it easy to see where to go if the problem is severe.

The biggest change on this page is the addition of the animated doctor. The doctor is there to welcome the child and invite the parents to include their children in the care seeking process. The speech balloon informs why it is important to involve their children and in what ways the service is adjusted to suit involvement. When clicking on the doctor, it will speak out loud to the child. Except for this first one, which is there to present what the doctor's function is to the parents, the speech balloons on following pages say exactly the same thing as the doctor will say out loud if clicking on it. This is to allow the parents to choose whether they want the doctor to speak or if they would rather want to give the information to their children themselves.
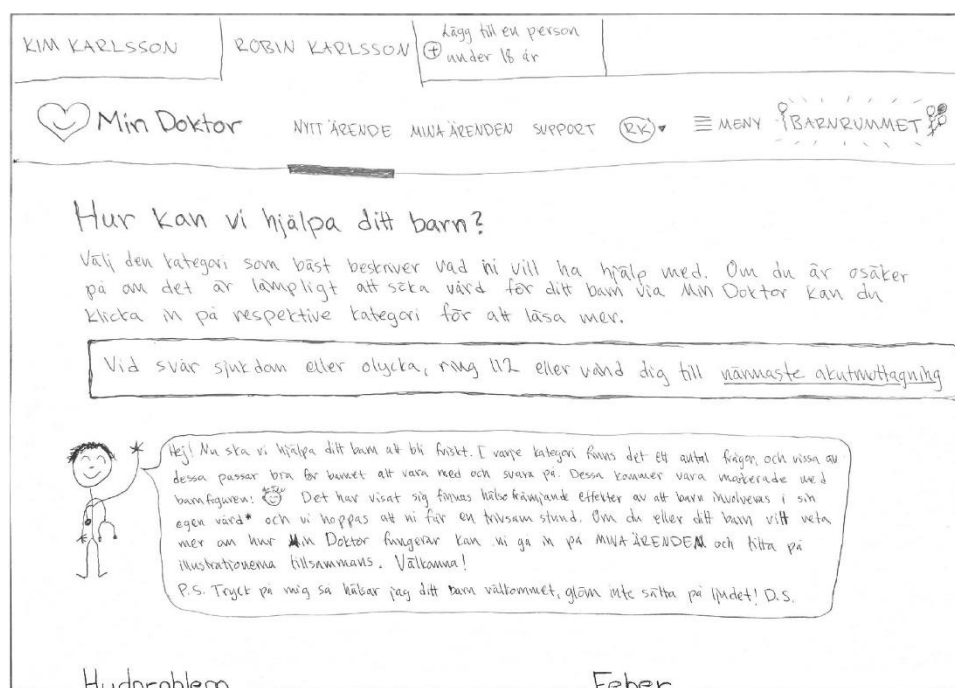
F.6.1 Intended changes

The inviting text has further been clarified to inform the parents that choosing the right category (and hence guide) is not crucial. The new text (in Swedish) is: "Välj den kategori som bäst beskriver vad ni vill ha hjälp med. Det gör ingenting om ni inte väljer helt rätt kategori från början, våra läkare kommer att se till att ni får rätt vård" (Choose the category that suits your symptoms best. It is okay if you do not choose the correct category to start with, our doctors will make sure that you get the right care). Further, the page of the prototype had a lot of text on it. Instead of having the doctor and speech balloon, an animated family should be present with a short text next to it informing the user that it is important to involve their child. The text (in Swedish) should be: "I enlighet med FN:s barnkonvention är detta verktyg utvecklat för att användas tillsammans med ditt barn. Att involvera barnet i vårdprocessen har dessutom hälsofrämjande effekter. Välkomna!" (Accordingly with the Convention on Rights of the child, this tool is developed to use together with your child. Further, to involve your child in the healthcare visit has health-promoting values. Welcome!).

The user scrolls to find the different categories available.

F.7 Page 7

A few children's diseases are added to this page without taking into account which categories they will end up under in the future service.
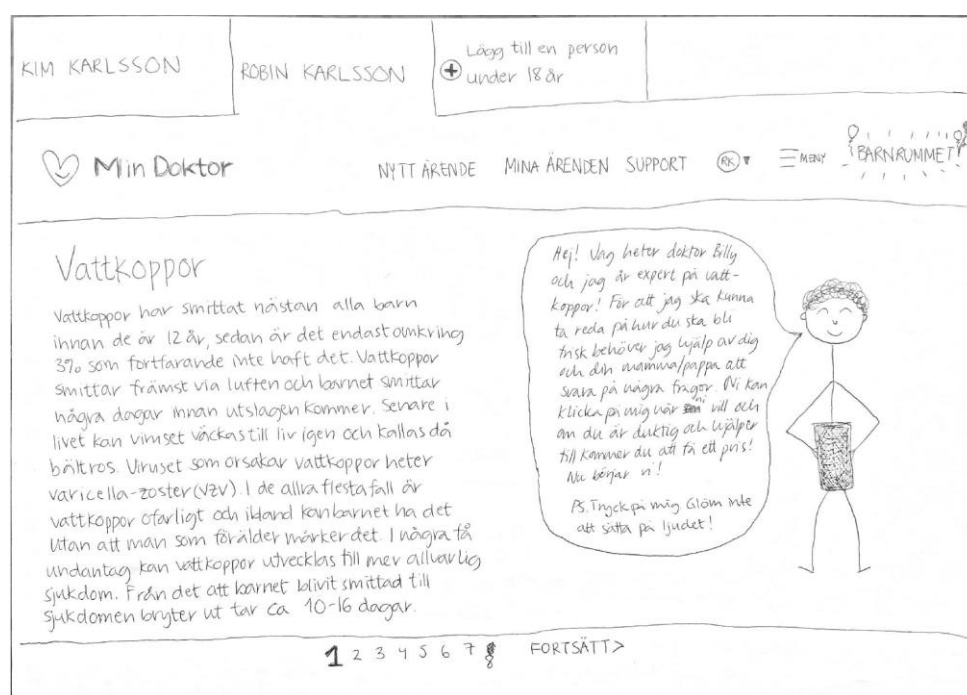

F.7.1 Intended changes

-

The user presses "Vattkoppor" (chicken pox).

F.8 Page 8

This page looks like the entry page in any guide, even though the "vattkoppor"-guide (chicken pox) is not available in the current service. There are however a few additions. The first one is the animated doctor with its speech balloon which follows the user throughout the guide. The second one is at the bottom of the page, where the current page is marked as a number which is larger than the other ones instead of a line which is used in the service today. These numbers are added to make it easier for the user to see how many pages are left of the guide and to be able to jump between the different pages.

F.8.1 Intended changes

The animated doctor changed. Instead, when entering the guide, a box pops up containing an explanation of what the baby head symbols (presented on the next page) mean and what the animated doctor is for. To minimize the amount of text and information and to make the doctor easier to ignore for parents not including their child, the animated doctor now has a small speech balloon with three dots in it, where the text occurs first after pressing the speech balloon. Further, a megaphone symbol is added, pressed to make the doctor read the text out loud. This is to avoid accidentally pressing the doctor when using the service from a smartphone or tablet. Another intended change is that a button (where applicable) is added to the

introductory description of the disease. If pressed, one or more pictures of the symptoms of the disease or likewise are presented, to inform the user of how it might look like.

The user presses "Fortsätt" (continue).

F.9 Page 9

On this page, the baby head symbols are introduced. They are meant to mark which questions are appropriate to involve children on. This is explained in the first doctor speech balloon on page 6. Further, "don't know"- and "other"-options are added where applicable, to make it easier for the parents to fill out the guides.

Two buttons are added at the bottom of the page, "Spara" (save) and "Avbryt" (leave guide). The guides are currently saved automatically on Min Doktor's service and a draft is placed under "Mina ärenden" (my cases) but there is no way of knowing that unless the user is familiar with the service. Further, there might be situations when the user experience a need to stop filling out the guides without saving a draft. Both buttons have question marks on them that, when clicked, presents more information about what the buttons do. When pressing the "Spara"-button the user gets to a landing page which states that a draft is saved under "Mina ärenden", that it is <u>not</u> sent to a doctor and that a reminder will be sent to the user if the draft is still not completed in two hours. When pressing "Avbryt" a pop-up asks the user if he/she is really sure and that no information will be saved or sent to a doctor. The landing page for this repeats that information and contains a link to "Nytt ärende" (new case) if the user accidentally entered the wrong guide.

F.9.1 Intended changes

The "Spara" and "Avbryt" buttons are renamed to "Spara och fortsätt senare" (save and continue later) and "Avbryt och släng utkast" (cancel and discard draft) and the question marks are discarded since the more distinct names provide enough feedback to the user. Further, the baby head symbols are, instead of marking appropriate questions for children to answer, clickable and present tips and advice to parents on how to explain things to their children.

The user presses "Nästa" (next).

F.10 Page 10

The differences here are the child symbols and the "do not know" alternatives on the questions.

F.10.1 Intended changes

-

The user presses "Nästa" (next).

F.11 Page 11

This page is added in line with the goal about helping the parents evaluate their children's general condition. The topmost text explains that some questions will follow to get a feeling about the child's general condition. Some of the questions are from the guide drafts from Min Doktor and some are added to further cover the general condition.

F.11.1 Intended changes

A clear header is added on top of the page with an explanatory text underneath. At the end of the page, there is a box with a tip that if the parents find the general condition hard to describe they can upload a video of their child at the end of the guide to allow the doctor to further evaluate it. Some more questions are added to the slide, asking about if the child is urinating normally, alert and playing.

The user presses "Nästa" (next).

F.12 Page 12

Nothing new on this page of the paper prototype compared to the current service.
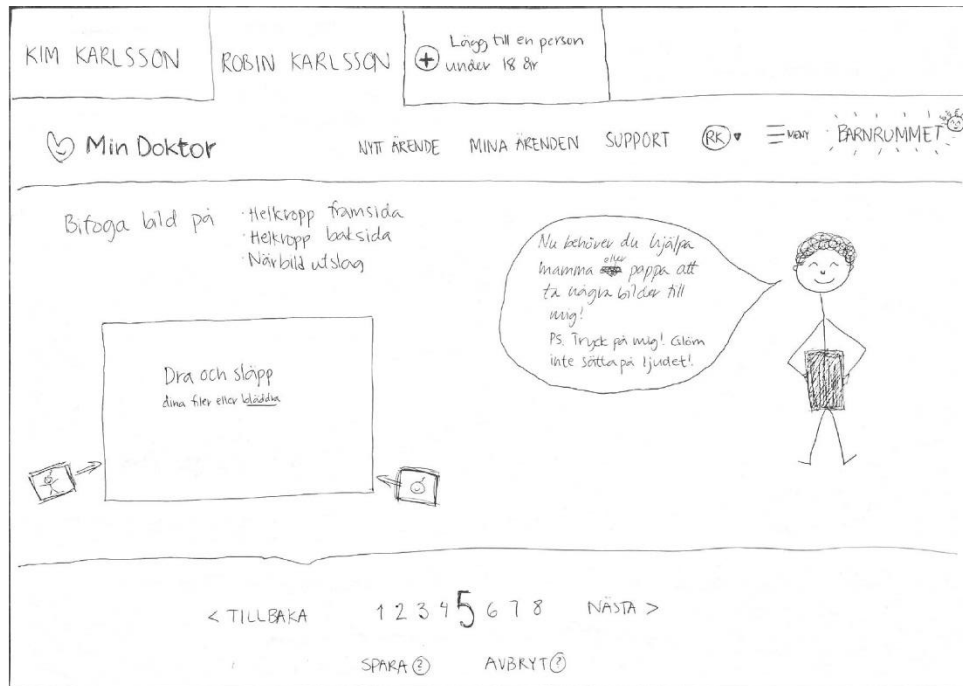
F.12.1 Intended changes

Each description of the pictures to be taken should be a hyperlink which leads to an example of what that image should look like. Further, there is going to be a text under the uploader which is also a hyperlink, "Hur vet jag att detta är säkert?" (how do I know that this is safe) which leads to an explanation about the security systems of Min Doktor and how personal information is treated by the system and doctors working for Min Doktor.

The user then presses "Nästa" (next).

F.13 Page 13

All information on this page was taken from Min Doktor's current guide drafts.

F.13.1 Intended changes

One more option should be added to the long list on the left side which is "Inget av ovanstånde" (none of the above) so that the parent needs to read through all options and to minimise the risk that he/she does not read it all or skips that question. In the smoking-question, "Ej relevant" (not relevant) should be removed since this was experienced as ambiguous.

The user presses "Nästa" (next).

F.14 Page 14

An uploader is added to this page to make it possible to upload further pictures or videos relevant to the case.
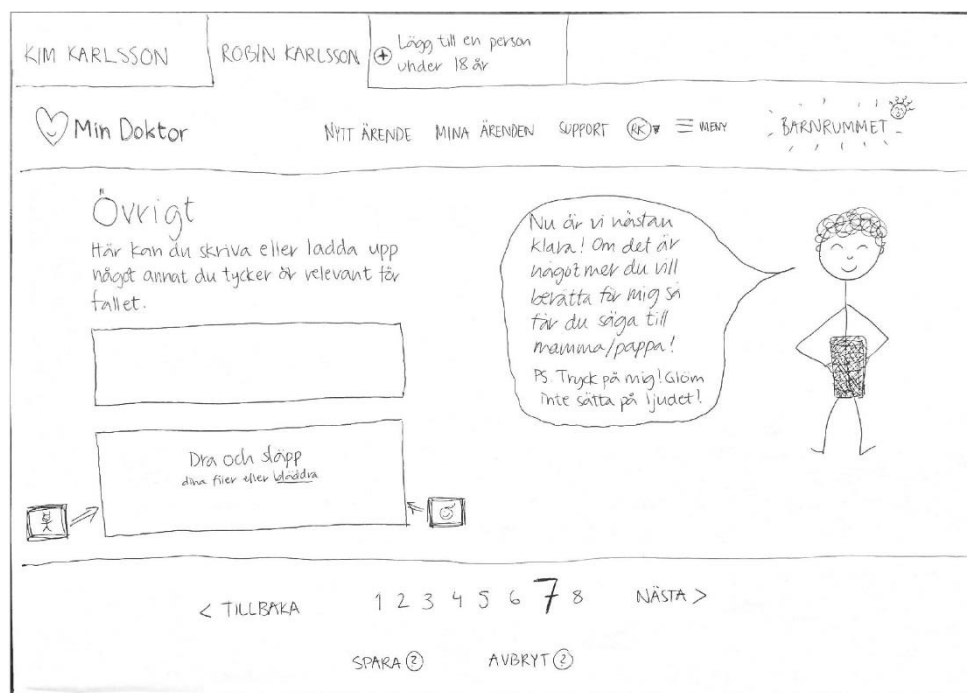
F.14.1 Intended changes

Examples of what could be relevant to upload should be added, for example a short movie about general condition, previous journals, results from self-tests etc.

The user presses "Nästa" (next).

F.15 Page 15

Nothing new.

F.15.1 Intended changes

-

The user presses "Skicka" (send).

F.16 Page 16

When pressing the doctor, a virtual price can be chosen on the screen which ends up in a sticker album under "Mina ärenden" (my cases).
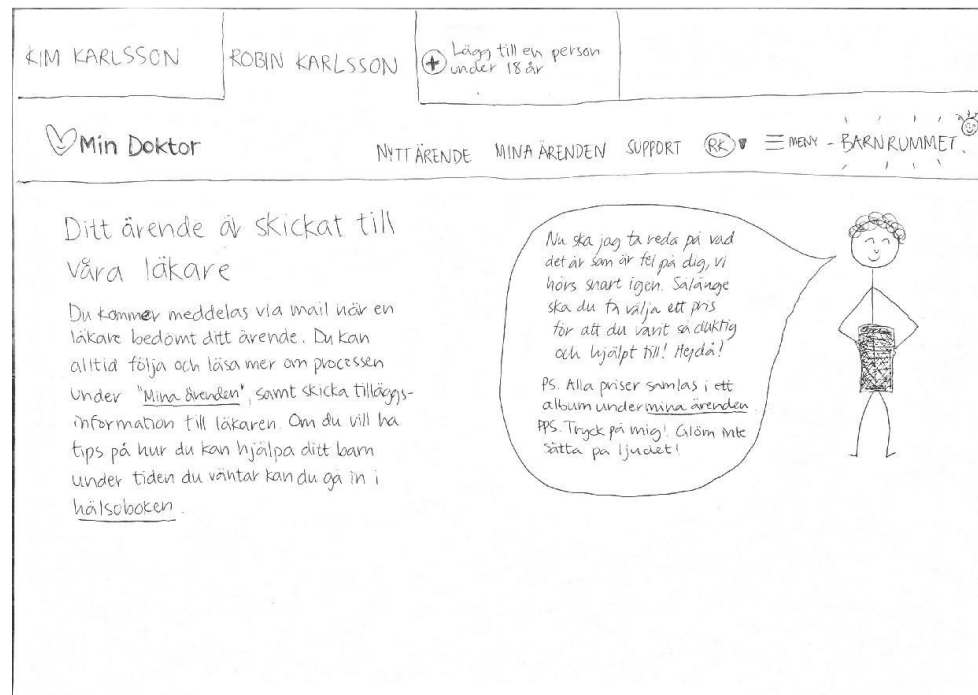
F.16.1 Intended changes

The virtual price was changed to a confetti rain on the screen, together with a fanfare when the megaphone is clicked and just the confetti rain when the speech balloon is pressed. Two more things were added to this page. Firstly, information about how long the waiting time is expected to be until the user gets its first answer from a doctor needs to be shown on this page. Secondly, there is going to be a box at the bottom of the page which looks childish and says that the user can visit the children's room for more information and games etc.

The user presses "Mina ärenden" (my cases).

F.17 Page 17

Firstly, a wastebasket is added next to the status "Utkast" (draft) to make it possible to remove a draft. Secondly, a sticker album called "Mina priser" (my prices) is added where the prizes from each care visit is saved. Finally, a visual timeline of how the service works is added called "Så funkar det" (that is how it works), consisting of a few balls connected with lines. Each ball is clickable to present further information about that specific step. This is to make it easier to get an overview of the service and where in the process the case is at and what can/will happen next and to encourage the parent to include the child when looking at the animations of the different steps. Next to the overview, there is a film that explains to the child how the service works.
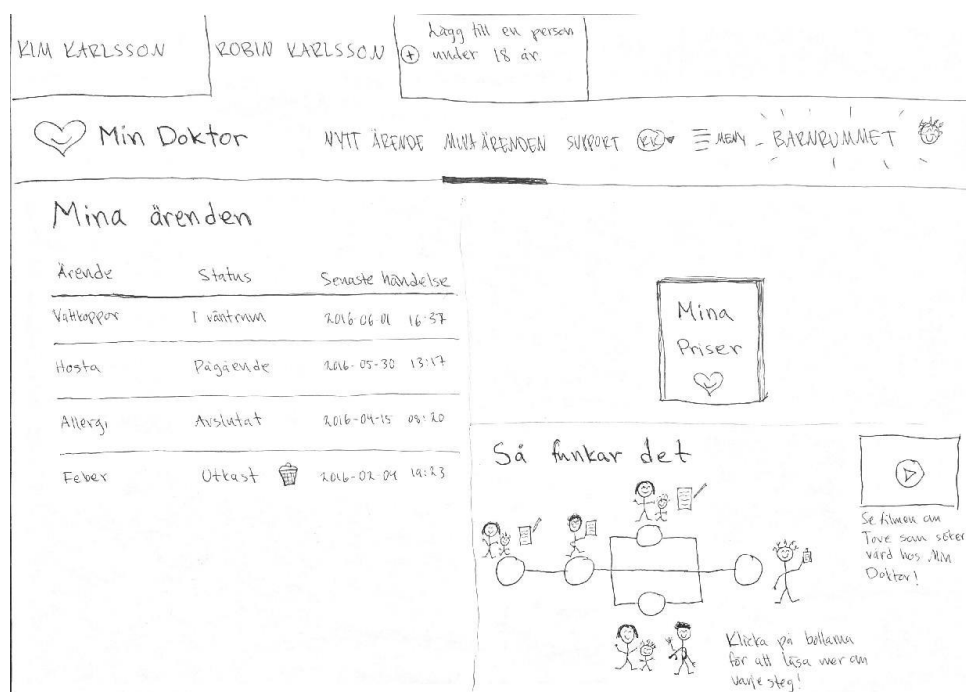
F.17.1 Intended changes

"Mina priser" (my prices) is removed since the virtual prizes are removed. Next to "Status" in the cases there is a question mark which, when pressed, presents information about what the different statuses mean. To make the layout more smartphone and tablet friendly, the timeline moves down and is placed underneath the cases. Also, the layout of the timeline changes so that it consists of four balls on a straight line with arrows between them. This change is made to make the interpretation of the timeline clearer. Each ball then holds more information than

before and all alternative actions possible in each step. The film about how the service works is moved to the children's room.

The user presses "Hosta" (the cough case) which is ongoing.

F.18 Page 18

The timeline is shown in the overview of the case and the ball which represents the status of the specific case is marked.
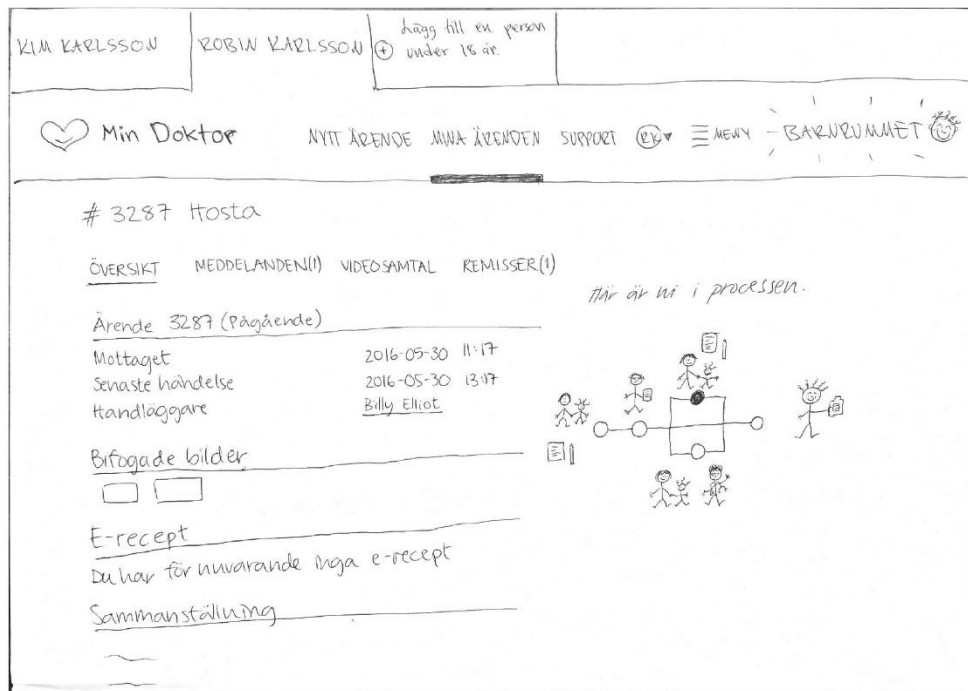
F.18.1 Intended changes

The timeline is moved and is placed under "Ärende" (case), once again to make it more mobile and tablet friendly.

The user presses "Meddelanden" (messages).

F.19 Page 19

In the message part, the animated doctor appears again to remind the parent to keep involving their child throughout the care process. The doctor also reminds the parent and child to look in "Hälsoboken" (the health book) and "Barnhälsoboken" (the children's health book). "Hälsoboken" is a collection of pages with information about different diseases. "Barnhälsoboken" is the same but created in a way so that children can understand the information, and except for information about diseases, it also includes information about the healthy body.
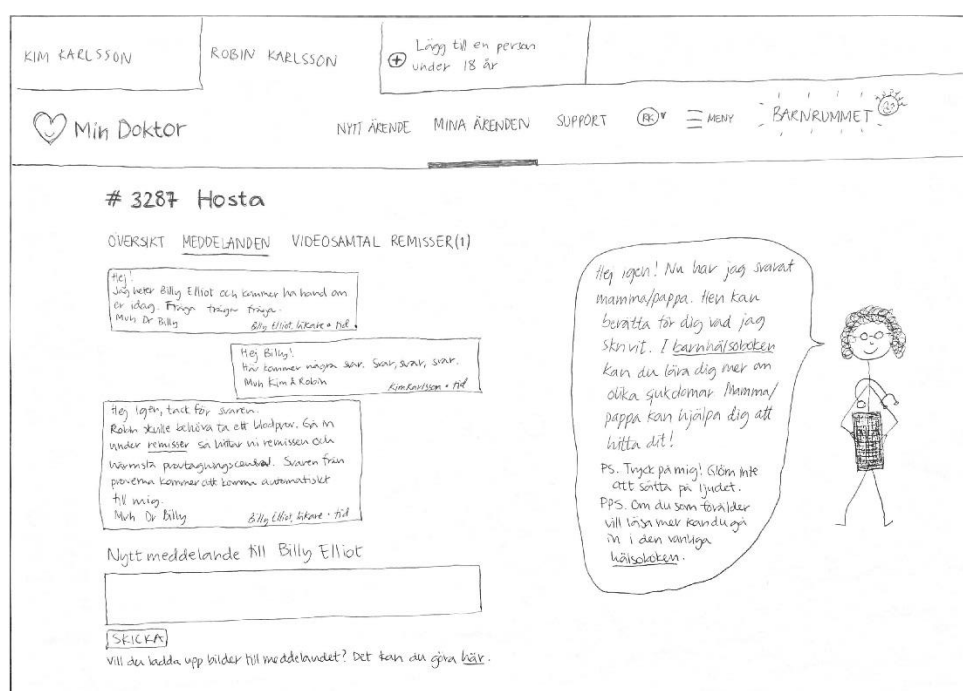
F.19.1 Intended changes

-

The user presses "Remisser" (referrals).

F.20 Page 20

On this page, a small information text was added underneath the header about which kind of referral it was, stating which kind of test that was to be performed. In the description of how the referrals work, a bullet was added about why it is important to prepare the child before a test and how it could be done using the children's room. The animated doctor also says that it is important to prepare before tests and that it can be done using the children's room.

F.20.1 Intended changes

A text box is added above the header telling the parent that movies to prepare the child are available in the children's room.

The user presses "Barnrummet" (the children's room).

F.21 Page 21

In the children's room, the normal sticky menu on the top disappears, together with the normal main menu, and is replaced with one single button that takes the user back to the normal pages. This is to avoid that the child accidentally enters a case or similar.

A child stands in the centre of the room and has a speech balloon, just like the doctor in the guides. The room consists of two main parts, firstly there is a door into the sample-taking central where the child can watch movies about other children who have had samples taken to learn how it works and that it does not hurt and why they are necessary. The other part is a bookshelf with a few different features. The first one is "Barnhälsoboken" (the children's healthbook) which has been described before. Further, there is a colouring book, puzzles and educational games, as well as a teddy bear that the child needs to take care of when it gets different diseases etc. Lastly, there is a doctor's tool bag where the child can look at the different tools and learn more about them and what they are for.

F.21.1 Intended changes

The child has the same kind of speech balloon and megaphone as the doctor to make the design consistent. Further, the user is not required to be signed into the service

to use the children's room. The film that describes how the service works is moved here and is shown on a TV on the wall behind the child. The teddy bear is moved so it sits next to the book shelf on a chair instead, the colouring book disappears and the doctor's tool bag is moved so just one activity is placed on each shelf. Different kinds of activities are still kept since all children like different things.

Appendix G Test plan

This chapter describes the test plan used when testing the prototypes. For the participants that had not participated in the interviews, a short explanation was made about that. Further, the steps performed to create the paper prototype was explained, as well as that it was based on the interviews and literature.

G.1 The test plan

This section presents the tasks given to the participant and where in the flow (on which page of the prototype) the task was given. In appendix F there is a detailed description of the prototype where the different pages can be seen.

Page 1: You want to sign in and register your child to be able to seek care for him or her.

Page 7: You suspect that your child has chicken pox and you want to seek care for that.

Page 11: Now your other child starts screaming from the next room and you feel like you need to take a break in the care seeking process.

Page 11: All of a sudden you other child stops screaming and you decide to continue.

Page 17: Your child wants to look at all of his or her prices.

Page 18: You want look at the cough case and the messages and referrals connected to it.

Page 20: You want to prepare your child before the sample taking.

When this part of the test was finished, the *Children's room* was explained further since the functions there were not prototyped.

G.2 Discussion about specific features

Did you feel like something was missing in the guides?

What are your thoughts (good, bad, indifferent) about;

- Registering a child?
- The animated doctor?
- The baby symbols?
- The general condition?
    - Could more questions be added?
- The Save/Cancel functions?
- The digital gift to the child?
- The different statuses on the saved cases?
    - Do you understand what they mean?
- "How it works"-illustration?
    - Do you understand what the different steps mean?
- The Children's room?

G.3 General discussion

- Do you think you would have used this service if it existed today?
- Would you feel safe using it?
- Would you have involved your child when seeking care?
- Does it feel like the service is pushing you to involve your child?
- Is it clear why we want you to involve your child?
- Is it clear that you do not have to involve your child?
- Is it clear which type of problems it is possible to get help with through this service?
- Are the questions easy to answer?
- Do you think that your child would understand that you were seeking care for him or her?
    - At what age?
- Do you think your child would enjoy being involved?
    - The Children's room?
- Was there something else you thought was good or less good? Clear or unclear?

Appendix H Test results

This appendix presents all test results from the user tests of the prototype. Firstly, the actual test results are presented, the pages are presented in order and the comments from all tests for each page are presented. Lastly, the results from the discussions following each test session are presented. P1 is code for parent 1 etc. P2 and P3 were a couple who tested the prototype together, hence their results are presented together.

H.1 The test

H.1.1 General comment about the test

P1

P2/3: The couple's small child sat between them during the whole time and it seemed like they were a bit distracted sometimes. Because of that, we took quite a lot of initiatives regarding when to turn the pages and likewise, mostly to move the test forward. They did not seem to understand that they were supposed to push the "buttons" for real but rather said out loud which button they thought they were supposed to push. That could have been because they were two and wanted to agree before making any decisions, but that was also why we needed to take some more initiatives.

P4

P5: Pushed the buttons on the prototype.

P6: Did a lot of pushing on the prototype, sort of felt his/her way. We did not have much time with this participant so we skipped a bunch of pages (the signing in for example)

H.1.2 Page 1

P1: Clicks "Log in".

P2/3: "Here one thinks "Log in" somewhere", points at "Log in".

P4: Is reading the text a bit, thinking for a while. Is a bit uncertain where he/she should click. "Maybe I would have clicked on "Meet doctor"".

P5: Clicks "Log in".

P6: The test leader describes this step.

H.1.3 Page 2

P1: Clicks "Log in with bankID".

P2/3: Is thinking for a while and then chooses "Log in with bankID"

P4: Clicks "Log in with bankID" after some reading.

P5: Clicks "Log in with bankID".

P6: The test leader describes this step.

H.1.4 Page 3

P1: Thinks for quite a while, asks if he/she is supposed to continue. Then says "Okay but the child has a cold so we are going to seek care for that" and clicks on that category. We tell him that he should have clicked on the "Add a person under 18"-tab. He suggests "A pre-page here, "Are you seeking care for yourself or your child?"".

P2/3: They discuss a bit then one of them sees the tap and the other one looked more at the original menu and looked a bit at "New case". Finally, they choose the right tab.

P4: Reads a bit and reflects on what the task was. "Oh right, I am only supposed to register my child" and clicks the correct tab.

P5: Reads a bit. "Should I turn the page then, I guess there was nothing here that fits". The test leader reminds her/him of the task. "Oh right, that was what I was supposed to do. Then I will add a person under 18". Clicks on the right tab.

P6: Tries clicking "New case". Gets back to the same page. "Okey but then I will assume that my child has aching ears. The question is… Yeah alright, I then have these choices?" - points towards the guides. Test leader explains how to do.

H.1.5 Page 4

P1: Reads for some seconds, then clicks "Register my child".

P2/3: Looks at the page for a while, chooses "Register my child".

P4: Reflects and reads for a while, clicks "Register my child".

P5: Directly clicks "Register my child".

P6: Calmly reads through the text and clicks "Register my child".

H.1.6 Page 5

P1: Pretends writing on a keyboard, filling in names and stuff, says "And I am a dad" and chooses "Dad" on the relation. Clicks "Register". Asks "How is the authentication working, that it is my child?". We tell him/her that it is outside the scope of our project and he accepts that.

P2/3: Now the small child is screaming pretty much so we just tell them about what they can fill out and they nod and seem to understand and then we turn the page.

P4: "Then I fill this out and click on "Register"".

P5: Clicks around pretending to fill out the information. Clicks "Register".

P6: Fills it out with the fingers and reads out loud. Clicks "Register".

H.1.7 Page 6

P1: Reads through the text for a while. We ask "Have you read everything?", he/she answers "Yes I have read everything". We say that he/she are going to seek care for chicken pox. He/she says "I believe I need to scroll here".

P2/3: They read through the text for quite a while. One of them says "If one scrolls down here all the categories will appear", the other one says "But maybe one should click there" referring to the animated doctor. We tell what would have happened if they had clicked the doctor. We tell about the chicken pox, they are quite for a while and we say that they were talking about that before and that they maybe want to scroll down and they say "Exactly" and then we turn the page.

P4: Receives the instructions about the chicken pox directly. Reads for quite a while. "Hmm choose a category... Then I will scroll down I guess".

P5: Reads a little, let us know when he/she is finished. Then the test leader informs that the child has chicken pox. "Then I guess I will choose a new case" and clicks "New case". Arrives at the same page again. "I am supposed to click on this figure too" and clicks the doctor. We explain to him/her that one is supposed to scroll down, "Yeah that I would have understood if it was for real of course".

P6: Reads through the text. The test leader tells about the chicken pox. Then he/she clicks on "Skin problems" without scrolling.

H.1.8 Page 7

P1: "Yes well there the chicken pox is" and clicks the chicken pox category.

P2/3: "Then we can find that there yes". We say "Then we click there yes" and they say "Yes exactly" and we turn the page.

P4: "Reads a little, finds it pretty fast. "Yes well here is the chicken pox, let's click that one".

P5: Finds chicken pox immediately and clicks it without saying anything.

P6: "Okay so it is there (points towards chicken pox), I would go directly to "Skin problems" because there are other rashes and likewise that looks similar and then it could be a skin problem instead".

H.1.9 Page 8

P1: Reads for a while and seem to read both the info text and the speech balloon text. "Then I should click on "Continue" here maybe" and clicks "Continue".

P2/3: They are reading for a while and then one of them says "Then we click here right" and clicks the animated doctor. We tell that the doctor will say the same thing out loud as the text in the speech balloon. The same person says "And then one can continue reading here about the different…" referring to the "Continue" button and then we turn the page and explain that here is where the care seeking process starts and that they can read through everything and then go through the whole process. The other person understands but the first one does not really seem to totally understand that they are supposed to seek care because he/she is just quiet and looks/reads.

P4: Takes time to read, looks at the doctor and the speech balloon too. Clicks "Continue".

P5: Reads through everything. "Yes well then I click the figure", we tell that the doctor will say the same thing as the text. He/she stagnates as he/she was expecting something more. "Well okay, then I guess I click here" and clicks "Continue" after he/she has wandered around with the eyes a bit.

P6: Reads it calmly. Looks through the speech balloon too. Clicks the doctor. Clicks "Continue".

H.1.10 Page 9

P1: Looks through pretty fast and clicks "Next".

133

P2/3: "And then one fills out the stuff here and then clicks there, or?", points towards the doctor. We explain that it is voluntary to click the doctor and that one otherwise can just click "Next" and they understand/agree, say "Yes exactly" and we turn the page.

P4: We instruct him/her to read through the questions to get a sense of how it works. "Yes, I guess I will fill this out and press "next"". Does not look at the doctor.

P5: Pretends to write a little and thoroughly reads through the questions. Clicks the doctor. Clicks "Next".

P6: "Ah ok and then here is a list" points towards the date. He/she would have wanted to have the doctor on the other side because he/she looks to the left and to the top at first. What the doctor says is supposed to be the first thing to happen, or the doctor gives like an overview so he/she should be the first thing to look att. "Next".

H.1.11 Page 10

P1: Looks through. The test leader says that the child starts to scream and the he/she needs to take a break. "Then I click "Save"" and clicks "Save". Test leader turns the page.

P2/3: Tell them to take a break. They click "Save" immediately. One of them asks if one is signed out after a while and we say yes.

P4: Tell him/her to take a break. He/she is thinking for a while and says "I think I would just leave. I understand that I am supposed to click save but I don't think I would have done that.

P5: Tell him/her about the break. Immediately clicks "Save". Comes back. Pretends to fill out the questions and then clicks "Continue". Forgot to click the doctor.

P6: Tell about the break. Considered for a while how he/she would have done. "Hmm… "Save". First I looked at "Cancel", and then I guess that if I would have clicked "Cancel" there will be a pop up asking me if I really want to cancel".

H.1.12 Page 11

P1: Reads through and clicks "Next".

P2/3: Reads through, clicks the doctor and then "Next".

P4: Reads out loud a bit, clicks "Next".

P5: Pretends to fill out some answers, "Oops, maybe I was supposed to click the doctor first", clicks in, then continue to fill out, clicks "Next".

P6: Reads through, clicks "Next".

H.1.13 Page 12

P1: Reads through. "Well now I don't have and pictures of my child of course because I haven't taken any before so then I would have clicked there" and points towards the doctor. "But I guess we will leave him for now?" and we answer "Yeah or he will say the same thing as in the speech balloon when you click him" and he/she answers "Ah ok" (sort of like he/she had not understood that before). "But then I will just drag and drop pictures here", clicks "Next".

P2/3: "And there it says drag and drop, but if one has it on the mobile phone as I guess one has…" We say that we do not really know how that works today. "But if one has a tablet, is it possible to take a photo directly in the app then?". "Well, we add a photo here then". "And then we click to listen to the sound and then "Next"". At the end of the testing he/she asks if there will be other pictures to look at, like example pictures of other children, sort of "it could look like this".

P4: "Picture…" thinks for a while. "Here I would have stagnated, up until now I have only read about what it is but here it is obvious that I will send away something and that that could cost me something." Test leader asks "Ah ok, you mean cost money?". "Well, up until now it has been like 1177 for example. Here it is obvious that it is some kind of visit to the doctor." Test leader asks "Ok and that is not very obvious when you are filling out questions and so?". "No, that felt like something automatic. So here I would have stagnated and probably left." Test leader: "How come?". "Well for me it is about that I would not seek care for chicken pox, the children can even go to school with it. So then I would more have wanted to read about it and get some tips, or get something that says that I don't need to seek care." Test leader says that it is for free for children. "Yes well... Up until now I haven't read anything about what it costs, but it is not just that, do I really want to occupy the doctors time or do I just want to read about it. If I was on this homepage because my child had a 43-degree fever and hadn't been eating for weeks, then the situation would have been different but if there were only some dots I wouldn't take up the doctor's time." Then we discuss why we haven't included the price. "Could have been nice if after the general condition section one could be informed that care seeking is not needed. But maybe that is too sensitive." We pretend that he/she would have continued seeking care anyway because he/she was worried. "Ok so here one would need to stop for a while and take pictures with the phone to upload to the computer". Moves on.

P5: Clicks on the doctor. "Taking a picture of the child, click, click! Uploading picture, Next".

P6: Looks around, clicks "Next".

H.1.14 Page 13

P1: Reads through. Says "Smoking?" in a joking way. We explain that it is child up until 17 years old, and that we are not the ones who have written the questions.

P2/3: Tell them that everything will be filled in the next time. "Oh yes"" they answer in a positive way. Asks "Is it possible to get development curves for the children as well?". Vi ask if that is something he/she would have wanted. "We always think that that is fun and maybe one is wondering if they have grown anything the last 6 months… Maybe they are growing in the same pace in a year and then all of a sudden much faster. Yeah well I don't know." Clicks "Next".

P4: The test leader explains the health profile and the it will be filled in the next time. He/she reads through. Clicks "Next".

P5: Explain about the health profile. "This is always so hard, the weight and so, they usually check that during the visit. Oh well, I will have to go away then to take the measures, because that I don't know about at all if it has been a long time since the last visit." "And there is no alternative for "None of the above" on this one?" and points towards the list with diseases. "It would have been good if one has to answer no in an active way so one doesn't miss anything." Fills in the last things and clicks "Next".

P6: Reads through, klicks "Next".

H.1.15 Page 14

P1: Quickly looks at it, "Yes well not much here", clicks "Next".

P2/3: "Yes well then we will add some more pictures and clicks there (the doctor) and then "Next"".

P4: Reads through and clicks "Next".

P5: Reads a little bit and clicks "Next".

P6: Reads through.

H.1.16 Page 15

P1: We explain that this is a summary of the answers. "Yes, I filled everything out". Presses "send".

P2/3: We explain that this is a summary of the answers. "Ok, then we press "send"".

P4: "And here I see all my answers. Next... No, that is not an option, "send"."

P5: "Summary, am I supposed to fill that out?". We explain that it is a summary of all the answers. "Yes, maybe there should be a box to tick to ensure that all answers are correct in case I wrote something wrong." Presses "send".

P6: Explains that it is a summary of the user's answers.

H.1.17 Page 16

P1: Reads through the page rather quickly and then looks up and say "Mm" and nods to show that he/she is done. We tell him/her that the child wants a price. He/she thinks for a while, presses the doctor a little bit and then we tell him/her that if the doctor is pressed the prices show up. Then the prices are put on the table. He/she chooses the cat. We say "Then it flies over there" and points at my cases.

We say "Now the child wants to look at his/her prices." He/she reads a bit and then presses "my cases".

P2/3: Reads through the page. Asks "Does one not have any telephone contact with the doctor?". We tell him/her that it is possible to schedule a video meeting or a phone call but that it is unusual.

"On this slide it would have been good to know if I am expected to get an answer within four hours or a week", "One is extra worried about the child and want to get an answer as soon as possible", "To know what to expect", "Also what hours of the day they are available, if it is chicken pox the symptoms are often worse at night, that applies to other diseases as well". We tell him/her that several people mentioned that and he/she agrees that availability is very important.

We remind him/her that it is possible to choose a price. "Yes, right." and chooses the cat. We say, "and then it flies over there" and points vaguely at my cases and tell him/her that he/she wants to look at all prices. He/she says "There then?" and points at the children's room, we show him/her where to read in the speech balloon and he/she chooses "my cases".

P4: Reads through the page. "Did I fill out my e-mail somewhere?", we tell him/her that it is available on his/her profile. Keeps on reading. "There is nothing more to press here". The test leader tells him/her what to do next. He/she noticed the animated doctor. "I think I deliberately did not press the doctor". Still pretends that the child would get a price and we tell him that they want to look at all prices. Thinks about where to press, looks confused. "Hmm, well... I might press "the children's room"". We instruct him/her what to read. "Oh, should I read as well. We just did similar studies and people do not read, not even three big words appearing in the center of the screen.". "We even noticed that people press buttons and then read while the next slide is loading." Finally press "my cases".

P5: Reads for a while, then press the doctor. "Is it a physical or a digital price?". The test leader explains that the price flies into my cases and we ask him/her to look

at all prices. "Yes, is it "the children's room" then. Or should it be in "my cases"? We try "my cases"". "It feels like those kinds of things should end up in "the children's room"."

P6: Reads through the page. Want to turn the page. The test leader asks him/her to wait and tells him/her about the prices and shows when they appear. Chooses a price, then clicks "my cases".

H.1.18 Page 17

P1: He/she looks a little bit. "And then we have "my prices" here" and press "my prices".

We tell him/her that he/she wants to look at the cough case and he/she presses it.

P2/3: He/she looks again and says "Yes and there are "my prices", and there you can press the balls [about the timeline]" and we tell him/her that they pop up when pressed and he/she nods. We tell him/her that he/she wants to look at the cough case and he/she says "then I would press here" and press the case.

The other parent comes back after being away and we show him/her what was went through. He/she asks "Is this "my cases" only for the child?".

P4: Looks through the page. The test leader gives the next instruction. "Yes, then I press "cough"".

P5: Reads through a bit, clicks the book with the prices. The test leader gives the next instruction and he/she presses the cough case.

P6: He/she reads through the page and wants to turn the page. The test leader instructs him/her to look at the cough case. He/she presses "cough".

H.1.19 Page 18

P1: He/she looks through the page, "Now I see that I have a message here" and presses "messages".

P2/3: One parent leaves the room for a while. The other parent looks a little at the page and says "There is a message related to this case" and press "messages".

P4: Reads through the page. Hums a little. "I actually do not understand where I am in the process" (looks at the timeline). The test leader explains a little. "The first thing I thought about was that I did not know in which direction I should look at it. And then this (points at two balls that are similar), they look the same, does this mean that I should do something... No, this was not obvious." The test leader explains a bit further. "Ok, well, I seem to have a message. Did I get an e-mail about that as well?", We answer yes and he/she press "messages".

P5: He/she looks a little. The test leader tells him/her that he/she got a message. "Maybe it should be bold or something so that it is clearer that there is something there".

P6: "Can I click here? "Most recent events"." Explains that it is only a time indicator. The test leader asks him/her to check messages and the participant presses "messages".

H.1.20 Page 19

P1: He/she reads the message and looks like he/she is reading the doctor's speech balloon. "I see here that I got a referral, I need to look at that" and presses "referrals".

P2/3: Both parents are now back. They look around the page. One parent says "So it is possible to answer and send." The other one says "Let's see, we press referrals then" and points at "referrals".

P4: Read through the page quickly and missed out on the first messages so he/she did not understand the context at first. Reads the last message out loud, "Yes, let's go to "referrals" then".

P5: Reads, presses "referrals".

P6: Reads through the messages briefly. "What I think would have been good is if the latest message would appear on the top because most often I would like to look at what happened most recently." Seem to be looking for what to do next. The test leader tells him/her about the referral and the participant presses "referrals".

H.1.21 Page 20

P1: Looks through the page briefly. "Then I should choose location for the sample taking I suppose" and presses "choose location". We show him/her the map and he/she understands. We tell him/her that maybe he/she wants to know how it works. "Right, then I press "how does it work" I guess" and presses that button. Reads through the page and nods when ready. We tell him/her that they want to prepare the child on what will happen during the sample taking and the participant presses the hyper link to "the children's room" in the "how does it work"-text.

P2/3: Barely looks through the page, chooses "choose location" right away. We show the map and one parent chooses location. We ask if maybe they would like to know how it works, and one parent answers "Then we press here I guess" and points at the doctor, we tell him/her no and he/she tries the children's room. We point at the "how does it work"-link and show them the instructions. We tell them that it is to make the parents understand and they say oh okay like they understand and we

tell them that otherwise it was a good idea with the children's room. After reading they press "the children's room".

P4: Looks through the page, "yes, "choose location"", "Yes and then the one closest to me is the largest, that's good. I choose this one then". The test leader asks if maybe he/she wonder how it works and the participant says "nah, not really, I press "choose location" and then I assume something happens". The test leader describes that they want to prepare the child. "I think I would just tell my child what we are going to do". The test leader asks him/her where he/she would click if they wanted to use the service to prepare them. "I guess the "the children's room"-hyperlink".

P5: Presses "choose location". The test leader shows the map and the participant presses one location. The test leader tells him/her that maybe he/she wants to prepare the child before the sample taking. Presses the doctor. "Let's press the animated doctor then. No, "the children's room"!".

P6: Reads through what the doctor says and the test leader tells him/her that he/she wants to prepare the child. Presses "the children's room".

H.1.22 Page 21

P1: Looks through the page briefly and reads and then press the door to the sample taking room.

P2/3: They look briefly at "the children's room". "Then we press here" and points at the door. We tell them about the movies to prepare the children "I think that is great, really. Considering taking a blood sample from a child, it is important that the first time goes well." We ask them if they think that it is better to prepare the child than to pretend like it is nothing. "It is definitely better when they are prepared." The other parent says "Yes it is easier to talk to them when they know more about it".

P4: The test leader describes the children's room.

P5: Reads through the page and looks around, presses the door.

P6: We tell him/her about the children's room and asks for spontaneous thoughts. "Hmm, is it possible to reach this even if you're not ill?" We answer that it is possible but not without signing in. "Okay... Why?" We are not really sure. "I am just thinking, from a marketing point of view, that the more time the children spend on the page the more the user gets used to… Yeah, do I call 1177 like I usually do or no, right, my child spends time on this page". Wants to know as soon as possible what is wrong with the child and then let the child sit for itself and play with the children's room.

H.2 Discussions

H.2.1 P1

It is good not to start with the guide without knowing who it is about, maybe it would have been even clearer if it was possible to sign in as the child. On the first page it would have been good to have a text or something that catch the eye more central on the screen that tells the user that it is possible to seek care for the child as well (in excess of the sticky menu at the top).

He/she is worried about authentication and whether the service knows that it is one's own child that is registered, and how it would work if the other parent wanted to seek care for the same child.

When registering the child, maybe one should not need to fill out mum or dad since that is not gender neutral.

It is good that it is possible and that the user is encouraged to involve the child but unsure if he/she would actually do it.

At first he/she did not notice the baby head symbols at all, he/she thought that it was a nice guideline but seemed to think that it was a bit strange and he/she felt like it was quite illogical which questions were marked and which were not.

Regarding having different animated doctors in the different guides, he/she thought that it was good for the child to have different experiences every time.

Regarding general condition, he/she wanted to add a questions about whether the child is more tired than usual and some kind of box where the user could write freely. He/she thought the questions already present were relevant.

Instead of question marks on the save and cancel buttons, the buttons themselves could have been more clearly formulated, and that a pop up comes up when pressing cancel, and to end up on landing pages that gives the user further information about where the cases are saved etc.

Nice with a price to the child but they might be a bit disappointed that it is not a physical price. Maybe it could be a nice animation or something instead so it is obvious that you are not meant to get something.

The guide covers all questions he/she thinks are necessary.

Regarding question mark symbols, he/she thinks that it is always good to be able to get more information.

Regarding the how it works-timeline; A little unclear. Maybe there should be a prescription step and clearer illustrations of what happens in the different steps, maybe more information should appear when hovering over the balls and that it

relates to the case, like, when hovering over a case in the list it could appear on the timeline where that case is in the process.

Regarding the children's room, he/she thinks that everything that can help the parent explain things to the child is great, for example with the sample taking. He/she likes the doctor's tool bag in particular. He/she thinks that it is important not to overdo the children's room, a few features will be enough.

Generally, he/she thinks that the design concept is good and that it makes the user want to return to the service and it is obvious that the children were in focus when doing the design, which is great. He/she thinks that it is hard to know what conditions are suitable to seek care for and that it is a general problem with online health care. The user first needs to create a profile, then find a suitable guide and then figure out if they are "the right amount of ill".

H.2.2 P2/P3

It would be good to have examples of what different symptoms can look like when entering a guide (for example when having chicken pox), as well as examples of what the pictures you are supposed to take should look like.

The service is great but it needs to work right away every time. The availability is the main advantage of this kind of service, and if it does not work straight away the most important advantage is lost. It is also necessary that it works on smartphones and tablets, especially at night or when travelling, when you might not have a computer nearby. Another good thing about the service is that it is possible to share your thoughts with a doctor even though you do not think that it is an emergency, which is good since it creates a safe feeling.

They would have filled out the guide themselves, without their children. The child would have understood and thought that it was interesting if included. It is good that it is possible to prepare the child.

They would not have missed the section about general condition, if the general condition would not have been good they would probably have sought care elsewhere, but it is good that it is there if people are worried. Maybe questions about the child's toilet habits and how the parents noticed that the child was ill could be added.

It is good that it is optional to give the child a price. Children understand digital environments such as games and that you are rewarded with a digital price if you finish something, so they do not think that they would be disappointed that it was not a physical price.

They want to be able to discard the child things from the service, and think that there is too much information from the doctor on each slide. Maybe it would be enough that the doctor's speech balloon would appear when hovering over the doctor.

They missed having free text answers (did not notice the box at the end of the guide), for example "Did you seek care for this before" or "sickness in the family".

They would have liked to be able to get more information about what the different statuses mean in the list in my cases.

They would only use the children's room with a tablet. They like that the child is meant to learn something from the games.

Availability is the key for this service. It needs to be put in relation to how available other solutions are when the child is ill, it is seldom a problem seeking care the traditional way with children, so it needs to be perfect when seeking care through Min Doktor.

When their children are ill, they google a lot, so it is good if Min Doktor appears among the top results when googling for diseases.

H.2.3 P4

People in general do not read, they prefer to try.

Regarding the timeline, the flow would be clearer if the lines connecting the balls would have been arrows. Further, the different steps could have had different colours to make it even clearer.

The animated doctor tempts the user to do something else than filling out the guide, which is experienced as negative since you want to focus on seeking care. Once you have understood that the doctor is there for the children you stop reading his speech balloons, so it is important that all important information should not be placed in those. He/she experience that the doctor is there for the child (positive).

Worried about security in the service overall. How does the system know that I am the parent of the child that I'm trying to register? This needs to be presented clearly to make the parent feel safe. Otherwise it feels funny to upload pictures etc.

The instinct is not to involve the child since important things are to be filled out and he/she does not want to take focus from that. However, he/she would need to ask the child about some things, then it would have been good if the children were invited to participate by the service.

He/she suggests that the information about what the animated doctor mean could have been placed once the user enters the guide instead. Then it could just be a short note on the first page about why the children should be involved and that the tool is adapted to that.

In general, he thinks it is good with explanations, everything that makes it clear and allow the user to understand the intentions of things are good. For him/her, however, the general condition slide does not matter.

Regarding the children's room, he/she does not want to leave the child alone with his/her bankID signed in. It would have been better if it was a separate application. Does not want the children to go on about doing something that involves his bankID.

In general, he/she thinks that he/she would think twice before seeking care for the children through a service like this, since information is saved about the child. It is how it works in the traditional healthcare system, but it is something that has already built up trust.

The great advantage of Min Doktor is that one doctor is assigned to each case so it is obvious who is responsible for the case, there is a status to it and the patient knows who to turn to if something is wrong.

It is good that it is designed as an "adult service with child features". It makes it feel serious but it gives a safe feeling that it has childish things as well, it makes the user feel like the service knows that he/she seeks care for a child and there will be no misunderstandings.

For the child, its willingness to participate varies from day to day. It probably would not have wanted to sit down for that long. He/she would have understood that it was a real care visit, they have a good sense of those kinds of things. The child would probably like to have an animated doctor in the service, but the parent thought it seemed a bit unserious. However, it is better to have an animated doctor than a sample picture of a doctor from a database.

H.2.4 P5

Thought the sticky menu was ok, but did not find the add-button straight away. Would rather not involve the child, but prefers to fill it out as quickly as possible.

Would probably have read through the whole text to start with but not pressed the doctor after that. Children whine quite much when they are ill, so it is not very fun to involve them. It did not bother him/her that the doctor was there, as long as there is no need to press it to move forward or anything. He/she did not think that the baby head symbols added any value, they did not disturb him/her but the parent knows for itself when to involve the child. He/she might have considered involving the children when they are older. Then they would have used the children's room as well, depending on how ill they were.

Good with a specific page dedicated to the general condition of the child, he/she experience that as the most important thing the doctor looks at during a physical healthcare visit. He/she misses tired, dull and spirit.

In the page with general questions about the child's health he/she would have liked to have a suggestion that was "none of the above" in the long list of diseases to force the user to read through them all. Not relevant should be removed as an option on the smoking-question since it is ambiguous.

The digital price would probably have made the child disappointed, "what to use it for?". Hopefully, they will not seek care that often and then it will not really be like gathering something.

Felt safe using the service, but would have chosen carefully which diseases to seek care online. It is not very obvious from the service what to seek care for, what does even severe illness or accident mean? Maybe a pop up with information about what to seek care for would have been good. Further, it is hard to know what disease the child has, so for small children it might be hard to choose a specific guide.

The statuses on the cases are a bit unclear, as well as the how it works-timeline. It would have been good with clearer illustrations and more information.

Worried about the authentication and how it works if two parents want to seek care for the same child.

H.2.5 P6

When the doctor arrives, he/she wondered who the service was aiming for. "Who is supposed to be in charge? It seems like an activity for both... Mainly for the parent but when I read the speech balloons I think that it is for the child. Maybe the child part should be more outstanding so it is the first thing the user reads, otherwise you answer all questions first and then look at the doctor". Thinks that it is good that it is possible to ignore the child parts. Maybe it should even be possible to hide the child parts. If it pops up all the time when filling it out without the child it might be annoying.

If it was nothing urgent, he/she would have involved the child because the child is very interested and think that it is fun to go to the sample taking central etc. Children in general are curious and it is good that it is an educational process for them as well. Maybe there could be information for the children during the guide, such as "Why does one get fevers?" to learn meanwhile filling out the guide.

Would have felt safe using the service but sees it more like an alternative to 1177 than a physical care visit. Wonders about how long it takes to get an answer. Most often it is quick to get a physical care visit when it is about children, if it is not quick enough at Min Doktor it might even take longer to seek care online. However, sometimes there are telephone queues at the primary care units, and it is practical to be able to send a case in the morning, do other things during the day and receive an answer meanwhile. For example, eczema and rashes, things that does not need immediate attention. Not fever or something like that.

The child would have appreciated to be involved, he/she would have sat down and understood that it was a real visit. He/she would probably have needed to explain meanwhile.

Did not really understand why we thought that the child should be involved, that text was too long to read in full. The same applies with the baby head symbols. He/she found them unnecessary, if it is obvious from the beginning why the child should be involved the parent can decide for itself which questions are appropriate to answer together. He/she liked the idea about having the baby head symbols with tips and information instead of as markers.

Regarding the digital price, he/she liked it and that it is obvious that they are collected. Maybe there could be different medals to gain or something, once seeking care for the most common children's diseases.

The general condition page is important. It is hard to know if the child's body aches, the child does not really get what that means. Further suggestions to the general conditions page were "How much does the child play", "do they pee".

Would have liked to be able to sign in as the child instead of registering it at the parent's page. That would create a feeling that it is possible to seek care for the child, now there is nothing indicating that on the start page. It works the way it is now, that the child is coupled with the parent, but it needs to be clear from the start page that it is possible to register a child and how to do it.

He/she does not think that the doctor should be to the right on the screen but on the top since he/she says an introductory sentence to each page of the guide. If all answers are filled out before noticing the doctor, it might feel too late to click the doctor.

Really liked the how it works-timeline and the concept of it but did not really understand what all steps mean. Overall positive though. He/she also suggested to have a green check mark or something on the steps performed already.

After sending the case to the doctor, he/she would have liked to know approximately how long it would take until the doctor answered.