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Experience with  
intravenous antibiotic  
treatment at home for  
patients with a  
prosthetic joint infection  
from a patient and  
professional perspective.

Master thesis

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The logo for Isala hospital, featuring the word "isala" in a stylized, lowercase, blue font. The letters are interconnected, with the 'i' and 's' sharing a vertical stroke, and the 'a' having a unique shape with a curved bottom.

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## Abstract

**Background:** Within healthcare, there is an upward trend in costs and demand because of the ageing of the population. One way to change healthcare is the transition of care from hospital to home. Therefore the project Medication@home has started by mProve. The Isala hospital in Zwolle is one of the hospitals in this project and their orthopedic department is already providing intravenous antibiotic treatment at home for patients with a prosthetic joint infection. Since this treatment at home has never been evaluated, it is important to look into the experiences of patients and healthcare professionals involved, to identify how the process is experienced and where there might be room for improvement. This study aims to provide insight into the important aspects and the experiences of healthcare professionals and patients with the treatment of intravenous antibiotics at home for patients with a prosthetic joint infection.

**Method:** Insight in these aspects and experiences is gathered by conducting semi-structured interviews with healthcare professionals and patients. The patients participating in these interviews were all treated in 2021 by the Isala hospital and also the professionals were part of the treatment process of Isala. Before starting with the interviews, a study proposal was sent to the Medical ethics Committee of Isala to get ethical approval for the interviews. After receiving the ethical approval, the interviews could be conducted. The interview schemes used, were developed on the basis of previous research in the field of intravenous antibiotic treatment at home and the six domains of quality of care by the Institute of Medicine. This resulted in the following themes: communication, information, efficiency, safety and patient-centeredness. All interviews were recorded and afterwards transcribed and coded to get the results.

**Results:** 9 patients and 8 professionals were interviewed during the study. Among the professionals were 1 physician assistant, 1 hospital nurse, 2 pharmacy workers, 1 transfer agency nurse and 3 homecare nurses from different organizations. Both professionals and patients were generally satisfied about the safety and the patient-centeredness of the treatment. Professionals and patients consider information about the treatment and the medication as an important aspect within the treatment and the data shows that in the field of information there are steps to take to improve the process. Especially regarding the information to the patient, this appeared to be insufficient and can be easily improved by providing written information. This information should for example contain side-effects of the medication, contact details, information about who and when to call. Also communication between the different professionals and towards the patient is considered as an important aspect and in the experiences of the current situations, the general opinion about the communication is positive. As it comes to efficiency there is room for improvement in the logistical part of the process where medication needs to be arranged, since patients are now waiting in the hospital until everything is

arranged to continue treatment at home. This could be solved by changing the process and sending the patient home with medication from the hospital. In the current process a patient waits 1 or more days before they can continue treatment at home because patients and homecare nurses depend on the delivery of the medication.

**Conclusion:** The current process of treating patients with prosthetic joint infections at home with intravenous antibiotics is positively experienced. Important aspects, where there is room for improvement are information and efficiency. The hospital is advised to review the content of information and their way of providing information to the patients and other professionals since patients and professionals have indicated that the information provided in the current situation is insufficient.

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## Introduction

There are several reasons why healthcare in the Netherlands is under pressure and in the need for a change. An example regarding this need for change is the ageing of the population, which has a high impact on the healthcare sector (1,2). It is estimated that in the Netherlands in 2040 there will be 1.7 million more elderly above the age of 65 compared to 2015 (2). Since people will live longer, the prevalence of chronic diseases will become higher as well. On average, elderly need more healthcare compared to young people, because in general elderly have a higher blood pressure and the prevalence of heart failure, diabetes and arthritis is higher among elderly (3). The growing number of elderly and as a result, the increase in (chronic) diseases are several reasons that the demand for healthcare will increase in the coming years. Together with the development of new technologies, this results in increasing costs of healthcare. Estimated is that the expenses for elderly care in the Netherlands between 2015 and 2040 will increase with 157% from 17 billion to 43 billion euros (2).

As a result of these increasing care demand and costs, the Dutch government and healthcare organizations are trying to find solutions within healthcare to prevent these increases from becoming infinite. The increasing demand can result in a shortage of hospital rooms and staff if no action is taken, which asks for a solution without building more hospitals. According to the taskforce 'de juiste zorg op de juiste plek' (JZOJP) there are three main goals to improve healthcare: prevention of (more expensive) healthcare, transition of healthcare (closer to home) and the use of more technology within healthcare (4). These technologies can be used as a replacement or as an addition to existing manners of treatment for example (4). In this JZOJP taskforce it is stated that to reach these goals within healthcare a different approach with a different perspective on illness and health is necessary (4). The interests of the provider or what the healthcare system has to offer becomes less important. On the contrary, one of the aims is to center healthcare more around the patient. This means that what the patient needs to function in his daily activities as good and independently as possible becomes more central in his care plan. To achieve this, the patient will become a more important stakeholder within his own health, and his care plan is no longer completely dependent on the healthcare providers. The needs of the patient and the desired outcomes should be the driving force behind healthcare decisions and quality measurements (5).

One way to get closer to the goals and dimensions of improving healthcare is to provide care, where possible at the patient's home, if possible. Patients are already discharged from the hospital sooner than they were 20 years ago (6), but there is still room to make this transition of healthcare from hospital to home in an earlier state or on different levels. In 2016, it was estimated that 46% of the patients in the hospital could be sent home earlier (6) and receive the needed care in their own

environment. One of the projects of mProve, an innovative network of seven ambitious top clinical hospitals in the Netherlands that are aiming for better healthcare, is 'medication@home'. Within this project the goal is to provide care closer to the patient without any unnecessary hospitalization (7). The Isala hospital in Zwolle is one of the hospitals participating in the medication@home project.

One of the hospital departments that participated in this project is the orthopedic department. In this department, total knee arthroplasties and total hip arthroplasties are a major part of the surgeries performed. After a knee or hip arthroplasty, there is a risk of getting a prosthetic joint infection (PJI), which is also treated in the same department. Nowadays, the patient can be discharged from the hospital when he has no fever and is physically mobile enough to go home. Another condition in the current process is that the type of bacteria must be known to give the patient the correct medication directly at home. After determining the bacteria causing the infection, the patient can be discharged from the hospital. The current aim of the hospital is to send patients with a PJI home with the right intravenous antibiotics after four days. At home the patients will continue treatment with the help of a homecare nurse and a mobile infusion pump. In the past, the patient stayed in the hospital for at least two weeks until the treatment with intravenous antibiotics was finished and went home afterwards with oral antibiotics.

In contrast to some other healthcare pathways, for example cardiology and oncology, within the medication@home project, patients of the orthopedic pathway are already receiving their intravenous medication at home. Treatment with intravenous antibiotics at home is also called outpatient parenteral antibiotic treatment (OPAT). Since the 1980s the essence of OPAT became increasingly clear, because it facilitates more efficient and cheaper care for a patient population that is increasingly older and sicker (8). Studies show that administering intravenous antibiotics at home is a safe and cost-effective way of treating patients for infections (9,10). Also it is stated that treatment at home results in positive patient outcomes, such as less readmissions and hospital based infections compared to treatment in a hospital (11). The patients in general prefer outpatient treatment over hospitalization.

Besides these positive patient outcomes, it is important to know whether the quality of care also improves when a patient is treated at home with intravenous antibiotics. To conduct research into quality of care, the Institute of Medicine (IOM) developed a framework to measure quality of care (12), which can also be used to measure quality of care of the treatment with intravenous antibiotics for patients with PJI at home. There are six dimensions in this framework that will contribute to quality improvement of healthcare and that are used to measure quality of care (12). These six dimensions are effectiveness, efficiency, accessibility, patient-centeredness, equitability and safety (12). When a treatment with medication continues in the home situation of the patient, it is important that all six

domains are achieved. In 2013, a Belgian study has shown OPAT for patients with PJI to be safe, patient-friendly and cost-effective (13). Further research about the experience with these six domains in this PJI target group has not been done before.

When a patient is treated, it is important that his needs and wishes are taken into account and that the patient his values serve as a guide for the clinical decisions (14). Therefore, it is good to know how the patients experience their healthcare processes, when treated with intravenous antibiotics at home. As included in the six dimensions of quality of healthcare, patient-centeredness is an important factor for measuring quality of care. Looking at the other dimensions of quality of healthcare, it is also important that care delivered at home is safe, efficient, and effective. These factors are not only experienced by the patient, but are also important for the professional in how he achieves good quality out of his work. The experience of quality of care from a professional perspective is therefore also important to get a complete view on how treatment with intravenous antibiotics at home is done in the current situation within the Isala hospital.

Besides quality of care, there are other factors that influence the experience of patients and professionals. Previous research has shown that communication and information are also important factors within treatment at home (15,16). Communication towards the patient about the treatment is important, but also between the different professionals that are involved in the whole process of medication@home. For the patient it is important that questions can be asked and that the answers received are the same from whomever the question is asked to (16). Otherwise it might be confusing for the patient when different answers are given by the professionals. If a patient has a question about the medication for example, the same answer should be given when still treated in the hospital by the hospital nurse as when the same question is answered by the homecare nurse. Therefore, it is important that the homecare nurses who administer the antibiotics are well trained and educated and that the same protocols and leaflets are used by the hospital and the homecare organization. Information about the process and the given medication is important to patients to get a positive feeling of safety (15). Patients want to know what is happening with and around them. A previous explorative study with 16 focus group interviews with 16 patients with various ailments (15) shows that information given to the patient by the professionals should consist of education on what the antibiotic does and what the possible side-effects are. A lack of this information can cause insecure feelings that the patient might experience.

Thus, there are multiple aspects that affect the quality of treatment with intravenous antibiotics at home. The treatment with intravenous antibiotics at home for patients with PJI by the Isala hospital has not yet been evaluated, even though this is already done for years. The current aim of the hospital



is to discharge a patient and make the transition for the patient from hospital to home after four days. If a patient is discharged earlier than four days, the chance that the type of antibiotic must change will become bigger and this could be a logistical challenge to get the right antibiotics to the patient's home as soon as possible. Therefore, it is important that the process runs smoothly, that the transition is efficient and that this transition is arranged as good as possible for the patient. For the hospital it is important to know how the current situation of the intravenous antibiotic treatment at home is from a patient perspective, but also from a healthcare professional perspective. This information about the important aspects and experiences provides an insight in the current process and where improvement is possible and how these improvements can be achieved.

The aim of this study is to find out what the important factors are from a patient and professional perspective in the current situation for patients with a prosthetic joint infection treated with intravenous antibiotics at home by the orthopedic department of the Isala hospital. When there is insight into these important factors and how they were experienced by patients and healthcare professionals, an analysis will be made on the strong and weak points of the process of treatment with intravenous antibiotics at home for patients with a prosthetic joint infection. Recommendations for the hospital to improve the process will be made based on these results.

This results in the following research question:

***What are important factors from a patient and healthcare professional perspective that affect the experience of quality of care in the current situation for patients with a prosthetic joint infection treated with intravenous antibiotics at home by the Isala hospital?***

## Research method

This chapter describes what methods were used to answer the research question and how data was collected and analyzed. To answer the research question, a qualitative study using individual semi-structured interviews has been conducted. The choice for semi-structured interviews has been made because this gave the opportunity to ask more in-depth questions to get the most complete answers of the interviewees. The interviews were conducted with patients and professionals within different disciplines involved in the process of administering intravenous antibiotics at home. This is illustrated in more detail under the heading study population.

## Study population

The Isala hospital in Zwolle is part of the mProve group that started the medication@home project. This hospital is one of the hospitals that is specialized in patients with prosthetic infections. This means that a patient that had their hip- or knee prosthesis in another hospital can be send to the Isala hospital for the treatment of their infection. In 2019, the Isala hospital treated 54 infections as a result of a total hip replacement and 18 infections due to a total knee replacement. A patient treated for this prosthetic joint infection by the Isala hospital with intravenous antibiotics is treated within the hospital for at least four days and will leave the hospital to continue treatment at home when the patient no longer has fever and is physically mobile enough to go home. Since the Isala hospital is providing intravenous antibiotic for these patients already for years, the choice is made to focus on the orthopedic department of the Isala hospital to see how their patients experience the treatment process.

To get a complete view of the experience of the treatment with intravenous antibiotics at home, not only the perspective of the patient was used within this research but also the perspective from all stakeholders involved in the process. Hospital nurses, a physician assistant, transfer nurses, homecare nurses and pharmacy workers are all stakeholders in the process of treating the patients with intravenous antibiotics at home. Figure 1 shows a flowchart of the stakeholders within the current process. Those stakeholders have all been interviewed about their tasks within the current process and about their experience of the process of intravenous antibiotic treatment at home for patients with a prosthetic joint infection.

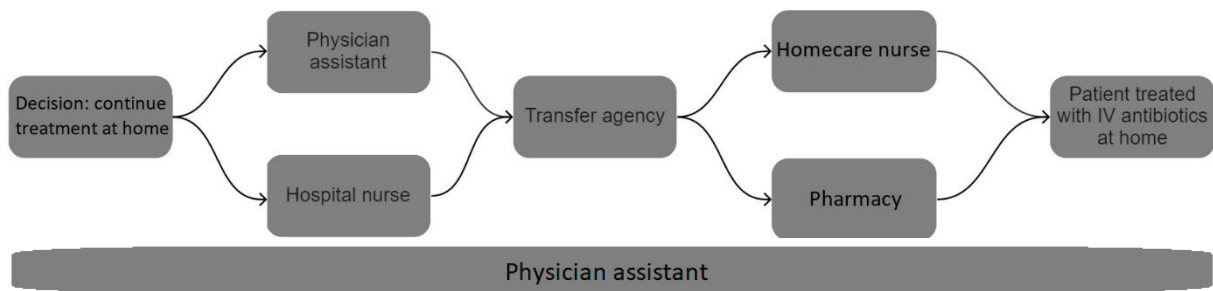


Figure 1: Flowchart of stakeholders involved within the process of intravenous antibiotics at home.

The patients included in the study were treated for their prosthetic joint infection of the knee or hip with intravenous antibiotics at home between January and June 2021 by the Isala hospital. After the decision has been made to continue treatment at home, the process starts with the hospital nurse, or the physician assistant as shown in figure 1. When the patient is ready to continue the treatment at home, the transfer agency nurse comes along to make sure that everything needed for administering the antibiotics and the preparation of the medication itself is taken care of. The medication is prepared by the Isala pharmacy or by Mediq Tefa. When the patient arrives at home, the home care nurse will administer the medication and is in direct contact with the patient. During the treatment at home the physician assistant from the hospital is in contact with the patient regarding the monitoring of the medication. All these stakeholders cover an important function within the process. Therefore, the choice was made to take all their experiences into account to answer the research question.

Inclusion criteria for the interviews were patients with a PJI that completed the treatment with intravenous antibiotics at the patients' home by the orthopedic department of Isala hospital in 2021. The patient had to be able to fully understand the Dutch language in speaking and in reading. For the professionals the inclusion criteria were that the professional had to be part of the process of treatment of patients with PJI with intravenous antibiotics at home by Isala hospital. Another inclusion criterion was that all interviewees had to sign the informed consent before the start of the interview. They received this informed consent form together with the information letter. These forms were sent to the patients and professionals by the secretary of the orthopedic department. The professionals were asked to contact the researcher which they all did and the patient were contacted by the researcher after the orthopedic department of the Isala hospital received the signed informed consent. Thereafter appointments were made for the interviews.

## Data collection

The semi-structured interviews were conducted using a video calling program, for example Skype, Microsoft Teams or Zoom. If the interviewee had no experience with any of these applications, the choice was made to conduct the interview using a regular phone call or FaceTime. The interviews were recorded using the used video calling program, or in the case of a regular phone call, Zoom was used to record the interview. The recordings were collected and stored on the Isala account of the researcher to make sure that data will stay inside the hospital. If the interview was not recorded directly on the Isala desktop, the researcher stored the data in the study folder on the Isala desktop immediately and deleted it from any other device afterwards.

After each interview, the recordings were transcribed using Amberscript. Those transcriptions did not include any names of patients or professionals or characteristics that could be traced back to the interviewee. This was done to ensure anonymity. The transcripts only included the answers given to the interview questions.

## Interview schemes

To conduct the semi-structured interviews, interview schemes were made for the patients and the different healthcare professionals involved in the process as shown in figure 1. The themes within the schemes were based on relevant academic literature. The objective of the interviews is to gather information about the experiences based on these different themes.

Literature research is done to investigate whether there were previous studies about the experience of intravenous antibiotic treatment at home. A number of themes have emerged from these previous studies and were used within the interview schemes, since they emerged as important factors for patients treated at home with intravenous antibiotics in multiple studies (15–17). The themes found in these articles were information and communication. These previous studies focused on intravenous antibiotic treatment at home in general. This research differs from the previous studies because this study is only focusing on patients with a prosthetic joint infection of their prosthetic knee or hip. Besides previous research about the treatment with intravenous antibiotics at home, research was conducted to see how experience of quality of care can be measured and what the important aspects are that are used when measuring quality of care experience. This resulted in themes used within this study found in the quality framework of the Institute of Medicine (IOM), which uses six domains to measure quality of healthcare. These six domains are safety, effectiveness, patient-centeredness, timeliness, efficiency and equitability (12). A few of those are used in this study, namely safety, efficiency, and patient-centeredness. Safety is used as a theme, since previous studies have shown that safety is an important factor within the treatment according to the experience of patients (15)(16).

Table 1 gives an overview of the themes used in the interview schemes together with their definition and used literature.

*Table 1: Themes and definitions used in the interview schemes*

<b>Themes</b>	<b>Definition</b>
<b>Efficiency</b>	Efficiency is one of the six domains included in the IOM's framework to measure quality of care. This means that waste should be avoided in terms of equipment, supplies, energy and money (12)(14).
<b>Information</b>	The information that is given to the patient about their treatment at home, but as well the information between the different professionals with regard to the patient. Information about the medication and their side-effects should be known by patient and professional (13)(15)(16)(18).
<b>Communication</b>	Communication between the professionals to get everything arranged for the treatment of the patient at home, possibilities for professionals and patients to contact another professional and communication around the treatment and status of the patient (13)(15)(16)(18)(19).
<b>Safety</b>	Safety is one of the six domains included in the IOM's framework to measure quality of care. This means that harm should be avoided to the patient from the treatment at home with intravenous antibiotics that should help them (12)(16)(10)(14).
<b>Patient-centeredness</b>	Patient-centeredness is one of the six domains included in the IOM's framework to measure quality of care. This means that the care provided is respectful and take into account the needs, preferences and values of the patient (12)(14)(19).

During the interview, the first open question for the patients was to get a general view on their experience of the treatment at home before discussing the various themes. For the other stakeholders the interview started with a question to explain their tasks within the treatment process and how they experience these tasks within the current process in general. In the end of the interview the stakeholders were asked if there were any missing factors. This is done to see whether there are important factors that influence the quality of care and were not mentioned in literature before.

To keep a clear structure during the interview, the process of intravenous antibiotic treatment at home was divided into three phases. The first phase is the moment that the patient is still in the hospital and the decision is made and communicated to the patient to continue treatment at home. The second phase is the transition of care, this part of the process is when everything needs to be arranged to continue treatment at home. The third phase is when the patient is actually treated at home with intravenous antibiotics by the home care nurse. Table 2 shows the three phases and which stakeholders are important in the phases. Since some stakeholders are not involved in a specific phase, all interview schemes differed from each other.

*Table 2: Phases of the process of intravenous antibiotic treatment at home, and the involved stakeholders in these phases.*

<b>Phases</b>	<b>Stakeholders involved</b>
The decision to continue treatment at home.	Physician assistant, hospital nurse, patient.
The transition of care from hospital to home.	Physician assistant, transfer nurse, pharmacy, homecare nurse, patient.
The actual treatment at home.	Physician assistant, homecare nurse, patient.

## Data analysis

All interviews were recorded and afterwards transcribed using Amberscript. The interviewer checked and adapted the transcriptions if necessary. After completion of the transcriptions, the interviews were labeled using Atlas.ti. Subsequently, the coding has taken place, also using this program. First, the researcher started with open coding to see which important themes emerge in the interviews. After that, axial coding took place. With this type of coding the coded themes while doing open coding were compared to each other and ended up together under umbrella codes. This means that after the codes were compared, codes that belong together were merged to lower the number of categories. After doing this, important categories have emerged that were used to answer the research question. Finally, selective coding has taken place. Within this process all important categories resulted of the axial coding were used to put all data collected from the interviews together and connect them to each other. With the results of the last coding method, the information gathered during the interviews showed what important is within each theme in the current process of treatment. Besides that, it also shows what the experiences within this theme are according to the interviewees.

The primary outcome of the research are factors affecting the experience of the current treatment of a prosthetic joint infection, that appeared to be most important for patients, but also according to healthcare professionals. Those factors were identified in the interviews with all the stakeholders

involved in the process. To get a complete view on how the experience of the current treatment process is, the factors show what the strong and weak point in the current treatment are.

These outcomes were used in a strengths, weaknesses, opportunities and threats (SWOT) analysis (20), to evaluate the process and show where there is room for improvement within the process to make the transition to home treatment earlier in the future. This is done knowing that the orthopedic department of the Isala hospital wants to lower the minimum days of hospitalization before discharge from four to two days. A SWOT analysis is mainly used to display information from the analysis in a clear way. After pointing out the points in the SWOT analyses, recommendations were written down for the orthopedic department to help to optimize the current treatment process of intravenous antibiotics at home for patients with a prosthetic joint infection of their knee or hip, before they will take the step towards earlier discharge of these patients.

### Ethical approval

The study was approved by the ethical committee of the Isala hospital on June 17<sup>th</sup> 2021 with number 210613. The Medical ethics Committee (METC) review was required since interviews were conducted with patients. A study proposal was written and handed in to the METC of the Isala hospital. This METC approved the study as non WMO, which means that further approval did not have to be asked. To ensure the privacy of the patient and professionals, an information letter was sent to the patients and professionals by the secretary of the orthopedic department (appendix 2). Patients that met the inclusion criteria were firstly contacted by their physician assistant to ask if they were interested in taking part in the study and the information letter was sent afterwards. This letter also contained an informed consent that needed to be signed by the interviewee and the researcher before the interview took place.

## Results

The interviews conducted during this study will be described in this chapter.

The results will be explained per theme used in the interview scheme. For every theme the results of the interviews with the healthcare professionals are explained first, thereafter the results of the interviews with the patients will be presented. During the interviews some extra themes emerged to be important, for example blood sampling. Therefore, the choice is made to head out these themes as well next to the themes used in the interview scheme.

Eight healthcare professionals that are involved in the process of intravenous antibiotics at home have been interviewed (table 3). Four of the professional work in the Isala hospital and the other four are an external pharmacy worker and three homecare nurses. Besides the healthcare professionals, also nine patients that have been treated with intravenous antibiotics at home for their infection of their hip- or knee replacement were interviewed. All of them completed the treatment with intravenous antibiotics for their PJI, therefore they have all experienced the complete process.

Every professional within the process has their own specific tasks. To get a complete view on how these professionals play their role within the process from their discipline, all were asked about their tasks. Table 3 gives an insight in the task description of the healthcare professionals that they have mentioned during the interviews.

*Table 3: The tasks of the healthcare professionals according to themselves.*

<b>Healthcare professional</b>	<b>Task description</b>
<b>Physician assistant (n =1)</b>	Arranging the process of discharge, making sure that the transfer agency gets the prescriptions on time. Planning the follow up appointments with the patients and monitoring the results of the patient's weekly blood checks.
<b>Hospital nurse (n =1)</b>	Consulting the transfer nurse and make sure that they receive the recipe as prescribed in the patient file. Writing a transferal letter for the homecare nurses with information about the patient. Making appointments with the patient and family about the deliveries of the medication and infusion pump and the discharge time.
<b>Transfer agency (n =1)</b>	Arranging the antibiotics at one of the pharmacies (Isala or Mediq Tefa) and the infusion pump at Mediq Tefa. Arranging homecare for the patients with homecare nurses of the affiliated agencies.



<b>Pharmacies</b>	<b>(n =2)</b>	Preparing the medication and an administration instruction and deliver it to the patient in the right doses on the right time or make sure that it is ready when the patient leaves the hospital. If necessary, the Mediq Tefa pharmacy needs to deliver an infusion pump to the patient as well.
<b>Homecare nurse</b>	<b>(n =3)</b>	Doing an intake, the first day at home. Visit the patient every day to connect the IV bag and check and take care of the infusion line the patient has twice a week. Monitor the patient to see how the reaction on the medication is and to see if there are complications.

### Overall experience by healthcare professionals

Six of the eight professionals were generally satisfied with the current process of intravenous antibiotic treatment at home for patients with a prosthetic joint infection. They mentioned a few positive, but also a few points to improve this process (table 4). One of the positive points about the current process was the infusion lines they are using. Nowadays, they most often use a peripherally inserted central catheter (PICC line), which is a flexible tube that is inserted into a vein in the upper arm and ends in the superior vena cava. In the past, they used other infusion lines, for example a short peripheral infusion line; this gave more problems like a broken needle or phlebitis, which is an infection of the vein. Another positive point is that the communication between the different professionals is in general good, there are short lines of communication between the healthcare professionals as for example between the home care nurse and the physician assistant. Positive within this communication is that all of the different professionals are willing to help and to think along during the treatment.

With regard to points to improve the current process of IV antibiotics at home the professionals mentioned mainly the logistical part and efficiency of the part in the current process between the decision to continue treatment at home and the moment of discharge. This was mainly about the requests and delivery times of the medication and the materials needed. At this moment a patient cannot leave the hospital the same day the decision to continue intravenous antibiotic treatment at home is made since the medication and materials cannot be arranged so soon. The requests and recipes need to be at the transfer nurse before 12 pm to discharge the patient the day after. Some of the interviewees were stunned about this fact that a recipe needs to be at the transfer nurse before 12 pm, otherwise the medication cannot be delivered the next day, which results in an unnecessary extra day at the hospital for the patient.

Table 4: Positive points and points to improve in the overall experience of healthcare professionals about the current process.

Positive points	Points to improve
Using a peripherally inserted central catheter (PICC) line.	Logistical process of arranging the medication.
Contact between different stakeholders.	Efficiency of the current process.
Willingness to help and think along.	
Protocols are followed.	

### Overall experience by patients

Nine patients were asked about their overall experience with the treatment with intravenous antibiotics at home. All of them were in general very positive about the treatment, but some patients had comments or remarks about the process. Most (n=8) patients were mainly positive about being able to go home and continue their treatment there. The interviewees also mentioned to be satisfied about the people around them during the process, they were nice and civilized towards the patient, which made the patient feel comfortable. Besides that, they were generally positive about the PICC line, which is nowadays the most common type of infusion line that is used within the process of intravenous antibiotic treatment at home by Isala. Two patients had also experience with a short infusion line, this brought more complications than the PICC line. An example given by the patients was that they experienced the line shooting out or veins getting infected because of the short infusion line.

One of the patients mentioned the infusion pump to be annoying since it kept beeping and the interviewee found the pump difficult to handle. During the treatment this patient arranged a smaller kind of pump, that looks like a ball and is attached to the body. This other pump the interviewee recommends to everyone that must undergo this treatment in the future. All other patients were generally positive about the pump used within the current process.

## Efficiency

With regard to the theme efficiency, the interviewees were firstly asked for aspects that make sure that they can do their job within the current process of IV antibiotic treatment at home in the most efficient way. This means that no unnecessary quality or time of the process gets lost. The following aspects were mentioned by the professionals:

- Medication must be properly ordered by the transfer nurse and delivered by the pharmacies.
- The pumps and other materials also must be delivered on time by the pharmacies.
- Type of medication. Preferably a medication type that takes 24 hours to enter the patients' body, which means that the homecare nurse only has to visit once a day.

The professionals were asked how these aspects are arranged in the current situation and they were generally satisfied about this, but there is still room for improvement. Three interviewees mentioned that the process is in general very efficient as it is now. This opinion slightly changed towards a more critical attitude when more in-depth questions about the efficiency of the current process were asked. The other professionals also had some critical points regarding the efficiency of the current process. The critical attitude of the professionals was mainly towards the part of the process before discharge and during the transition, when everything needs to be arranged for the patient to go home and about the part of the process when a change in medication needs to be made while the patient is already treated with IV antibiotics at home. The interviewees were asked more in-depth questions regarding the efficiency of these specific parts of the process and the following sections will point these out.

### Efficiency before discharge and during transition

An negative aspect of efficiency that the professionals encounter the most is that a recipe needs to be at the transfer agency before 12 pm to discharge the patient the following day. After the decision of the hospital to discharge a patient, the patient must wait until everything is arranged and delivered before going home. All of them would like to see a possibility to discharge a patient the same day as when the decision to continue treatment at home is made. Part of this problem lays within the delivery times of the medication. It is mainly because of logistical reasons that the patient must wait one or even more days before going home. When the decision is made to continue treatment at home, the recipe needs to be at the transfer agency before 12 pm. The transfer agency nurse must arrange everything and send the recipe to the pharmacist, who needs the request before 3 pm to be able to deliver the next day. Delivery of medication is not possible on Sunday and Monday, with the result that a patient has to stay until Tuesday within the hospital if the decision is made on Saturday.

*“The pharmacy gets a recipe, that needs to be there before 3 pm. Then they can deliver the medication the next day before 12 pm. That logistics is what you depend on”. (P4)*

*“The decision has already been made and then we just wait on the logistical elaboration”. (P7)*

There were a few possibilities mentioned to improve this process and this logistical part of the process, namely:

- Delivery by the pharmacy on the same day.
- A specialist team that reserves time on a daily basis for a discharged patient.
- Connect the infusion pump with the first doses of medication at the hospital.

If one of these points are included in the process, the patient can be discharged from the hospital the same day as the decision to continue treatment at home has been made. This is because the medication and materials needed for the treatment, or in any case the first day of treatment is arranged. In case of the third point, the homecare nurse can continue treatment the day after the patient goes home with the materials delivered that day by the pharmacy.

*“I think the policy as it is now; needing the recipes before 12 pm, then you can leave the following day. I think that should go away. Mainly: if you finish everything at 1 pm, then a patient can't go home until the day after tomorrow. Yes, I don't think it is of this time and it is also not efficient.” (...) “If you order something online these days, doesn't matter what time, it will be delivered the next day. I think it is odd that this is not possible within this process, in this society that we live in.” (P6)*

### Efficiency during a change of medication

While a patient is treated at home there is a possibility that a change in medication or doses is needed. A patient must have blood tests once a week when he is treated at home with the IV antibiotics. This is necessary to see whether the medication works and in the case of some specific medications as Vancomycine, how the medication level in the blood is. After these blood tests there might be a possibility that a change in medication or doses is necessary.

The interviewees were asked how these changes are done in the current process. When a patient needs a change in medication (doses), the physician assistant will make a new recipe for the transfer agency. Then he must scan the recipe and email it to the transfer nurse. The transfer nurse sends this document to the pharmacy, so that they can prepare and deliver the changed medication at the home of the patient.

The interviewees were asked about their opinion on how these changes are arranged in the current process. First, none of the professionals experienced any major problems for the patient at this moment. The change of medication takes some time, since it goes through multiple channels, and it

takes time to prepare and deliver the new medication. For the patient it is generally not threatening if they receive the new medication one day later. Despite that, the involved professionals within the hospital that make these changes possible were critical of the current way and mentioned that it could be more efficiently regulated. The professionals were mainly critical about the logistics the way it is arranged in the current process of IV antibiotics at home. The interviewees mentioned that in the current process there are too many different channels in between the one noticing that medication needs a change and the pharmacy preparing and delivering the medication. This slows down the process.

Another logistical problem that was mentioned by the interviewees was that the current way of making and sending the new recipe is laborious. It would be ideal for the professionals at the orthopedic department of Isala if there was a possibility to use the patient system to send the needed changes to the transfer agency or pharmacy.

*“Look, you have to inform them, and it would be easier if you can possibly do that through HiX. In the current process, you have to make an email with patient number. All kinds of information need to be in this email including the new recipe. So, you have to take a lot of information from the medical system and put this in an email. I do not think that is very efficient.” (P7)*

Since the hospital is looking for possibilities to change their objective of discharging the patient after at least four to at least two days. When the hospital starts doing that, the possibility that a patient needs a change in medication is higher. Therefore, the interviewees mentioned some points to improve regarding the efficiency in medication changes. These were the following:

- Having one dedicated control center.
- Not needing a new recipe when it comes to a change but having the possibility to arrange this through the patient system.

## Information

During the whole process from the patient still being at the hospital until the last treatment day of the patient at home, information plays an important part for the different stakeholders involved. This section is split in the information that is important for the professionals (transfer of medical information) and the information provided to the patient about the treatment at home.

The interviews were firstly asked what their opinion about the information is in general in the current process of treatment with IV antibiotics at home. All professionals were critical about the current information provision to the professionals, but also to the patients. The interviewees mainly talked about information not being given or not being complete enough in the current process. The various professionals within the process all have their own need for specific information to do their job. A pharmacy for example only needs to have information about the medication and materials they have to prepare and deliver, and a homecare nurse needs information about the patient as well. Some professionals also have their specific information they need to provide to other stakeholders.

### Information to professionals

To get all professionals informed about the patient and the medication, a few documents are needed. This starts with the physician assistant that needs to inform the nurses about what medication the patient will receive at home. The physician assistant needs to write a recipe with information about the medication and the duration of the treatment. This recipe needs to go to the transfer agency nurse so that they can inform the pharmacy and the homecare nurse about the medication with this recipe. Besides the recipe, the hospital nurse needs to write information about the patient and their treatment to inform the homecare nurse about the patient and what is expected of the homecare nurses and the patients.

### Recipes

The recipe that the doctor sends to the transfer agency is needed for them to fill in the application forms for the pharmacies. The pharmacies need complete information about the medication and the duration to prepare and deliver the right amount of medication. Also, the homecare nurses need a recipe to know what medication they are providing to the patient and for how long.

The professionals mentioned during the interviews that the start and stop date on the recipe could be clearer. Mainly the stop date is not always very clear, because it can be interpreted in several ways. A way to improve this is to note the last day of administration. It is also considered important that the way of administering, like the entering time of the antibiotics is noted clearly on the recipe, which according to the professionals is well arranged in the current process.

*“The last day of administration is open to one explanation, but up or up to can be interpreted in different ways. Try to write down everything as clearly as possible and otherwise ask for clarification.” (P5)*

*Professional perspective on the transfer of medical information*

When a patient goes home it is important that everyone within the process is informed properly about the patient to be able to give the best care. The interviewees mentioned the important aspects that they need to know before they can start taking care of the patient. These aspects are listed in table 5 with a score of how it is regulated in the current process.

*Table 5: Aspects of patient information found important by the professionals*

<b>Aspects of information about patient</b>	<b>How it is regulated in the current process</b>
What a patient is treated for / Diagnosis	++
What kind of medication is given	++
Care request (wound care for example)	+/-
What kind of line a patient has	+/-
Date the line was placed	+/-
Contact details	+/-
A clear quit date	-
If the line can be removed afterwards	-

++ Always      + Most of the time      +/- Sometimes      - Too less

All professionals were asked about the patient information transfer towards other disciplines, and they were generally positive about it. There is enough information to be able to treat the patients well and otherwise they can ask the patients. Yet they indicated that they occasionally miss some information that they find useful to know about the patient.

The patient information seemed to be hard to read because there was a lot of the same information and the professionals would like to see the information more step-by-step. The professionals would like to see a clear care request, which means that they would like to know for example if they also need to provide wound care and what is expected from them regarding the IV line and the medication. Next to that they often miss information about the history of the patient’s health regarding to the prosthetic joint infection.

*“If I can be honest, when I receive this information as a homecare organization, then I would think; yeah, you can do something with it, but not really a lot. You don’t know if a patient had some side effect from one thing or complaints about another. It’s really minimal.” (P6)*

*“Next to the fact that you receive a lot of information, you still have to draw your own conclusions. As I said, step-by-step. Short care requests, the quit date and that kind of information.” (P4)*

Another point that was mentioned by four professionals is that they want to know on forehand whether they can remove the infusion line after the last day of the treatment. In the current situation the healthcare providers need to call the hospital, which may take unnecessary time and the patient may get worried about this.

*“Like the patient is allowed at the end of the treatment, there doesn’t even have to be a date then, but at the end of the antibiotic treatment the line can be removed. That saves us calling, that save the patient worries and it saves the hospital having to contact the doctor again.” (P2)*

#### *Patient perspective on the transfer of his medical information*

The patients mostly noticed that everything was well arranged for them and that all materials and professionals were there when the patient arrived at home. This was for the patients comfortable, because they noticed that the aspects of the treatment were well communicated among the different professionals. There were two patients that mentioned some issues regarding the information exchange among the professionals. For one patient, this was mainly due to a lack of clarity about the wound care. This patient mentioned that it would be an improvement if the homecare nurses had been better informed about the wound care, so that the homecare nurse knows what to do. This will also give the patient a more comfortable feeling. Another aspect that could be improved, is that information is given to the homecare nurse about what the patient can and should not do, for example when it comes to the eventual load on the new hip or knee.

Another thing the patients noticed, is that sometimes the professionals are not well informed or do not have enough experience with this treatment when it comes to administering the medication. For one patient this was mainly noticed when the homecare nurse had no knowledge about how to store the medication. This should have been kept in the refrigerator, but this did not happen, because this was not told to the homecare nurse by any other professional. This can be solved by giving good information towards the homecare nurse about the medication. Besides this, it is also mentioned by one of the patients that it would be better if the professionals that are part of the process are well trained and have knowledge about the process and safety aspects of treating a patient at home with IV antibiotics.

*“You should wash your hand and you have to wear gloves. You should not do it this way, but that way. Then the nurse said: “yes, but I am an intern”. This made me restless, whenever I saw that there was again a new person at the door, then I thought; I hope this will turn out fine. If people will get this treatment, and especially older people, that you send professionals that are experts, that they know how to do the treatment.” (Pt3)*



Another thing the patients missed in the information given to the professionals about their treatment is that they have no clarity in the duration of the treatment. The professionals also mentioned that this is not always clear in front, like for example that there is no clarity if the PICC line can be removed after the last day of administering the intravenous antibiotics. The patient would like to have clarity about these things, so that they know what to expect and to know where they are within the process.

## Information given to patient

### *Professional perspective on given information*

Not only the professionals need information, but the patients also need to be informed about the treatment and the medication they receive at home. The professionals were asked during the interviews about their opinion of the information provided to the patient by the professionals. The results are shown in figure 3.

The opinion of the professionals differed from each other. This was mainly due to the reason that there is no good sight on how the hospital provides information to the patient. The interviewees do think that information is provided by the orthopedic department of the Isala hospital but are wondering how much a patient remembers of this information. In the complete process patients will get enough information, because not only the professionals at the department but also the transfer nurse and the home care nurse can provide information to the patient whenever questions are asked by the patient. Especially the professionals in front of the process were very critical about the information provided to the patients and mentioned that the only thing a patient is told is that they will receive antibiotics at home. There are no worries about differences in information because they all use the same leaflets and protocols. Yet the professionals think there is still room for improvement when it comes to providing information. During the interviews the professionals indicated that it would be good to provide written information in the form of a folder.

*“Well, you will receive IV antibiotics at home, therefore a home care nurse will visit you and that is about it. We don’t give them any more information besides that.” (P6)*

*“Well, I think that we explain it all, but I also think that maybe some documentation or an information leaflet can be made, so that patients can read this in their own time and tempo.” (P7)*

In the current process patient receive some information from the pharmacy about the medicine and from the home care nurses about the treatment at home whenever there are questions about this. All

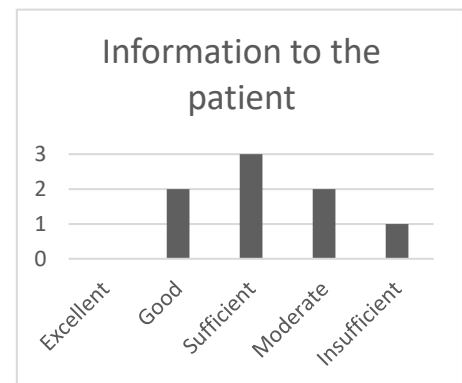


Figure 3: information towards patient

interviewees agree that with one general folder with complete and coordinated information, a patient would be better informed and will be able to review the information.

The interviewees mentioned some aspects that should be in an information leaflet. For example, the fact that a patient has to take blood tests every week. It still happens to often that the patient is not aware of this. But also, information about the side effects of the medication, when to contact a professional and who to contact at that moment is missing. Also, information about the infusion pump the patient will get at home is missing. Sometimes a patient is afraid in advance, because they have not been told that the pump the patient will get at home is a small and mobile pump. Positive about the latter is that the hospital started using these smaller pumps on the orthopedic department, which ensures that patients are already familiar with such a pump and therefore be reassured. The aspects that the professionals named to include in an information leaflet are mentioned in table 6.

Table 6: Aspects that need to be in written information provided by Isala

<b>Aspects in written information</b>	<b>How it is provided in the current process</b>
Most common side effects of the antibiotics. (Allergic skin reaction, nausea as examples)	In prescription by pharmacy.
Symptoms to be aware of.	Not prior to the treatment at home.
When to contact and who to contact. (Contact details)	Not or by homecare nurse when asked for.
What is expected of the patient. (For example: blood draw)	Not enough, sometimes oral in the hospital.
Goal of the treatment.	Oral by hospital.
Information about the infection in general.	Sometimes by the hospital.

Besides providing written information in the form of an information leaflet, three of the professionals mentioned that the use of an app on the computer or smartphone might be an improvement of the information provision as well. Isala already does this with patients that got a total hip or knee replacement, but not yet when they are treated for an infection of the knee or hip prosthesis. The use of such an application gives the possibility to provide all information and contact details within this application. It also could communicate with the patient at a distance, which makes monitoring easier when the patient can send a picture for example of their skin when there may be an infection. If in the future patients will be more self-reliant with the medication, this would be a solution to keep a close eye on the patient. Professionals can also use the app to see contact details for example of the home care organization that is treating the patient if contact with them is needed. In addition, the patient can see who they should contact and when.

*“That way you can keep better contact with the patient, and it is interactive. I think that would be a very nice modern way for that part of treating at a distance.” (P7)*

*“But what would be useful, is if you can see directly in an application, like which homecare organization is there and have they already visited the patient; yes or no.” (P8)*

#### *Patient perspective on the received information*

The professionals mentioned that there is room for improvement when it comes to the information given to the patients. When the patients were asked about the information they received in front of the treatment at home, they all mentioned that this was enough. Three patients did say that it was not much information, but that they could ask everything during the treatment, which made it enough to endure the treatment. Noticeable is that they all call themselves empowered, by which they mean that they obtain enough information by asking questions.

The interviewees were asked what they thought was important information to get before the treatment continues at home. The patients mentioned that they found it important that everything was arranged before going home, so that the medication and materials are there and that the professionals know what to do when arriving at the patient his home. This was mainly positive, but the patients mentioned that information about things that they had to arrange themselves was not always provided. For example, a bed that is changeable in heights, or a pot chair. It was not always clear if the patient had to arrange this, that it would be arranged by the hospital or the homecare organization. There should be some information on forehand on those things, also about possible costs for the patient and other things like transport from hospital to home.

*“Yes, maybe some information. I mean, nowadays, there are leaflets for everything, everywhere, even if it is online, but you could print those. And that is what I maybe missed a little during the treatment, not only for the PICC line, but also for the complete treatment at home.” (Pt1)*

When asked more in-depth questions, the patients mentioned a few aspects that they would like to get more information about. In the current process, the patient does not get any information on what to monitor, for example that the wound keeps leaking. The patient does not know when it is better to contact a professional and therefore the patients are afraid that they wait too long before notifying a professional and that this results in bigger issues. This is something patients are insecure about, since they think that when the wound is still leaking, there might still be a problem, and this causes anxiety.

*“Look, they could say for example, if your wound is leaking, you have to contact us immediately or that they tell you clearly what you should do. Then I do not have to worry about that. Do I have to rinse it with water, or should I do anything else? Just give a little more advise”. (Pt7)*

In general, patients were satisfied with the little amount of information. Some patients would like to be better informed before they leave the hospital, they mentioned that they received no information about the medication that they will receive at home. Only that the blood rates caused by the infection must get lower and that is it. The patients mentioned that because of their own state, the information was enough, but if they would be older or more scared, the information would not have been enough. This could be improved by informing the patient better about the medication and about what the patient can expect when he receives IV antibiotics at home, just like the patient wants to know what to consider during the treatment.

## Communication

### Professional perspective on communication

As shown in table 1 a lot of different professionals are part of the current process of IV antibiotic treatment at home for patients with a prosthetic joint infection. Therefore, it is important that the process in the field of communication is well organized. The interviewees were asked for aspects that are important to get the best out of the communication between all different parties. These aspects are shown in table 7. In general, all professionals were positive about the communication and they all mentioned that in the current process, everyone involved is easily accessible. The interviewees were asked to score the communication with the different parties in the current process, which is shown in figure 4.

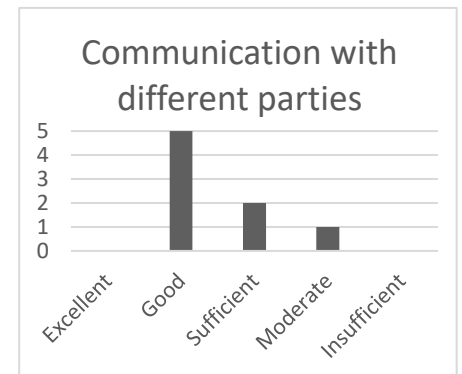


Figure 4: communication with different parties in a professional perspective

Table 7: Important aspects of communication in a professional perspective

Important aspects within communication	How it is regulated in the current process
Completeness in reporting.	+
Approachability / short lines.	++
Having the contact details.	-
Unambiguous and clear communication.	+
Flexibility of professionals.	++
Quick responses.	+

++ Very good      + Good      - Not good enough

When the decision to continue IV antibiotic treatment at home has been made, everything is set in motion directly. At that moment the communication with the transfer agency is important, so that the transfer nurse can arrange the right medication, homecare, and materials for the patient. The interviewees were generally positive about this part of the communication. The recipes are given to the transfer agency on time and in case of questions about these recipes contact with the orthopedic department is easily possible. The transfer agency then makes sure that a homecare organization and the pharmacy is informed about the patient. According to the interviewees the lines between the professionals involved are short and they are all open to answer questions and help each other.

When medication needs to be arranged the communication between the pharmacies and the hospital was scored as excellent by two interviewees. This is mainly because the transfer agency is responsible and has clear forms to request the medication and whenever there are questions, it is easy to get in touch with each other.

About the part of the process when the patient is at home and being treated with IV antibiotics the professionals were more critical about the communication. This was mainly because the contact details of the involved parties were not always there. One of the interviewees scored the communication as moderate because it felt like a search for the right person and being send from pillar to post. Six other interviewees mentioned the importance of having a clear overview of contact details as well to prevent the professionals from calling the wrong parties as for example the wrong pharmacy or wrong homecare organization.

*"It's not always clear to us where and from whom we should get information and then you are on a quest to find it." (P3)*

*"Suppose we have to call the homecare nurses, then we look for quite a long time for a phone number like; what homecare organization is treating this patient? Who can we call about the patient? That could be more efficient in my opinion, that there is, for example, an overview with phone numbers and contact details" (P8)*

Another point of criticism was that when there are question about the status of a patient, the communication about this takes place during other work activities, which disrupts other processes. This could be resolved by making this more structured with for example time schedules for contact with the orthopedic department, or an application could help in this situation. On the opposite it is perceived as positive that questions are quickly responded in the current process, since the patient does not have to wait too long for an answer. To solve these, appointments can be made to contact each other, so that the patient and professional knows when to expect an answer.

*"That means that communication about a patient takes place between other activities. That interrupts your other processes. In my opinion that could be more structured, and an application might help." (P7)*

### Patient perspective on communication

The patients that were interviewed were all positive about the communication with the hospital and the home care nurses. There was not much they mentioned that did not go well. One thing they did mention was that there was not enough clarity about the contact details and who to contact in some situations. The patients noticed during the treatment that a lot of different disciplines are involved during the treatment and that made it confusing. For them it would be easier and clearer if there would be a central person to contact throughout the whole treatment, this also means that the patient does not have to tell his situation multiple times. This is also mentioned by one of the professionals, that it should be good to have one person that is responsible for the communication with the patients.

The patients were also asked how they and their families were involved in the choice to continue the treatment with IV antibiotics at home. This was in general good; all patients were satisfied about their involvement and the involvement of their family.

One thing that was mentioned by two patients is that the communication with the pharmacies went wrong one time. This resulted in the patient going to the wrong pharmacy for his medication for one patient and for the other patient this resulted in a delivery of all medication on his medication list, which was not necessary and almost led to waste of medication. This should be clearer within the hospital before they are contacting the pharmacies. The right pharmacy must be informed about the medication and the patient needs to know which pharmacy he needs to go to, or which pharmacy will deliver his medication.

## Safety

### Professional perspective on safety

When the decision has been made to continue treatment with IV antibiotics of a patient with a prosthetic joint infection at home, it is important that the whole process is safely regulated. The interviewees were asked about how safety is within the current process and all eight indicated that it is good. Reasons why this is considered good is that the pharmacy prepares and checks the medication, afterwards it is sent to the homecare nurses who will also check it but for them it is nice that they are working with ready-to-use medication. Other factors that ensure good safety is that the homecare organizations involved send specialistic teams to the patients, they are all well trained and they work with infusion pumps and medication daily. It is also found safe that when the medication is administered there is always a homecare nurse present.

The interviewees indicated various aspects that they consider important when it comes to safety:

- Stick to the treatment protocol.
- Good material (infusion pump, medication for example).
- Good transfer of medical information.
- Information provision towards the patients.
  - It is important that a patient knows what to do and when to call.
- Build in your own safety as a healthcare professional.
- Having the right forms, for example:
  - Preparation method
  - Medication checklist
  - Administration instruction

All homecare organizations involved are working with protocols and this ensures that every patient is treated in the same way and mistakes are not easily made based on choices within the treatment. The interviewees mentioned that these protocols are followed and that this contributes to the safety of the patient.

*“So basically, in that area, in terms of changing materials, taking care of these materials. That is all done according to the latest guidelines, so I don’t think that there is much room for improvement.” (P2)*

Regarding the right forms, the preparation method is almost never needed in the current situation since the pharmacy prepares the medication now while this was previously done by homecare itself. This is a progress when it comes to safety, since there are more checks if the medication is correct and if the homecare nurse must do it, it is more error-prone since they do it less often. The other example given are the checklists of the medication. These occasionally missed according to the professionals.



This might put safety at a risk since there is no record of whether the medication was given and whether there were any particulars, like a problem with the PICC line. As for safety this was the only point for improvement, for the rest all professionals are aware of what is important to deliver safe care.

**Patient perspective on safety**

When the patients were asked about his feeling of safety when leaving the hospital to continue IV antibiotic treatment at home, most of them answered that they felt safe. This feeling of safety is mainly because the patients have trust in the healthcare professionals, they have family or friends around them, and they are at home and there is nothing that feels more safe then your own home.

*“I would have felt safe otherwise. You’re in your own house, right.” (Pt8)*

All interviewees mentioned factors that contributed to their feeling of safety or that would have helped them to feel safer. These factors are listed in table 8 with the level of satisfaction of the patients within the current situation.

*Table 8: Aspects of safety and how satisfied patients are about these aspects*

Aspects of safety	Level of satisfaction
Involved healthcare professionals	++
Good explanation	+
Possibility to contact any professional	+
That everything is arranged	+
Good information in front	+/-

++ Very good      + Good      +/- Okay      - Not so good

The patients were satisfied about the involvement of the professionals. The professionals are interested in the patients and are open for questions and willing to help the patient if necessary. Besides that, there was room for improvement in the other aspects. First the good explanation, the patients are happy with the explanation they get, for example they receive answers on their questions. They explain it in a way that the patient understands what is happening or what he should do. What is striking is that the patient has to ask for this explanation and the hospital could improve this in giving more information in front, which will possibly make them feel safer before leaving the hospital. Some interviewees mentioned that they feel insecure when they leave the hospital, but after they get answers on questions they have, the feeling of safety grows.

The possibility to contact the professionals in the hospital, or the homecare nurses is good, but sometimes they do not have a good idea of who they must call when there are questions or complications. This can be remedied by giving the patient contact details and indicating when a patient should contact a professional.

In short, the patients feel safe, because everything is properly arranged and the professionals are open to them and willing to help, but there are still small improvements possible. In the current situation patients indicate that they would feel safer if they can stay the first week in the hospital, because they are insecure and uncertain about the treatment at home. Complete information and explanation could solve this.

## Patient-centeredness

### Professional perspective

Generally, all interviewees were positive about the patient centeredness of the current process of IV antibiotic treatment at home for patients with a prosthetic joint infection. This is because the professionals try to meet the needs of the patient, which means that they have to be flexible in their time for example. Even though this is not always possible for the professionals, they are positive towards the patient-centeredness since everything goes in good consultation with the patients.

One of the interviewees does not think that the current process is patient centered because of the efficiency regarding the discharge of a patient. This interviewee mentioned that the process falls short because a patient must wait too long until everything is arranged before he can be discharged. It would be an improvement if a patient can be discharged within eight hours after the decision to continue at home has been made.

The interviewees were asked which aspects ensure that the care they deliver is patient centered. The following aspects were mentioned:

- Patient should get discharged within eight hours.
- Personal contact (about the delivery of the medication for example).
- Contact on a regular basis.
- Flexibility of the professionals where possible (for example in visit times at home).
- Respect and treat the patient correctly.

About these aspects the interviewees were satisfied in how the current process works. Except for the first point, which was only mentioned by one professional. There were also some doubts about the flexibility. This was mainly because the homecare nurses cannot always arrange it according to the wishes of the patient since they simply do not have that option within the time they have.

### Patient perspective on patient-centeredness

The patients were asked about the patient-centeredness of the current process of intravenous antibiotics at home. They were asked whether the care really revolved around them. All interviewees mentioned that this was positive, because the healthcare professionals did whatever was best for the patient and the professionals took into account the wishes and needs of the patient.

*“Yes, off course I was the most important within my treatment and whatever I asked for, was answered or was done by all healthcare professionals.” (Pt2)*

The patients were also asked about the visits of the homecare nurses to see if there would be any room for improvement when it comes to patient-centeredness. The patients all mentioned that these visits were amazing. The homecare nurses were nice and sweet and took good care of the patients, since they knew exactly what to do. Besides that, the homecare nurses also checked the wound and plaster most of the time, which was comforting for the patients. The homecare nurses were not averse to do something extra, which was perceived as positive. One interviewee mentioned that the homecare nurse came back on her free day to help with the stitches.

However, two of the interviewees also indicated that they sometimes had a visit from a homecare nurse who was less experienced and there might be some room for improvement to educate the professionals good, before letting them treat the patients alone.

*“There was even someone who was off duty on Saturday and came to my house to get the last stitches out. Well, that's great isn't it.” (Pt4)*

Looking at the aspects that the professionals mentioned to be important for a patient to be central within the process, the current process is patient-centered in a positive way according to the answers of the patients during the interviews.

## Quality of care

The different themes that are discussed, all contribute to the experience of quality of care of a patient. All professionals play a big role within the process to ensure the patient to experience good quality of care. Although a lot has already been discussed under these themes, the interviewees were also asked directly about their contribution to the quality of care of a patient treated with IV antibiotics at home for a prosthetic joint infection. Table 9 shows what the professionals see as contributions within quality of care and why these contribute to better quality of care.

Table 9: Contribution to quality of care of the professionals in their own perspective

<b>Contribution to quality of care</b>	<b>Why</b>
Working with specialist teams.	These teams are administering IV medication on a daily basis. They also have to recertify themselves.
Provide information and education to the patient.	This ensures that the patient goes home well prepared and reassured. They know when to contact a professional and what to do.
Monitoring and signaling the patient.	Watch for any deviant reactions during treatment. This applies to the IV line and the wound. Also, the blood values are monitored.
Working with protocols.	This ensures all professionals to do their job in the same way. It also keeps them up to date when it comes to the latest guidelines.
Being approachable to others.	Since there are many different professionals involved in the process it is important that it is easy for them to get in contact with each other.
Following webinars and courses.	To keep up to date the professionals should follow webinars and clinical lessons about the infection and treatment options.

*“The fact that the possibility to do it at home is already quality improvement.” (P4)*

*“We have learned very well how to deal with webinars and things like that. That you also once a year or so, just get some sort of clinical lessons about certain conditions. To make sure that you get more focus on the problem.” (P3)*

## Blood tests

### Professional perspective on blood tests

When a patient is treated at home with IV antibiotics, it is necessary that they take blood tests every week. This is done to see how the infection is reacting on the antibiotics and this allows the professionals to see if an adjustment in the medication is necessary. There are different options for the patient to do this. If the patient is mobile enough, he goes to a hospital or doctor for the blood test. If this is not a possibility someone will come to the patient to do the blood test.

The area in which Isala treat patients with IV antibiotics at home for a protheses infection is large. This is because Isala is specialized in treating prosthetic joint infections, so also patients that received their prothesis in another hospital can go to the Isala hospital for treatment of their infection. This results in the fact that it is not always possible that Isala regulates the blood sampling. This sometimes causes logistical problems, like results that are not coming to the attending physician or that no blood is drawn at all. It is sometimes difficult to get the results in when a patient went to another hospital to take the blood tests.

One of the professionals mentioned that here is room for improvement and that this can be done easily. Right now, the physician assistant must instruct a secretary about the blood test for every patient, this could be solved by making something like a protocol. This ensures that the secretary knows exactly what to do, where to send the results to and who to contact if there are any issues. It is noticed by the interviewees that the blood samplings are not an automated process, which results in checking the secretary and patients if everything is done in the right way. This could be improved by making one person responsible for this. This person could contact the patient if everything went well around the blood sampling and if not so, they could ask for the reason and help the patient to solve the problem.

It also emerged during the interviews that patients themselves are not aware of the fact that they must draw blood once a week. This is part of one of the aspects that should be included in the written information mentioned in table 6.

### Patient perspective on the blood tests

Because of the wide range wherein Isala has patients they treat at home with intravenous antibiotics, there are different ways that the blood tests are arranged for the patients. In case of one patient the hospital arranged someone to go to the patients' home and take the blood samplings there. Another patient had to go to the hospital or another place where they took the blood samplings. When the patients were asked about the way this is arranged in the current situation, the answers were quite different. As already mentioned by the professional there is room for improvement, and the interviews with the patient confirmed that.

In general, it was well arranged according to the patients, but some of them mentioned that the communication around appointments was not correct. For example, one of the interviewees mentioned that there was someone from Isala at her home to draw the blood, and after half an hour, someone else from another hospital also came to do the same blood test. In this case it is a logistical and communication problem because there is no fixed way in how it is arranged in the current situation. This could make it uncertain for patients, that they do not know what to do and where to go for the blood sampling. The protocol that should be made as mentioned by the professional could be a proper way to solve this and make this part of the process clearer and less error prone.

Another point for improvement that the interviewees mentioned was mentioned by the patient that had to go outside their home to take the blood tests. They prefer that it could be arranged within the hospital or at home, since it is hard for them to get in and out of a car. The patients would like more clarity in what is expected of them when it comes to the blood tests and would like the possibility to let it be done in their home.

Besides the clarity of where and when the blood samplings are done, one of the interviewees mentioned that it is unclear on what the blood is tested. This patient had problems with the iron levels and did not have any results on that, which made her insecure about these levels. More clarity on what is tested would improve this.

The patients were asked in how they were kept informed of the results. In general, they were satisfied about this. Only one of the patients would like to see a system that everything is arranged, from appointments to results. That is also what the professional mentioned, that it should be more centrally controlled. This would make it more clear and easier for the secretaries as well since the forms are also centrally arranged then.

## Pros and cons

### Pros and cons for professionals

The aim of the hospital is to discharge a patient as soon as possible if the patient is not really sick and mobile enough to continue treatment in a safe way at home. To get a complete view on what the professionals think about the patient being treated at home with IV antibiotics, they were asked to mention the pros and cons of the treatment at home in the current situation.

#### Pros

- The fact that the patient can go to his own house as it is.
- Preventing of unnecessary length of stay in the hospital. The costs outside the hospital are lower than when the patient is still treated inside the hospital.
- Patient goes to an environment that gives peace. They are not bothered by other patients.
- At home there are less bacteria, which decreases the chance of infections.
- A patient feels free on many different levels which results in for example sleeping better, eating better.

*“As I say, people sleep better, people eat better, people move more easily, they go out more easily, the social aspect; receiving people at home.” (P2)*

*“Well, an advantage is that someone can just go home to his own place. There is no better place than your own home, in my opinion.” (P4)*

#### Cons

- Things are signalized later, because a patient is seen only half an hour a day most of the time and in the hospital, there is 24/7 someone available for them.
- Some patients like to go to the hospital, so that they have personal contact with their doctor.
- If adjustments of the medication are necessary, it is more difficult to arrange that as soon as possible when the patient is at home.
- A patient could feel less safe when treated at home instead of in the hospital.

*“Negative could be that you have less visibility, that patients do not always call on time when there might be some problems. That could be a con.” (P6)*

*“Some people just like it to come into the hospital, to have personal contact with their doctor. Sometimes it is just a getaway, but sometimes it is also a lot of trust. That is a con.” (P5)*



There were some cons given by the professionals, but four professionals saw no disadvantages at all to the treatment at home. Other cons could be easily solved, when it comes to for example the feeling patient has when leaving the hospital. If the professionals inform the patient in a good way, they will be more secure about the treatment they will get at home.

### Pros and cons for the patient

None of the patient mentioned any cons regarding the treatment with IV antibiotics at home. They were all positive about the fact that it is possible at home. That was a major pro for every patient, and they mentioned that it is never nice to spend unnecessary time in a hospital.

*"I do not think that there is any con. You are at home, in your own bed and environment and that is great for the recovery". (Pt3)*

The patients mentioned a few pros during the interviews, these were:

- PICC line
- Being at home at your own home environment
- Nice nurses with a lot of patience
- Freedom
- "Only pros!"

*"Pros, yes, 100 percent pros in my opinion. Freedom, happiness and well, happiness, although you have an infuse. But still a lot more freedom. Yes, without having an infusion pole inside the hospital". (Pt6)*

Regarding the pro that patients have more freedom, the interviewees were asked if there were besides having more freedom, also limitations in their freedom. The interviewees mentioned that there were not any limitations, only from the surgery or spacer for example, but not regarding the medication they received at home. Some of the interviewees mentioned that the infusion line gave some limitations during walking or showering and changing clothes for example.

The patients were positive about the possibility to organize their own days, doing anything you want during the day. Still the fact that the patients are very dependent on themselves, sometimes caused insecurity, and one of them felt dependent on his family. That took a lot of getting used to.

*"That is a positive story, because you can pick up your own rhythm again, being able to do your own things. You are back in your family circumstances, what is also for the partner nice, that saves them visits, not having to go to the hospital so many times". (Pt1)*

## SWOT- analysis

This chapter describes the strength, weaknesses, opportunities and threats analysis. The results were collected and the most notable points were put together in a SWOT-analysis. This gives an overview in the positive points and the points of improvement that came forward during the interviews about the experience of the current treatment of intravenous antibiotics at home. The opportunities are positive points that are externally arranged or largely taken place outside the hospital. The threats are points of improvement that lay outside the hospital, but that they can influence. The strengths are positive points within the hospital. Weaknesses are points of improvement within the hospital.

The points in the threats and weaknesses show where there is room for improvement within the current process of IV antibiotics at home for the Isala hospital. Recommendations will be made, based on the weaknesses and threats that are mentioned in the SWOT table (table 10).

Table 10: SWOT-analysis of the current process of intravenous antibiotic treatment at home for patients with PJI by the Isala hospital

<b>SWOT-analysis</b>	
<b>Externally</b>	<b>Opportunities</b>
	1. Working with specialized teams (homecare nurses)
	2. Clarity about the medication that is given to professionals
	3. Everything is arranged when patients arrives at home
<b>Internally</b>	<b>Strengths</b>
	1. Use of the PICC line
	2. Contact between different stakeholders
	3. Monitoring of the patient when he is at home
	4. Safety of the current process
<b>Positively</b>	
	<b>Weaknesses</b>
	1. Knowledge and education of healthcare professionals
	2. Logistical process of arranging medication
	3. Logistical process of blood tests
	<b>Room for improvement</b>

## Discussion

The aim of this study was to find out what the important factors are from a patient and healthcare professional perspective that affect the experience of quality of care in the current situation for patients with a prosthetic joint infection treated with intravenous antibiotics at home by the Isala hospital. The professionals that have been interviewed about their experiences indicated all themes (communication, information, efficiency, safety, patient-centeredness) as important aspects of the treatment with intravenous antibiotics at home for patients with a PJI. They did mention that some of the themes have points for improvement. Remarkable was that experiences and opinions about the current situation differed between patients and professionals. One aspect that differed in the patient perspective compared to the professional perspective was the information given to the patient by the hospital. The professionals were critical about these aspects and wanted to see more information on paper provided by the hospital, which is currently not done at all. They mentioned it to be important that a patient knows what to expect at home and when and whom to call whenever there are problems during the treatment with IV antibiotics. On the opposite, when the patients were asked about this information provision, they did not miss any information during their treatment. According to the patients this was because they were not afraid to ask questions whenever they have them. Some patients did mention that when they would have been afraid to ask questions or would have been more worried or less independent, they would have needed more information in front of the treatment at home. These patients found that the hospital provides little information, but that it was enough for their treatment with intravenous antibiotics at home this time. Still, it is an important aspect according to both patients and professionals. Other studies that evaluated the experience of patients also mentioned information and communication to be important aspects within the treatment with IV antibiotics at home (15–17). These studies only looked into the patient perspective and included multiple clinical pathways within their study. This study differs from those, since this study included the professional perspective and came to the conclusion that these two perspectives are close to each other when it comes to the importance of various aspects of treatment with intravenous antibiotics at home. Within the aspect of information the professionals do think that they fall short in providing written information since there is no common thread or any grip in what information is or should be provided. As a results, it can differ per patient in what information is provided. Patients do think more fixed information should be an improvement even though they did not miss it in the first place during their own treatment.

This study is only looking at the current process of the Isala hospital. A way to compare the important aspects and experiences of the current situation with these aspects and experiences in other hospitals is to conduct the study in other hospitals that are part of the medication@home project and provide

intravenous antibiotics at home for patients with PJI. There is no comparison at this point, but one of the interviewees mentioned other hospitals to have another way of providing IV antibiotics at home. There might be positive and points to improve in both ways and comparing these might ensure that there is one preferred way of treating patients with IV antibiotics at home.

During the interviews it was mentioned multiple times that the pressure on homecare nurses is high and that sometimes patients had to stay more days in the hospital because the homecare nurses did not have time to visit them. This is happening more often lately and therefore further research is recommended to see how the pressure on the homecare nurses could be lowered. This study was done during the Covid-19 pandemic, which also might have had influence on the pressure of the homecare nurses. There are a few ways to solve this high pressure on homecare nurses, which are making patients more self-reliant (21), for example that they provide and change the medication sacks themselves instead of having a homecare nurse visiting them every day to do this. Another option is to have a team prepared in the hospital that already provide the antibiotics to the patient for the first day(s) before the homecare nurse has time to go to the patient his house. Further research into these alternative possibilities of medication provision is recommended since in the future, the hospital wants to discharge the patients even earlier.

Lowering the work pressure on homecare nurses could be done by for example letting the patient self-administer the medication and having the homecare nurses visiting them for one day a week to check up on the patient. Little research is done about self-administrating IV, but patients are not always in favor to do this, since they have for example lack of knowledge or skills (22). Other studies show that patients are positive towards the responsibility given to them when self-administering the medication (23). More research into the possibilities of self-administering medication is recommended, since little is known about the best way to do this. Pharmacies did already publish instruction videos to show the patients how to do this. The current process of IV antibiotic treatment at home by the Isala hospital has not been using these yet (24). During the interviews it is noticed that patients do appreciate the visits of the homecare nurses, since the patients are still insecure about for example the wound. Having a daily visit of a homecare nurse gives them the opportunity to ask questions.

One of the interviewees mentioned that after having some trouble with the pump used by the Isala hospital, another pump was arranged by the homecare organization. This other pump was smaller and connected to the body and did not bleep as many times as the first pump she got. In this study the kind of pump is not taken into account, but it is recommended to look into other possible materials to have a better patient experience, for example an elastomeric pump (25).

Besides the material technologies, also the use of an application is mentioned during the interviews. This application can be used to communicate with the professionals in the hospital, get information about the treatment, or to get blood results for example. An application can have many options to solve problems in information and communication. The use of an application gives possibilities regarding to: information management, clear overview of appointments, communication and consulting, patient monitoring and medical education and training (26).

### Strength and limitations

In contrast to earlier research about experiences with IV antibiotics at home, this study includes both patients as healthcare professionals. This results in a complete view of the current process illuminated from all sides.

The interview schemes used during the interviews were different per stakeholder. Therefore, not the same questions were asked to all interviewees, since all of them have another task within the total process of treating a patient at home with IV antibiotics. This could be seen as a strength since the interview schemes were appropriate to the tasks of the professionals. Besides that, it also brought limitations because it resulted in interviews with professionals with one participant, as for example there has been an interview with only one hospital nurse. Still, they play an important part within the process, but there could be a possibility that there would have been other results if another hospital nurse would have been interviewed.

Another limitation was that the questions asked to the patients were broadly interpretable, which resulted in one patient telling long stories about their experience that were not directly useful for this study and another patient giving short answers being satisfied with how everything went for them during the process of treatment at home. This could be easily solved by formulating clear open questions without too much room for own interpretation. If questions were more specified on details of the treatment patient would probably have given more specific answers for this treatment instead of telling stories about other treatments and other hospitals. The interviews have not been evaluated in between the interviews since the interviews found place in two weeks. If this was done, some questions could have been adjusted before the next interview. There was also a difference in questions used for the themes in the interview schemes of the different professionals. Questions were specified on the tasks that the professionals have within the process and therefore it was hard to get a clear fixed structure within the results.

There is a possibility that treatment duration, number of treatments and comorbidities have influenced the treatment or experience of the patients (27). The minimal duration of IV antibiotic treatment for the PJI patients is two weeks, but this can also become a few months. This is not

considered in this study but could influence the results in several ways. A patient that is treated longer has more time to adapt and to accept the treatment but can also get annoyed by the duration of the treatment. The comorbidities might cause differences in experience, since for example one patient could do more at home than another, due to their physical state. Some patients that were interviewed were treated more than once with IV antibiotics at home and experienced the first time different than the second time. This is not considered, since not all patients had a second time of treatment with IV antibiotics at home. To take these things into account in further research more specific questions should be included to get a view of these differences in patient characteristics as for example questions about their physical and mental state.

## Recommendations

On base of the weaknesses and threats SWOT-analysis, recommendations are made for the hospital to improve the treatment of intravenous antibiotics at home for patients with PJI. Below, these recommendations are explained and the numbers of the weaknesses and threats of table 10 are used to clarify which recommendation belongs to which weakness or threat.

### Recommendation 1

*Provide an information folder to the patient with all information regarding to the treatment, the medication and the contact details. (Weakness 1, 3 and 4)*

Since the hospital falls short on providing information, mainly according to the healthcare professionals themselves, it is important that steps are taken in this regard. In the current process it is noticeable that the healthcare professionals do not know from each other what information is being given. Therefore it is recommended that all healthcare professionals put together the information they think is important to provide to the patient and merge this into a folder. This ensures complete and unambiguous information that can be provided to the patient in the hospital before the transition towards home is made. The folder can be read together with the patient, to ensure that the patient understands what will happen at home. This might also results in the patient going home more confident and well-knowing about what is going to happen, which could lead to a stronger sence of safety as well. Being more confident after receiving more information is also mentioned by some patients during the interviews.

### Recommendation 2

*Develop an app in which the patient can be provided with information, but where it is also possible to get in contact with one of the professionals. (Weakness 1 and 4)*

To digitalize the information provided to the patient, the development of an app can be a solution in which there are multiple other opportunities. This app can contain the information about the treatment, medication and contact details just like the proposed folder, only digital. Digital information ensures the patient not losing it. Besides information, an app may also contain all contact details of the healthcare professionals and have the ability to contact a professional whenever there are questions or problems regarding the treatment by using this app. For example there could be an option to video call or send a picture of the wound, so that the professional in the hospital can judge this, to see if this might be a reason to come back to the hospital.

### Recommendation 3

*Rethinking what is important information to provide to the homecare organization about the patient and his medical background. (Weakness 3)*

In the current situation there is some disagreement in how the patient information is given to the homecare organizations. One finds the information too cumbersome, where another lacks information about the medical background or disease course of the patient. For example, it is not always clear if the PICC line can be removed, or that woundcare is needed. A way to solve this, is for the hospital nurse and physician assistant to ask the homecare organization what information is needed about the patient and his treatment. A standard form can be made, that only needs to be filled in by the professionals in the hospital with patient information and step-by-step information about what is expected of the homecare nurses. This results in clear and complete information for the homecare nurse and less contact needed for questions about the patient. It is also important that medication checklists are sent together with the medication to make it possible for the nurses to check each others work and therefore ensure safety within the process.

### Recommendation 4

*Consider to connect the infusion pump at the hospital with the first day of medication, to avoid the patient having to wait one day before he can go home. (Weakness 2)*

In the current process patients have to wait till the infusion pump and medication are delivered at home, which mostly take at least one day and during the weekends even more. One possibility to solve this internally, is having pumps of the pharmacy available at the hospital, so that the patient can get connected to this pump. When a patient goes home in the current situation, the pump at the hospital is disconnected before leaving and the patient gets a new pump at home from the homecare nurses. Another option what is recommended is to connect the pump, to use at home, already in the hospital. This makes it possible for the patient to go home with the first day of antibiotics. After this first day, the rest of the medication is delivered by the pharmacy and the homecare nurse can change the medication sacks. It is important that when this is done, that the patient gets good instruction in the hospital, about what to do and what not to do at home if there is not a homecare nurse available that same day.



### Recommendation 5

*Change the delivery system of the pharmacy to ensure that delivery is possible the same day, if the recipe comes in before 3 pm (Threat 2).*

According to the interviewees one of the main obstacles is that medication cannot be delivered the same day as the decision to discharge patient is made. This takes at least one day, if the recipe is at the transfer nurse before 12 pm, otherwise it will take two days. To resolve this problem externally it is necessary for the pharmacy to look for opportunities to deliver the same day if this recipe is there before 12 pm. Besides that, the pharmacy should also look for opportunities to deliver during the weekends since in the current situation the patient cannot go home on Sunday and Monday, which results in unnecessary extended hospital stays. Internally, the hospital can look for a solution to make the application of medication easier and faster, for example by using a patient system, like HiX to make and send recipes instead of e-mailing it.

### Recommendation 6

*To keep the knowledge of the healthcare professionals up to date it is important that they follow courses about the medical condition, the treatment and the developments in the field of intravenous antibiotic treatment at home (Threat 1).*

To treat according to the last developments and protocols, it is important that healthcare professionals are educated. An advantage of the current process is that the homecare nurses are mainly part of a specialistic team, which ensures quality because they work with intravenous antibiotics daily. However it is important that they stay educated and that they keep up to date with their knowledge. The same goes for the healthcare professionals in the hospital and the pharmacies. If the hospital gives all professionals the possibility to follow courses or clinics, then the process also moves with the time regarding new developments as in pumps for example. This could mean for example that a new smaller pump is developed and being up to date by following courses gives the possibility to use this new development and implement it directly after a course.

Table 11: Recommendations and explanations for the hospital to improve the current process

<b>Recommendation</b>	<b>Explanation</b>
<b>1. Weaknesses 1, 3 and 4</b>	<i>Provide an information folder to the patient with all information regarding to the treatment, the medication and the contact details</i>
<b>2. Weaknesses 1 and 4</b>	<i>Develop an app in which the patient can be provided with information, but where it is also possible to get in contact with one of the professionals.</i>
<b>3. Weakness 3</b>	<i>Rethinking what is important information to provide to the homecare organization about the patient and his medical background.</i>
<b>4. Weakness 2</b>	<i>Consider to connect the infusion pump at the hospital with the first day of medication, to avoid the patient having to wait one day before he can go home.</i>
<b>5. Threat 2</b>	<i>Change the delivery system of the pharmacy to ensure that delivery is possible the same day, if the recipe comes in before 3 pm.</i>
<b>6. Threat 1</b>	<i>To keep the knowledge of the healthcare professionals up to date it is important that they follow clinics or courses about the medical condition, the treatment and the developments in the field of intravenous antibiotic treatment at home.</i>

## Conclusion

This study provides an insight in the important aspects according to both healthcare professionals as patients during the treatment with IV antibiotics at home for patients with a prosthetic joint infection. It also provides insight in how it is experienced in the current process of treatment at home with IV antibiotics by the Isala hospital. The current process is experienced in a positive way by both patient and professionals. According to the professionals, information provision is an important aspect within this treatment and there is room for improvement in the information provision among the healthcare professionals, but also in the information provision to the patients. Also, communication is an important aspect according to the patients and professionals, which is currently well regulated, there is only room for improvement in providing contact details and scheduling fixed times to contact professionals. The hospital is advised to provide more information about the medication and the treatment to the patient including contact details in a written form or using an application.

The safety of the treatment with IV antibiotics is good as it is in the current situation. The patients rely on the expertise and the choices of the healthcare professionals and do not see any problems regarding to safety. The same goes for patient-centeredness, patients are positive about this and notice that they are in the middle of their own treatment process. Information about blood tests and who and when to call is currently lacking.

Regarding to efficiency there is room for improvement regarding to the logistics of the process. This applies to the process of discharge, where everything needs to be arranged for the patient at home, which in the current situation results in unnecessary hospitalization. Besides the logistics of discharge, the process of blood tests could, about which there is ignorance, also needs improvement.

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## Appendices

### 1. Interview schemes

#### **Interview schema voor interview met patiënten**

##### **Introductie**

Mijn naam is Milou Geerdink en ik ben master student Health Sciences aan de Universiteit Twente. Wat fijn dat u ervoor open staat deel te nemen aan dit onderzoek. In de brief die u voorafgaand aan het interview gelezen heeft om toestemming te geven heeft u al het een en ander aan informatie gelezen over het onderzoek. Voor nu geef ik nog even een kleine introductie voordat we starten met het interview.

Ik ben bezig met mijn afstudeeropdracht binnen het Isala ziekenhuis op de afdeling Orthopedie. In mijn onderzoek is het doel om te kijken naar de ervaringen van zowel de patiënt als de zorgprofessional wanneer de patiënten antibiotica thuis toegediend krijgen. Binnen het onderzoek zijn hoofdbehandelaars dr. Ettema en dr. Van Overvest vanuit het Isala ziekenhuis betrokken. De patiënten binnen mijn onderzoek hebben een infectie naar aanleiding van hun heup of knieprothese. Wanneer bekend is welke medicatie nodig is voor het behandelen van de infectie, dan wordt de patiënt ontslagen uit het ziekenhuis en wordt de zorg vanuit het ziekenhuis verplaatst naar huis. Vervolgens wordt de patiënt thuis verder behandeld met medicatie via een infuus.

U heeft in de afgelopen periode thuis medicatie gekregen als behandeling van uw infectie, of u wordt hier op dit moment nog steeds mee behandeld. Daarom heb ik u benaderd om deel te nemen aan dit onderzoek. Met uw hulp kan ik het ziekenhuis inzicht geven in de ervaring van het thuis toedienen van antibiotica via een infuus. Graag zou ik u wat vragen willen stellen over uw ervaringen met de verplaatsing van de zorg vanuit het ziekenhuis naar thuis en de toediening van medicatie thuis.

Ik zal het interview opnemen, maar uw gegevens zullen in het onderzoek anoniem verwerkt worden, hierdoor zijn de door u gegeven antwoorden niet tot u te herleiden. Dit wordt ook vermeld in de informatiebrief die u van te voren ontvangen heeft.

Heeft u tot nu toe nog vragen?

Anders mag u altijd tussendoor vragen stellen indien u deze heeft.

##### **Gegevens patiënt**

Wat is uw:

- Leeftijd?
- Geslacht?

Uit uw gegevens blijkt dat u behandeld werd voor een ... infectie met ... (medicatiesoort). Hiervoor bent u ... weken behandeld, klopt dat?

##### **Algemene ervaring**

- Kunt u mij in het kort vertellen hoe u in het algemeen de behandeling met antibiotica voor uw prothese infectie in uw eigen huis heeft ervaren?

##### **De keuze om de toediening van antibiotica thuis te vervolgen**

De eerste vragen gaan over het moment dat u zelf nog in het ziekenhuis lag en de keuze gemaakt werd om uw behandeling thuis verder voort te zetten.

##### *Communicatie*

- Hoe heeft u de manier waarop de stap, om thuis verder te behandelen met antibiotica, met u gecommuniceerd is ervaren? *Onvoldoende – Matig – Voldoende – Goed – Uitstekend*

- Heeft u het idee dat u voldoende betrokken bent geweest in deze keuze om de behandeling thuis te vervolgen? *Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
- En geldt dit ook voor uw eigen omgeving, bijvoorbeeld uw familie? Zijn zij ook voldoende betrokken geweest?
- Zijn er zaken die u graag anders had willen zien?
  - o Zo ja: welke en hoe had u dit anders willen zien?

#### *Informatie*

- Wat is uw mening over de ontvangen informatie in het ziekenhuis over de behandeling met de antibiotica die u thuis zou gaan krijgen?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u uw keuze hiervoor toelichten?
- Wat vindt u belangrijke informatie om te krijgen voordat u naar huis gaat met de antibiotica?
  - o Zijn er onderwerpen waar u graag wat meer informatie over had gekregen voordat u naar huis bent gegaan? Zo ja, welke onderwerpen zijn dit?

#### **Verplaatsing van het ziekenhuis naar huis:**

Bij de volgende vragen zal ik het hebben over de verplaatsing van het ziekenhuis naar huis. Hiermee bedoel ik het proces waarin u een andere infuus pomp aangesloten krijgt, de thuiszorg voor het eerst langs komt etc. zodat u op dezelfde manier thuis verder behandeld kunt worden.

- Hoe heeft u de verplaatsing van het ziekenhuis naar thuis ervaren?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u uw keuze hiervoor toelichten?
- Zijn er zaken die u bij de verplaatsing naar huis graag anders had gezien?
  - o Zo ja, welke zaken zijn dit?
- Wat zijn volgens u belangrijke zaken die geregeld moeten zijn voordat u het ziekenhuis verlaat? (*bijvoorbeeld om het regelen van een thuiszorgorganisatie voor u, de juiste medicatie bij de apotheek, een infuus pomp etc.*)
  - o Hoe was dit bij u geregeld op het moment dat u naar huis toe mocht?
- Hoe was uw gevoel bij het verlaten van het ziekenhuis?
  - o Bent u met een gerust en veilig gevoel naar huis gegaan?
  - o Wat heeft hier aan bij gedragen of wat heeft u hier juist gemist?

#### **De behandeling met antibiotica via het infuus in de thuissituatie**

##### *Informatie:*

- Wat vond u van de informatie die u tijdens de behandeling thuis heeft gekregen?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
- Er zijn verschillende aspecten waarbij het belangrijk is dat u hierover informatie ontvangt. Dit zijn bijvoorbeeld de medicatie en de bijwerkingen van de medicatie. Eventuele activiteiten die u tijdens de behandeling eventueel niet mag doen etc. Natuurlijk zijn er nog meerdere.
  - o Over welke aspecten bent u voldoende geïnformeerd, en waarom?
  - o En over welke aspecten had u graag meer informatie willen krijgen en waarom?
- Indien niet benoemd in de vorige vragen: Hoe was de informatievoorziening over de antibioticasoort en de eventuele bijwerkingen?

##### *Communicatie:*

- Hoe was de communicatie met de thuiszorg en het ziekenhuis?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
- Heeft u voldoende de ruimte gevoeld om vragen te stellen?
  - o Zo ja, heeft u daar ook voldoende antwoord op gekregen?



- Zo nee, hoe zou u dit graag anders hebben gezien?
- Hoe heeft u in het geval van bijwerkingen of vragen over eventuele bijwerkingen de mogelijkheid tot contact met het ziekenhuis ervaren?
  - Wat waren de aspecten die voor deze ervaring zorgden?
- Zijn er zaken die u heeft gemist?

#### *Veiligheid:*

- Welke factoren hebben er aan bijgedragen dat u zich al dan niet veilig heeft gevoeld tijdens de periode dat u thuis antibiotica toegediend kreeg?
- Op het moment dat u thuis antibiotica krijgt bent u natuurlijk meer op uzelf aangewezen, hoe heeft u dit ervaren?
  - Op welke aspecten heeft het ziekenhuis of de thuiszorg hieraan bijgedragen?
  - Waarin had u eventueel juist wat meer steun willen krijgen?

#### *Vrijheid:*

In het algemeen wordt er aangenomen dat wanneer een patiënt naar huis gaat hij/zij meer vrijheid ervaart om zijn/haar dag in te delen (bijvoorbeeld om bezoek te ontvangen, zelf even de deur uit te gaan en het ritme van de dagelijkse dingen zoals eten).

- Hoe heeft u dat ervaren?
  - Welke factoren hebben hieraan bijgedragen?
- Heeft u tijdens de behandeling thuis belemmeringen in uw vrijheid ervaren?
  - Welke zijn dit?

#### *Thuiszorg:*

- Hoe heeft u de bezoeken van de thuiszorg verpleegkundige die de medicatie toediende ervaren? *Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - *Wat had u hier graag anders in gezien? / Wat vindt u hier zo positief aan?*

#### *Bloedprikken en controles:*

Om te controleren of de medicatie werkt en goed aanslaat heeft u wekelijks bloed moeten laten prikken bij een prikpost of bij u thuis.

- Bent u door een Isala prikpost of door een prikpost van een ander ziekenhuis geprikt?
  - Hoe tevreden was u over hoe dit is gegaan?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - Kunt u deze keuze toelichten?
- Bent u thuis geprikt of bent u naar een prikpost gegaan?
  - Hoe heeft u dit ervaren?
- Vindt u dat u tijdens de behandeling voldoende op de hoogte gehouden bent van de uitslagen?
  - Zo nee, wat had u hierin graag anders gezien?

#### *Patiënt-centraal*

- Binnen de huidige manier van zorgkwaliteit meten is het belangrijk dat de patiënt centraal staat in de behandeling. Dit betekent dat de patiënt voorop staat in zijn eigen behandelingsproces.
  - Hoe heeft u dit tijdens uw behandeling thuis ervaren?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - Kunt u deze keuze toelichten?
- Is er tijdens de behandeling thuis voldoende rekening gehouden met uw wensen en behoeften?
  - Waar blijkt dit uit?

*Timing van het naar huis gaan*

- Wat vindt u van het moment waarop u naar huis bent gegaan?
  - o Had dit naar uw mening nog sneller gekund of was het misschien zelfs te snel naar uw mening?
  - o Waarom vond u dit?

Tot dusver zijn een aantal belangrijke factoren binnen het behandelproces aan bod gekomen. Zijn er nog belangrijke factoren van de behandeling thuis te benoemen die nog niet besproken zijn?

Kunt u ten slotte benoemen wat volgens u de voor- en nadelen zijn van de behandeling thuis?

Wat zou ik daarnaast nog mee kunnen nemen als eventuele verbeterpunten voor de behandeling?

Heel erg bedankt voor uw medewerking in dit interview voor mijn onderzoek.

## **Interviewschema voor interview met thuiszorgmedewerker**

### **Introductie:**

Mijn naam is Milou Geerdink en ik ben master student Health Sciences aan de Universiteit Twente. Wat fijn dat u ervoor open staat deel te nemen aan dit onderzoek. In de brief die u voorafgaand aan het interview gelezen heeft om toestemming te geven heeft u al het een en ander aan informatie gelezen over het onderzoek. Voor nu geef ik nog even een kleine introductie voordat we starten met het interview.

Ik ben bezig met mijn afstudeer opdracht binnen het Isala ziekenhuis op de afdeling Orthopedie. In mijn onderzoek is het doel om te kijken naar de ervaringen van zowel de patiënt als de zorgprofessional wanneer de patiënten antibiotica thuis toegediend krijgen. Binnen het onderzoek zijn hoofdbehandelaars dr. Ettema en dr. Van Overvest vanuit het Isala ziekenhuis betrokken. De patiënten binnen mijn onderzoek hebben een infectie naar aanleiding van hun heup of knieprothese. Wanneer bekend is welke medicatie nodig is voor het behandelen van de infectie, dan wordt de patiënt ontslagen uit het ziekenhuis en wordt de zorg vanuit het ziekenhuis verplaatst naar huis. Vervolgens wordt de patiënt thuis verder behandeld met medicatie via een infuus.

U heeft tijdens uw werk te maken met deze patiënten die thuis antibiotica middels infuus toegediend krijgen. Tijdens uw diensten zorgt u ervoor dat de medicatie aangesloten wordt en de patiënt dagelijks op de juiste manier hun medicatie krijgt. Daarom heb ik u benaderd om deel te nemen aan dit onderzoek. Met uw hulp kan ik het Isala ziekenhuis inzicht geven in de ervaring van het thuis toedienen van antibiotica via een infuus op dit moment. Graag zou ik u wat vragen willen stellen over uw ervaringen met de verplaatsing van de zorg vanuit het ziekenhuis naar thuis en de toediening van medicatie thuis.

Ik zal het interview opnemen, maar uw gegevens zullen in het onderzoek anoniem verwerkt worden, hierdoor zijn de door u gegeven antwoorden niet tot u te herleiden.

Heeft u tot nu toe nog vragen?

Anders mag u altijd tussendoor vragen stellen indien u deze heeft.

### **Wat zijn uw taken rondom het proces van de intraveneuze behandeling met antibiotica voor patiënten met een infectie aan een knie- of heupprothese?**

#### **Algemene ervaring**

- Wat is uw algemene mening over het proces van het thuis toedienen van antibiotica?

#### **De keuze om de toediening van antibiotica thuis te vervolgen:**

- Hoe kijkt u aan tegen de keuze die voor de patiënten gemaakt wordt om thuis verder behandeld te worden? Is deze keuze volgens u logisch?
- Hoe zijn de mensen in de omgeving van de patiënt betrokken bij het proces?
  - o Is dit voldoende?
  - o Zo nee, wat zou daar nog mogelijk zijn?

#### **Verplaatsing van het ziekenhuis naar huis:**

##### *Efficiëntie:*

Om uw werk zo goed en efficiënt mogelijk te kunnen uitvoeren, is het belangrijk dat verschillende aspecten goed geregeld zijn voordat u de patiënt thuis kan behandelen, zoals bijvoorbeeld de medicatie die klaar ligt, de pomp die aanwezig is etc.

- Wat zijn volgens u belangrijke aspecten die gedaan moeten zijn om het voor u mogelijk te maken om de patiënt goed te kunnen behandelen?
  - o Hoe gaat dit op dit moment? Zijn hier eventuele veranderingen nodig, zo ja: welke?

- Hoe tevreden bent u over de overdracht van de patiëntinformatie naar de thuiszorg wanneer de patiënt naar huis verplaatst om daar antibiotica te krijgen?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - Kunt u uw keuze hierin toelichten?
- Welke aspecten zijn belangrijk voor u om vanuit het ziekenhuis over de patiënt te weten alvorens u de patiënt voor het eerst gaat zien?
  - Hoe is dit in het huidige proces geregeld?

#### *Informatie en communicatie:*

Het is belangrijk dat u voordat u de eerste keer bij de patiënt thuis komt goed over de patiënt en de medicatie geïnformeerd bent, maar ook dat u makkelijk contact kan krijgen met andere betrokken partijen wanneer u bijvoorbeeld vragen heeft over de patiënt.

- Wat zijn volgens u de sterke en zwakke punten op het gebied van informatie en communicatie m.b.t. de verplaatsing van de patiënt vanuit het ziekenhuis naar huis?

### **De behandeling met antibiotica via het infuus in de thuissituatie**

#### *Efficiëntie*

Door de groeiende vraag en kosten binnen de zorg is het belangrijk dat zorg op een zo efficiënt mogelijke manier verleend wordt. Dit betekent onder andere met zo min mogelijk middelen in korte tijd de beste zorg leveren.

- Welke aspecten zorgen ervoor dat u de zorg thuis op een efficiënte manier kunt leveren?
  - Ziet u voor bepaalde aspecten nog mogelijkheden tot verbetering?
  - Zo ja, op welke manier zou dit verbeterd kunnen worden?

#### *Kwaliteit van zorg*

- Op welke manier kan de thuiszorg bijdragen aan de kwaliteit van zorg voor de patiënt wanneer een patiënt thuis behandeld wordt met intraveneuze antibiotica?

#### *Informatie*

Uit onderzoek blijkt dat het voor de patiënt belangrijk is goed geïnformeerd te zijn over de medicatie die toegediend wordt plus de eventuele bijwerkingen die hierbij kunnen optreden tijdens het verblijf thuis.

- Hoe vindt u de huidige manier waarop de patiënt hierover geïnformeerd is vanuit het ziekenhuis?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - Kunt u deze toelichten?
- Op welke manier kan de thuiszorg bijdragen aan de informatievoorziening?

#### *Communicatie*

- Hoe tevreden bent u over de mogelijkheid tot communicatie tussen de verschillende partijen die betrokken zijn in het proces van intraveneuze antibiotica?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - Kunt u deze keuze toelichten?
- Welke aspecten zijn voor de thuiszorg belangrijk binnen de communicatie om goede kwaliteit van zorg te leveren?
  - Hoe gaat dit in de huidige situatie?

#### *Veiligheid*

- Hoe tevreden bent u over de veiligheid van de intraveneuze antibiotica thuis in het huidige behandelproces?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - Kunt u deze keuze toelichten?

- Welke aspecten zijn voor u belangrijk om op een veilige manier de antibiotische zorg thuis te kunnen leveren?
  - o Hoe gaat dit in de huidige situatie?

*Patiënt-centraal:*

- Binnen de huidige manier van zorgkwaliteit meten is het belangrijk dat de patiënt centraal staat in de behandeling. Dit betekent dat de patiënt voorop staat in zijn eigen behandelingsproces.
  - o Hoe is dit volgens u in het huidige behandelproces?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Op welke manier staat de patiënt centraal in de huidige situatie van thuis behandeling met antibiotica middels een infuuspomp?
  - o Hoe zou dit eventueel nog verbeterd kunnen worden?
- Welke aspecten zijn voor de thuiszorg van belang om de patiënt centraal te laten staan en daarmee goede kwaliteit van zorg te leveren?

*Ervaring van patiënten:*

Wat zijn de ervaringen die u vanuit de patiënten terug krijgt over de behandeling?

- Wat zijn hierin de positieve/negatieve punten?

Tot dusver zijn een aantal belangrijke factoren binnen het behandelproces aan bod gekomen. Zijn er nog belangrijke factoren van de behandeling thuis te benoemen die nog niet besproken zijn?

Kunt u ten slotte benoemen wat in uw ogen de voor- en nadelen zijn van de behandeling thuis?

Wat zou ik daarnaast nog mee kunnen nemen als eventuele verbeterpunten voor de behandeling?

Heel erg bedankt voor uw medewerking in dit interview voor mijn onderzoek.

## **Interviewschema voor interview met transferverpleegkundige**

### **Introductie:**

Mijn naam is Milou Geerdink en ik ben master student Health Sciences aan de Universiteit Twente. Wat fijn dat u ervoor open staat deel te nemen aan dit onderzoek. In de brief die u voorafgaand aan het interview gelezen heeft om toestemming te geven heeft u al het een en ander aan informatie gelezen over het onderzoek. Voor nu geef ik nog even een kleine introductie voordat we starten met het interview.

Ik ben bezig met mijn afstudeer opdracht binnen het Isala ziekenhuis op de afdeling Orthopedie. In mijn onderzoek is het doel om te kijken naar de ervaringen van zowel de patiënt als de zorgprofessional wanneer de patiënten antibiotica thuis toegediend krijgen. Binnen het onderzoek zijn hoofdbehandelaars dr. Ettema en dr. Van Overvest vanuit het Isala ziekenhuis betrokken. De patiënten binnen mijn onderzoek hebben een infectie naar aanleiding van hun heup of knieprothese. Wanneer bekend is welke medicatie nodig is voor het behandelen van de infectie, dan wordt de patiënt ontslagen uit het ziekenhuis en wordt de zorg vanuit het ziekenhuis verplaatst naar huis. Vervolgens wordt de patiënt thuis verder behandeld met medicatie via een infuus.

In uw werk heeft u te maken met het verplaatsen van patiënten vanuit het ziekenhuis naar huis. Thuis worden zij middels een infuus verder behandeld met antibiotica. U zorgt ervoor dat de verplaatsing in op de juiste manier verloopt en dat alles geregeld is voor de patiënt en de thuiszorg. Daarom heb ik u benadert om deel te nemen aan dit onderzoek. Met uw hulp kan ik het ziekenhuis inzicht geven in de ervaring van het thuis toedienen van antibiotica via een infuus op dit moment. Graag zou ik u wat vragen willen stellen over uw ervaringen met de verplaatsing van de zorg vanuit het ziekenhuis naar thuis en de toediening van medicatie thuis.

Ik zal het interview opnemen, maar uw gegevens zullen in het onderzoek anoniem verwerkt worden, hierdoor zijn de door u gegeven antwoorden niet tot u te herleiden.

Heeft u tot nu toe nog vragen?

Anders mag u altijd tussendoor vragen stellen indien u deze heeft.

### **Wat zijn uw taken rondom het proces van de intraveneuze behandeling met antibiotica voor patiënten met een infectie aan een knie- of heupprothese?**

#### **Algemene ervaring**

- Wat is uw algemene mening over het huidige proces van het thuis toedienen van antibiotica?

#### **De keuze om de toediening van antibiotica thuis te vervolgen:**

- Hoe tevreden bent u over de communicatie tussen u en de artsen/verpleegkundigen in het ziekenhuis wanneer de patiënt naar huis mag?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Vindt u dat de patiënt en de mensen uit de omgeving van de patiënt voldoende betrokken zijn binnen het huidige proces?
  - o Waaruit blijkt dit?

#### **Verplaatsing van het ziekenhuis naar huis:**

##### *Efficiëntie:*

Door de groeiende vraag en kosten binnen de zorg is het belangrijk dat zorg op een zo efficiënt mogelijke manier verleend wordt. Dit betekent onder andere met zo min mogelijk middelen in korte tijd de beste zorg leveren.

- Hoe kijkt u aan tegen de huidige manier van zorgverplaatsing?
  - o Zijn er volgens u aspecten die uw werk efficiënter zouden kunnen maken?
    - Zo ja, wat is er nodig voor u om efficiënter te kunnen werken?
- Bij het verplaatsen van de zorg naar thuis, speelt u een belangrijke rol om alles te regelen. Daarvoor is het nodig dat u de juiste recepten heeft bijvoorbeeld.
  - o Welke factoren zijn voor u belangrijk om u werk goed uit te kunnen voeren?
    - Hoe gaat dit in de huidige situatie?
- Wanneer de patiënt naar huis gaat wordt de infuuspomp verwijderd. Thuis krijgt de patiënt een infuuspomp aangesloten die via Mediq geregeld wordt.
  - o Op welke manier zou dit in uw ogen het meest efficiënt geregeld kunnen worden?
  - o Hoe gaat dit in de huidige situatie?

*Communicatie:*

- Hoe tevreden bent u over de huidige manier van communicatie met de verschillende partijen wanneer u alles voor de patiënt moet regelen? (*bijvoorbeeld met de artsen, apotheken, thuiszorgorganisaties, families etc.*)
  - Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?

Om de gegevens en de recepten van de patiënt te verwerken, werken jullie met een systeem waar dit in bijgehouden wordt, zodat iedereen kan zien wie nog thuis behandeld wordt en met welke medicatie.

- Hoe tevreden bent u over dit systeem?
  - Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- *Indien de keuze niet voor uitstekend is:*
- Wat zou volgens u kunnen bijdragen aan een fijner manier van werken met dit systeem?

**De behandeling met antibiotica via het infuus in de thuissituatie**

*Kwaliteit van zorg:*

- Op welke manier kan de transferverpleegkundige bijdragen aan de kwaliteit van zorg voor de patiënt wanneer een patiënt thuis behandeld wordt met intraveneuze antibiotica?

*Communicatie:*

- Op het moment dat de patiënt thuis is en daar de infuuspomp aangesloten is door de thuiszorg, zit uw taak er in principe op, behalve wanneer er een recept gewijzigd moet worden.
  - o Hoe gaat de communicatie wanneer er wijzigingen plaats moeten vinden?
  - o Gaat hierbij wel eens onnodig tijd verloren totdat de patiënt de wijziging in medicatie krijgt?
    - Zo ja, hoe zou dit anders geregeld kunnen worden zodat de patiënt zo snel mogelijk de juiste medicatie(hoeveelheid) krijgt?
- Zijn er naast het doorvoeren van de wijzigingen nog factoren waar u bij betrokken bent of zou willen worden op het gebied van de thuistoediening?
- Welke aspecten zijn voor u als transferverpleegkundige belangrijk binnen de communicatie om goede kwaliteit van zorg te leveren?

#### *Veiligheid:*

- Hoe kijkt u aan tegen de veiligheid van de thuistoediening van intraveneuze antibiotica?
- Welke aspecten zijn volgens u belangrijk om het proces op een veilige manier te laten verlopen?
  - o Hoe gaat dit in de huidige situatie?
- Welke aspecten zijn voor u als transferverpleegkundige belangrijk binnen de veiligheid om goede kwaliteit van zorg te leveren?

#### *Patiënt-centraal:*

- Binnen de huidige manier van zorgkwaliteit meten is het belangrijk dat de patiënt centraal staat in de behandeling. Dit betekent dat de patiënt voorop staat in zijn eigen behandelingsproces.
  - o Hoe is dit volgens u in het huidige behandelproces?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Op welke manier staat de patiënt centraal in de huidige situatie van thuis behandeling met antibiotica middels een infuuspomp?
  - o Hoe zou dit eventueel nog verbeterd kunnen worden?
- Welke aspecten zijn voor u als transferverpleegkundige van belang om de patiënt centraal te laten staan en daarmee goede kwaliteit van zorg te leveren?

#### *Ervaring van patiënten:*

Wat zijn de ervaringen die u vanuit de patiënten terug krijgt over de behandeling?

- Wat zijn hierin de positieve/negatieve punten?

Tot dusver zijn een aantal belangrijke factoren binnen het behandelproces aan bod gekomen. Zijn er nog belangrijke factoren van de behandeling thuis te benoemen die nog niet besproken zijn?

Kunt u ten slotte benoemen wat in uw ogen de voor- en nadelen zijn van de behandeling thuis?

Wat zou ik daarnaast nog mee kunnen nemen als eventuele verbeterpunten voor de behandeling?

Heel erg bedankt voor uw deelname aan dit interview voor mijn onderzoek.



## **Interviewschema voor interview met apotheek**

### **Introductie:**

Mijn naam is Milou Geerdink en ik ben master student Health Sciences aan de Universiteit Twente. Wat fijn dat u ervoor open staat deel te nemen aan dit onderzoek. In de brief die u voorafgaand aan het interview gelezen heeft om toestemming te geven heeft u al het een en ander aan informatie gelezen over het onderzoek. Voor nu geef ik nog even een kleine introductie voordat we starten met het interview.

Ik ben bezig met mijn afstudeer opdracht binnen het Isala ziekenhuis op de afdeling Orthopedie. In mijn onderzoek is het doel om te kijken naar de ervaringen van zowel de patiënt als de zorgprofessional wanneer de patiënten antibiotica thuis toegediend krijgen. Binnen het onderzoek zijn hoofdbehandelaars dr. Ettema en dr. Van Overvest vanuit het Isala ziekenhuis betrokken. De patiënten binnen mijn onderzoek hebben een infectie naar aanleiding van hun heup of knieprothese. Wanneer bekend is welke medicatie nodig is voor het behandelen van de infectie, dan wordt de patiënt ontslagen uit het ziekenhuis en wordt de zorg vanuit het ziekenhuis verplaatst naar huis. Vervolgens wordt de patiënt thuis verder behandeld met medicatie via een infuus.

In uw werk heeft u te maken met het verplaatsen van patiënten vanuit het ziekenhuis naar huis. Thuis worden zij middels een infuus verder behandeld met antibiotica. U zorgt ervoor dat de juiste medicatie op de juiste manier gereed gemaakt wordt en dat dit klaar ligt voor patiënt en de thuiszorg. Mediq zorgt er daarnaast ook voor dat er een infuuspomp aanwezig is voor de patiënt. Dit is de reden dat ik u heb benadert om deel te nemen aan dit onderzoek. Met uw hulp kan ik het ziekenhuis inzicht geven in de ervaring van het thuis toedienen van antibiotica via een infuus op dit moment. Graag zou ik u wat vragen willen stellen over uw ervaringen met de verplaatsing van de zorg vanuit het ziekenhuis naar thuis en de toediening van medicatie thuis.

Ik zal het interview opnemen, maar uw gegevens zullen in het onderzoek anoniem verwerkt worden, hierdoor zijn de door u gegeven antwoorden niet tot u te herleiden.

Heeft u tot nu toe nog vragen?

Anders mag u altijd tussendoor vragen stellen indien u deze heeft.

### **Wat zijn uw taken rondom het proces van de intraveneuze behandeling met antibiotica voor patiënten met een infectie aan een knie- of heupprothese?**

#### **Algemene ervaring**

- Wat is uw algemene mening over het huidige proces van het thuis toedienen van antibiotica?

#### **Verplaatsing van het ziekenhuis naar huis:**

##### *Communicatie:*

- Hoe tevreden bent u over de communicatie vanuit het ziekenhuis met de apotheek omtrent de antibiotica en de infuuspompen?
  - Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?

##### *Efficiëntie:*

Door de groeiende vraag en kosten binnen de zorg is het belangrijk dat zorg op een zo efficiënt mogelijke manier verleend wordt. Dit betekent onder andere met zo min mogelijk middelen in korte tijd de beste zorg leveren.

- Hoe is het huidige proces geregeld op het gebied van efficiëntie?
  - o Op welke manier zou dit eventueel nog anders kunnen?

- Op welke manier kan de apotheek bijdragen aan efficiëntere zorg binnen het huidige behandelproces van intraveneuze antibiotica thuis?
  - o Hoe gaat dit in de huidige situatie?

### **De behandeling met antibiotica via het infuus in de thuissituatie**

#### *Kwaliteit van zorg:*

- Op welke manier kan de apotheek bijdragen aan de kwaliteit van zorg voor de patiënt wanneer een patiënt thuis behandeld wordt met intraveneuze antibiotica?

#### *Communicatie:*

- Op het moment dat de patiënt thuis al antibiotica krijgt, kan het voorkomen dat de hoeveelheid of de soort medicatie aangepast moet worden
  - o Hoe is de communicatie met de apotheek op dat moment?
- Welke aspecten zijn voor u als apotheekmedewerker belangrijk binnen de communicatie om goede kwaliteit van zorg te leveren?

#### *Efficiëntie:*

- Zou de communicatie omtrent veranderingen in medicatie op een efficiëntere en manier geregeld kunnen worden?
  - o Zo ja, wat zijn aspecten die ervoor kunnen zorgen dat dit efficiënter gaat?

#### *Veiligheid:*

- Hoe kijkt u aan tegen de veiligheid van de thuistoediening van intraveneuze antibiotica?
- Welke aspecten zijn volgens u belangrijk om het proces op een veilige manier te laten verlopen?
  - o Hoe gaat dit in de huidige situatie?
- Welke aspecten zijn voor u als apotheekmedewerker belangrijk binnen de veiligheid om goede kwaliteit van zorg te leveren?

#### *Patiënt-centraal:*

- Binnen de huidige manier van zorgkwaliteit meten is het belangrijk dat de patiënt centraal staat in de behandeling. Dit betekent dat de patiënt voorop staat in zijn eigen behandelingsproces.
  - o Hoe is dit volgens u in het huidige behandelproces?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Welke aspecten zijn voor u als apotheekmedewerker van belang om de patiënt centraal te laten staan en daarmee goede kwaliteit van zorg te leveren?

Tot dusver zijn een aantal belangrijke factoren binnen het behandelproces aan bod gekomen. Zijn er nog belangrijke factoren van de behandeling thuis te benoemen die nog niet besproken zijn?

Kunt u ten slotte benoemen wat in uw ogen de voor- en nadelen zijn van de behandeling thuis?

Wat zou ik daarnaast nog mee kunnen nemen als eventuele verbeterpunten voor de behandeling?

Heel erg bedankt voor uw deelname aan dit interview voor mijn onderzoek.

## **Interviewschema voor interview met ziekenhuisverpleegkundige**

### **Introductie:**

Mijn naam is Milou Geerdink en ik ben master student Health Sciences aan de Universiteit Twente. Wat fijn dat u ervoor open staat deel te nemen aan dit onderzoek. In de brief die u voorafgaand aan het interview gelezen heeft om toestemming te geven heeft u al het een en ander aan informatie gelezen over het onderzoek. Voor nu geef ik nog even een kleine introductie voordat we starten met het interview.

Ik ben bezig met mijn afstudeer opdracht binnen het Isala ziekenhuis op de afdeling Orthopedie. In mijn onderzoek is het doel om te kijken naar de ervaringen van zowel de patiënt als de zorgprofessional wanneer de patiënten antibiotica thuis toegediend krijgen. Binnen het onderzoek zijn hoofdbehandelaars dr. Ettema en dr. Van Overvest vanuit het Isala ziekenhuis betrokken. De patiënten binnen mijn onderzoek hebben een infectie naar aanleiding van hun heup of knieprothese. Wanneer bekend is welke medicatie nodig is voor het behandelen van de infectie, dan wordt de patiënt ontslagen uit het ziekenhuis en wordt de zorg vanuit het ziekenhuis verplaatst naar huis. Vervolgens wordt de patiënt thuis verder behandeld met medicatie via een infuus.

In uw werk heeft u te maken met het verplaatsen van patiënten vanuit het ziekenhuis naar huis. Thuis worden zij middels een infuus verder behandeld met antibiotica. U zorgt ervoor dat de patiënt in het ziekenhuis de juiste zorg krijgt. Wanneer bekend is welke antibiotica de patiënt thuis moet krijgen, zorgt u ervoor dat er een recept naar de transferverpleegkundige gaat en het naar huis gaan in gang gezet wordt. Dit is de reden dat ik u heb benadert om deel te nemen aan dit onderzoek. Met uw hulp kan ik het ziekenhuis inzicht geven in de ervaring van het huidige proces van het thuis toedienen van antibiotica via een infuus. Graag zou ik u wat vragen willen stellen over uw ervaringen met de verplaatsing van de zorg vanuit het ziekenhuis naar thuis en de toediening van medicatie thuis.

Ik zal het interview opnemen, maar uw gegevens zullen in het onderzoek anoniem verwerkt worden, hierdoor zijn de door u gegeven antwoorden niet tot u te herleiden.

Heeft u tot nu toe nog vragen?

Anders mag u altijd tussendoor vragen stellen indien u deze heeft.

### **Wat zijn uw taken rondom het proces van de intraveneuze behandeling met antibiotica voor patiënten met een infectie aan een knie- of heupprothese?**

#### **Algemene ervaring**

- Wat is uw algemene mening over het huidige proces van het thuis toedienen van antibiotica?

#### **De keuze om de toediening van antibiotica thuis te vervolgen:**

- Hoe is de communicatie met u wanneer de keuze gemaakt is om de patiënt thuis verder te behandelen met intraveneuze antibiotica?
- Hoe zijn de mensen uit de omgeving van de patiënt betrokken binnen het huidige proces?
  - o Is dit voldoende?
  - o Zo nee, hoe zou dit verbeterd kunnen worden?

#### **Verplaatsing van het ziekenhuis naar huis:**

##### *Efficiëntie:*

- Door de groeiende vraag en kosten binnen de zorg is het belangrijk dat zorg op een zo efficiënt mogelijke manier verleend wordt. Dit betekent onder andere met zo min mogelijk middelen in korte tijd de beste zorg leveren.

- Hoe kijkt u aan tegen de huidige manier van zorgverplaatsing?
  - o Zijn er volgens u aspecten die uw werk efficiënter zouden kunnen maken?
    - Zo ja, wat is er nodig voor u om meer efficiënt te kunnen werken?
- Bij het verplaatsen van de zorg naar thuis, speelt u een belangrijke rol om de patiënt met de juiste medicatie naar huis te sturen en dit via het transferbureau in gang te zetten.
  - o Welke aspecten zijn voor u belangrijk om u werk goed uit te kunnen voeren?
    - Hoe gaat dit in de huidige situatie?
- Wanneer de patiënt naar huis gaat wordt de infuuspomp verwijderd. Thuis krijgt de patiënt een infuuspomp aangesloten die via Mediq geregeld wordt.
  - o Op welke manier zou dit in uw ogen het meest efficiënt geregeld kunnen worden?
    - Hoe gaat dit in de huidige situatie?

*Communicatie:*

- Hoe tevreden bent u over de communicatie met de verschillende partijen waar u mee in contact bent, zoals de transferverpleegkundige?
  - Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?

*Informatie:*

- Hoe tevreden bent u over de informatievoorziening die de patiënt krijgt voordat hij het ziekenhuis gaat verlaten?
  - Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Hoe kijkt u aan tegen de informatie die u de patiënt geeft alvorens hij het ziekenhuis verlaat?
  - o Welke factoren zouden kunnen bijdragen aan de informatievoorziening?

**De behandeling met antibiotica via het infuus in de thuissituatie**

*Kwaliteit van zorg:*

- Op welke manier kan de ziekenhuisverpleegkundige bijdragen aan de kwaliteit van zorg voor de patiënt wanneer een patiënt thuis behandeld wordt met intraveneuze antibiotica?

*Communicatie:*

- Op welke manier bent u nog met de patiënt betrokken in het huidige proces, wanneer de patiënt thuis is?
  - o Hoe zou u dit graag zien?
- Welke aspecten zijn voor u als ziekenhuisverpleegkundige belangrijk binnen de communicatie om goede kwaliteit van zorg te leveren?

*Veiligheid:*

- Hoe kijkt u aan tegen de veiligheid van de thuistoediening van intraveneuze antibiotica?
- Welke aspecten zijn volgens u belangrijk om het proces op een veilige manier te laten verlopen?
  - o Hoe gaat dit in de huidige situatie?
- Welke aspecten zijn voor u als ziekenhuisverpleegkundige belangrijk binnen de veiligheid om goede kwaliteit van zorg te leveren?

*Patiënt-centraal:*

- Binnen de huidige manier van zorgkwaliteit meten is het belangrijk dat de patiënt centraal staat in de behandeling. Dit betekent dat de patiënt voorop staat in zijn eigen behandelingsproces.
  - o Hoe is dit volgens u in het huidige behandelproces?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Op welke manier staat de patiënt centraal in de huidige situatie van thuis behandeling met antibiotica middels een infuuspomp?
  - o Hoe zou dit eventueel nog verbeterd kunnen worden?
- Welke aspecten zijn voor u als ziekenhuisverpleegkundige van belang om de patiënt centraal te laten staan en daarmee goede kwaliteit van zorg te leveren?

*Ervaring van patiënten:*

Wat zijn de ervaringen die u vanuit de patiënten terug krijgt over de behandeling?

- Wat zijn hierin de positieve/negatieve punten?

Tot dusver zijn een aantal belangrijke factoren binnen het behandelproces aan bod gekomen. Zijn er nog belangrijke factoren van de behandeling thuis te benoemen die nog niet besproken zijn?

Kunt u ten slotte benoemen wat in uw ogen de voor- en nadelen zijn van de behandeling thuis?

Wat zou ik daarnaast nog mee kunnen nemen als eventuele verbeterpunten voor de behandeling?

Heel erg bedankt voor uw deelname aan dit interview voor mijn onderzoek.

## **Interviewschema voor interview met Physician assistant**

### **Introductie:**

Mijn naam is Milou Geerdink en ik ben master student Health Sciences aan de Universiteit Twente. Wat fijn dat u ervoor open staat deel te nemen aan dit onderzoek. In de brief die u voorafgaand aan het interview gelezen heeft om toestemming te geven heeft u al het een en ander aan informatie gelezen over het onderzoek. Voor nu geef ik nog even een kleine introductie voordat we starten met het interview.

Ik ben bezig met mijn afstudeer opdracht binnen het Isala ziekenhuis op de afdeling Orthopedie. In mijn onderzoek is het doel om te kijken naar de ervaringen van zowel de patiënt als de zorgprofessional wanneer de patiënten antibiotica thuis toegediend krijgen. Binnen het onderzoek zijn hoofdbehandelaars dr. Ettema en dr. Van Overvest vanuit het Isala ziekenhuis betrokken. De patiënten binnen mijn onderzoek hebben een infectie naar aanleiding van hun heup of knieprothese. Wanneer bekend is welke medicatie nodig is voor het behandelen van de infectie, dan wordt de patiënt ontslagen uit het ziekenhuis en wordt de zorg vanuit het ziekenhuis verplaatst naar huis. Vervolgens wordt de patiënt thuis verder behandeld met medicatie via een infuus.

In uw werk heeft u te maken met het verplaatsen van patiënten vanuit het ziekenhuis naar huis. Thuis worden zij middels een infuus verder behandeld met antibiotica. U zorgt ervoor dat alles goed verloopt. Hierin bent u binnen het ziekenhuis de contactpersoon voor kweekuitslagen en veranderingen. Dat wordt door u in de gaten gehouden en indien nodig worden veranderingen door u in gang gezet. Dit is de reden dat ik u heb benadert om deel te nemen aan dit onderzoek. Met uw hulp kan ik het ziekenhuis inzicht geven in de ervaring van het huidige proces van het thuis toedienen van antibiotica via een infuus. Graag zou ik u wat vragen willen stellen over uw ervaringen met de verplaatsing van de zorg vanuit het ziekenhuis naar thuis en de toediening van medicatie thuis.

Ik zal het interview opnemen, maar u blijft in het onderzoek anoniem. Dit wordt ook vermeld in het toestemmingsformulier dat u heeft ondertekend.

Heeft u tot nu toe nog vragen? Anders mag u altijd tussendoor vragen stellen indien u deze heeft.

### **Wat zijn uw taken rondom het proces van de intraveneuze behandeling met antibiotica voor patiënten met een infectie aan een knie- of heupprothese?**

#### **De keuze om de toediening van antibiotica thuis voor te zetten:**

- Welke aspecten spelen een belangrijke rol bij het maken van de keuze om de antibiotica toediening thuis voor te zetten gemaakt?
- Hoe kijkt u tegen het maken van deze keuze aan?
  - o Zijn er hierin aspecten die u mist om bijvoorbeeld de keuze te vergemakkelijken?
- Hoe zijn de mensen uit de omgeving van de patiënt betrokken binnen het huidige proces?
  - o Hoe zou dit verbeterd kunnen worden?
- Hoe tevreden bent u over de manier waarop patiënten geïnformeerd over de transitie van zorg naar huis? *Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
  - o Wat zou hierin nog verbeterd kunnen worden?
  - o Wat is hier voor nodig?
- Op welke manier staat de patiënt centraal in de keuze om de toediening van antibiotica middels het infuus thuis voort te zetten?
  - o Hoe wordt de patiënt betrokken in deze keuze?
  - o Heeft hij/zij zelf inspraak?
    - Zou u hierin verandering willen zien?

### **Verplaatsing van het ziekenhuis naar huis:**

Bij de verplaatsing van de zorg naar huis is het belangrijk dat alles goed geregeld is, zoals de juiste medicatie (hoeveelheid), maar ook de aanwezigheid van thuiszorgverpleegkundigen en een infuuspomp. Om dit goed te regelen wordt door jullie via het transferbureau alles in gang gezet.

- Hoe tevreden bent u over de manier waarop in de huidige situatie de transitie van ziekenhuis naar thuis geregeld is? *Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Wat zijn belangrijke aspecten die nodig zijn om deze transitie goed te laten verlopen?
- Wat zou hierin nog verbeterd kunnen worden?
  - o Wat zou hier voor nodig zijn?
- Hoe gaat de communicatie tussen de verschillende partijen die betrokken zijn bij de verplaatsing van de zorg?

### **De behandeling met antibiotica via het infuus in de thuissituatie**

#### *Efficiëntie*

Door de groeiende vraag en kosten binnen de zorg is het belangrijk dat zorg op een zo efficiënt mogelijke manier verleend wordt. Dit betekent onder andere met zo min mogelijk middelen in korte tijd de beste zorg leveren.

- Hoe kijkt u tegen de efficiëntie van het huidige proces aan?
  - o Wat zou er nodig zijn om dit nog te verbeteren?
- Welke aspecten zijn volgens u belangrijk zodat u efficiënte zorg kan leveren?

Wanneer een patiënt een verandering in medicatie nodig heeft, wordt dit via de kweekuitslagen bij u bekend. Daarna stuurt u een nieuw recept naar het transferbureau, zodat de patiënt z.s.m. de juiste medicatiehoeveelheid krijgt.

- Hoe tevreden bent u over deze manier van werken op het gebied van efficiëntie?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Zou dit op een andere manier efficiënter kunnen?
  - o Zo ja, wat zou hier voor nodig zijn?

De patiënt dient één keer in de week bloed te laten prikken om te zien hoe hij/zij op de antibiotica reageert. Dit wordt door de lokale prikpost gedaan indien de patiënt mobiel genoeg is.

- Hoe tevreden bent u over de manier waarop dit geregeld is in het huidige proces?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Wat zou hierin nog anders kunnen om dit proces eventueel te verbeteren?
  - o Wat zou hier voor nodig zijn?

#### *Kwaliteit van zorg*

- Op welke manier kan u in uw functie als physician assistant bijdragen aan de kwaliteit van zorg voor de patiënt wanneer een patiënt thuis behandeld wordt met iv antibiotica?

#### *Informatie*

Uit onderzoek blijkt dat het voor de patiënt belangrijk is goed geïnformeerd te zijn over de medicatie die toegediend wordt plus de eventuele bijwerkingen die hierbij kunnen optreden tijdens het verblijf thuis.

- Hoe zou u de huidige manier van informatievoorziening beoordelen ?  
*Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Wat is er voor nodig om de patiënt om een zo goed mogelijke manier te informeren?

- Welke aspecten zijn volgens u belangrijk om een patiënt op een zo compleet mogelijke manier van informatie te voorzien?
  - o Hoe gaat dit in de huidige situatie?

#### *Communicatie*

- Hoe tevreden bent u over de mogelijkheid tot communicatie tussen de verschillende partijen die betrokken zijn in het proces van thuisoediening van intraveneuze antibiotica?
  - Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Welke aspecten zijn voor u belangrijk in de communicatie om alle partijen op de juiste manier te kunnen bereiken indien nodig?

Gezien de verschillende betrokken partijen binnen het proces van thuis medicatie, zoals transferverpleegkundige, apotheekmedewerker etc., is het belangrijk dat er een kort lijntje tussen de verschillende partijen is om bijvoorbeeld verwarring te voorkomen.

- Hoe gaat dit in het huidige proces?
- Zijn er factoren die deze communicatie onderling zouden kunnen verbeteren?
- Welke aspecten zijn voor u als physician assistant belangrijk binnen de communicatie om goede kwaliteit van zorg te leveren?

#### *Veiligheid*

- Hoe kijkt u aan tegen de veiligheid van de intraveneuze antibiotica thuis?
- Wat zijn volgens u belangrijke aspecten die vanuit het ziekenhuis door u geregeld moeten zijn om veilige zorg te kunnen leveren?
  - o Hoe gaat dit in het huidige proces?
- Hoe zorgt u er samen met uw collega's voor dat een patiënt met een veilig gevoel naar huis gaat?
  - o Zijn hierin nog aspecten die nu missen, maar hier wel aan bij zouden kunnen dragen?

#### *Patiënt-centraal:*

- Binnen de huidige manier van zorgkwaliteit meten is het belangrijk dat de patiënt centraal staat in de behandeling. Dit betekent dat de patiënt voorop staat in zijn eigen behandelingsproces.
  - o Hoe is dit volgens u in het huidige behandelproces?
    - Onvoldoende – Matig – Voldoende – Goed – Uitstekend*
  - o Kunt u deze keuze toelichten?
- Op welke manier staat de patiënt centraal in de huidige situatie van thuis behandeling met antibiotica middels een infuuspomp?
  - o Hoe zou dit eventueel nog verbeterd kunnen worden?
- Welke aspecten zijn voor u als physician assistant van belang om de patiënt centraal te laten staan en daarmee goede kwaliteit van zorg te leveren?

#### *Ervaring van patiënten:*

Wat zijn de ervaringen die u vanuit de patiënten terug krijgt over de behandeling?

- Wat zijn hierin de positieve/negatieve punten?

Tot dusver zijn een aantal belangrijke factoren binnen het behandelproces aan bod gekomen. Zijn er nog belangrijke factoren van de behandeling thuis te benoemen die nog niet besproken zijn?

Kunt u ten slotte benoemen wat in uw ogen de voor- en nadelen zijn van de behandeling thuis?

Wat zou ik daarnaast nog mee kunnen nemen als eventuele verbeterpunten voor de behandeling?  
Heel erg bedankt voor uw deelname aan dit interview voor mijn onderzoek.



## 2. Information letter patients

### **Informatie voor deelname aan medisch-wetenschappelijk onderzoek**

#### **Ervaring met medicatie thuis vanuit de patiënt en zorgprofessional.**

*Ervaring van patiënten en zorgverleners met de behandeling van infectie aan heup- of knieprothese middels antibiotica via het infuus in de thuissituatie van de patiënt.*

Geachte heer/mevrouw,

Wij vragen u om mee te doen aan een medisch-wetenschappelijk onderzoek.

Meedoen is vrijwillig. Om mee te doen is wel uw schriftelijke toestemming nodig. U ontvangt deze brief omdat u een infectie aan uw knie- of heupprothese heeft gehad en daarvoor thuis behandeld bent met antibiotica via een infuus. Uw gegevens heb ik ontvangen via uw behandelend arts in het Isala ziekenhuis in Zwolle.

Voordat u beslist of u wilt meedoen aan dit onderzoek, krijgt u uitleg over wat het onderzoek inhoudt. Lees deze informatie rustig door en vraag de onderzoeker uitleg als u vragen heeft. U kunt er ook over praten met uw partner, vrienden of familie. Meer algemene informatie over medisch-wetenschappelijk onderzoek kunt u vinden op [www.rijksoverheid.nl/mensenonderzoek](http://www.rijksoverheid.nl/mensenonderzoek)

#### **1. Algemene informatie**

Dit onderzoek wordt gedaan als opdracht voor de opleiding Gezondheidswetenschappen bij de Universiteit Twente. Student Milou Geerdink voert dit onderzoek uit in opdracht van de afdeling orthopedie in het Isala ziekenhuis in Zwolle.

Voor dit onderzoek zijn 10 patiënten van het Isala ziekenhuis nodig. Ook zullen de mening van de behandelend arts van de afdeling orthopedie, verschillende verpleegkundigen en apotheek medewerkers meegenomen worden in het onderzoek.

Het onderzoek is goedgekeurd door een daarvoor aangewezen commissie in het Isala ziekenhuis.

#### **2. Doel van het onderzoek**

Het doel van dit onderzoek is uitzoeken welke factoren voor u belangrijk zijn en invloed hebben op de ervaring van kwaliteit van zorg wanneer u thuis antibiotica krijgt via het infuus. U bent behandeld of wordt nog steeds behandeld met antibiotica via het infuus in uw eigen huis voor een prothese infectie. Het is belangrijk voor dit onderzoek om te weten hoe u de huidige manier van deze behandeling ervaren heeft. Daarnaast worden ook de ervaringen van verschillende zorgverleners meegenomen, om het proces van alle kanten te kunnen evalueren.

De antibiotica die u thuis via het infuus krijgt is voorgeschreven als onderdeel van uw behandeling. Dit is niet als gevolg van uw deelname aan dit onderzoek. Dit betekent dat het afhalen en toedienen van de medicatie gebeurd zoals het ziekenhuis voorgeschreven heeft. Daarnaast zal in het geval van een eventuele eigen bijdrage, u deze zelf moeten voldoen.

De uitkomsten van dit onderzoek zullen gebruikt worden om eventuele verbeteringen binnen het proces van thuismedicatie door te voeren. De resultaten kunnen daarnaast gebruikt worden om het proces te vergelijken met de toekomstige situatie wanneer patiënten eerder ontslagen worden uit het ziekenhuis om thuis verder behandeld te worden.

### **3. Achtergrond van het onderzoek**

Er zijn steeds meer oudere mensen, wat op den duur zal zorgen voor meer vraag naar zorg. Om er voor te zorgen dat deze groeiende vraag naar zorg geen probleem gaat worden, zijn er veranderingen in de zorg nodig. Een van de mogelijke veranderingen is om de toediening van medicatie in het ziekenhuis naar de thuissituatie te verplaatsen. Gewrichtsartrose is een van de veelvoorkomende aandoeningen onder ouderen en daardoor zullen er steeds meer heup- en knieprotheses geplaatst moeten worden. Daarmee groeit ook het aantal mensen die een infectie krijgen aan hun prothese. Om te zorgen dat ziekenhuisbedden niet vol raken worden zij met antibiotica thuis behandeld. Belangrijk hierbij is dat de kwaliteit en veiligheid van deze zorg niet verminderen. Daarvoor is het belangrijk om in kaart te brengen welke factoren bijdragen aan de ervaring van een goede kwaliteit van zorg, bij toediening van antibiotica met gebruik van het infuus in de thuissituatie.

### **4. Wat meedoen inhoudt**

De onderzoeker zal een keer contact met u opnemen via een video belafsprak. Dit houdt in dat u via een door u gewenst programma zult beeldbellen met de onderzoeker. Mocht u niet bekend zijn met één van deze programma's, zoals bijvoorbeeld teams, kunt u hierover contact opnemen met de onderzoeker om te kijken naar de beste oplossing.

U wordt tijdens deze belafsprak geïnterviewd over de ervaring die u heeft met het gehele proces van uw behandeling. Het interview zal ongeveer 15-20 minuten duren.

### **5. Mogelijke voor- en nadelen**

Het is belangrijk dat u de mogelijke voor- en nadelen goed afweegt voordat u besluit mee te doen. Als u meedoet aan dit onderzoek betekent dit dat u zelf geen voordeel heeft aan het meedoen van dit onderzoek. Uw deelname kan wel bijdragen aan meer kennis over de kwaliteit van thuismedicatie om de behandeling die u heeft ondergaan nog verder te verbeteren.

Deelname aan het onderzoek betekent ook dat u tijd kwijt bent voor het interview.

### **6. Wanneer stopt het onderzoek?**

U beslist zelf of u meedoet aan het onderzoek. Deelname is vrijwillig.

Als u wel mee doet dan stopt het onderzoek voor u wanneer:

- Het interview geweest is.
- Daarnaast kunt u zich altijd bedenken en toch stoppen, ook tijdens het interview. De gegevens die tot dat moment zijn verzameld, worden gebruikt voor het onderzoek.
- Als één van de volgende instanties besluit dat het onderzoek moet stoppen:
  - o Isala ziekenhuis
  - o De overheid
  - o De nWMO adviescommissie die het onderzoek beoordeelt.

Als er nieuwe informatie over het onderzoek is die belangrijk voor u is, laat de onderzoeker dit aan u weten. U wordt dan gevraagd of u blijft meedoen.

Het gehele onderzoek is afgelopen wanneer alle deelnemers geïnterviewd zijn.

## **7. Gebruik en bewaren van uw gegevens**

Als u meedoet aan dit onderzoek geeft u toestemming om uw persoonsgegevens die gebruikt worden te bewaren. Het gaat om gegevens zoals uw naam, adres, geboortedatum en om gegevens over uw gezondheid. Het verzamelen, gebruiken en bewaren van uw gegevens is nodig om de vragen die in dit onderzoek worden gesteld te kunnen beantwoorden en de resultaten te kunnen publiceren. Deze gegevens zijn alleen zichtbaar voor het onderzoeksteam in Isala. De antwoorden die u tijdens het interview geeft zullen niet zichtbaar gekoppeld worden aan uw persoonsgegevens. Wij vragen voor het gebruik van uw gegevens uw toestemming.

### **Vertrouwelijkheid van uw gegevens**

Om uw privacy te beschermen worden de uitgeschreven interviews geanonimiseerd opgeslagen. Dit houdt in dat met de bestanden die gebruikt worden in het onderzoek geen mogelijkheid is dit naar uw gegevens te herleiden. Ook in de rapporten en publicaties over het onderzoek zijn de gegevens niet tot u te herleiden. Opname materiaal wordt direct na het transcriberen verwijderd.

### **Intrekken toestemming**

U kunt uw toestemming voor gebruik van uw persoonsgegevens altijd weer intrekken. De onderzoeksgegevens die zijn verzameld tot het moment dat u uw toestemming intrekt worden nog wel gebruikt in het onderzoek.

### **Meer informatie over uw rechten bij verwerking van gegevens**

Voor algemene informatie over uw rechten bij verwerking van uw persoonsgegevens kunt u terecht op de website van Isala. [www.isala.nl](http://www.isala.nl)

Daarnaast kunt u in het geval van vragen of klachten in het kader van gegevensbescherming contact opnemen met de functionaris voor de Gegevensbescherming Isala, Liesbeth van Boekel: [e.w.boekel@isala.nl](mailto:e.w.boekel@isala.nl), Tel. 038-4247955.

## **8. Verzekering voor proefpersonen**

Als u deelneemt aan het onderzoek, loopt u geen extra risico's. Isala ziekenhuis Zwolle hoeft daarom van hun medische ethische toetsingscommissie geen extra verzekering af te sluiten.

## **9. Vergoeding voor meedoen**

Er is geen vergoeding voor uw deelname aan het onderzoek.

## **10. Heeft u vragen?**

Bij vragen kunt u contact opnemen met Milou Geerdink (onderzoeker) of Jeroen Rekveldt (betrokken physician assistant, orthopedie). Zij weten veel over het onderzoek. Contactgegevens staan vermeldt in **bijlage A**.

Indien u klachten heeft over het onderzoek, kunt u dit bespreken met één van de onderzoekers of met uw behandelend arts. Wilt u dit liever niet wilt, dan kunt u contact opnemen met de klachtenfunctionaris, telefoon: 038-424 47 27, mail: [klachtenopvang@isala.nl](mailto:klachtenopvang@isala.nl) of via de post: Isala klachtenopvang, t.a.v. klachtenfunctionaris Postbus 10400, 8000 GK Zwolle. Alle gegevens vindt u in **bijlage A**: Contactgegevens.

### **11. Ondertekening toestemmingsformulier**

Wanneer u voldoende bedenktijd heeft gehad, wordt u gevraagd te beslissen over deelname aan dit onderzoek. Indien u toestemming geeft, zullen wij u vragen deze op de bijbehorende toestemmingsverklaring schriftelijk te bevestigen. Door uw schriftelijke toestemming geeft u aan dat u de informatie heeft begrepen en instemt met deelname aan het onderzoek.

Zowel uzelf als de onderzoeker ontvangen een getekende versie van deze toestemmingsverklaring.

Dank voor uw aandacht.

## **12. Bijlagen bij deze informatie**

- A. Contactgegevens
- B. Toestemmingsformulier

## **Bijlage A: contactgegevens**

### **Onderzoekers:**

Dr. H.B. Ettema

Orthopedisch chirurg Isala

Milou Geerdink

Master student Gezondheidswetenschappen aan de Universiteit Twente, onderzoek wordt uitgevoerd in opdracht van de afdeling orthopedie van het Isala ziekenhuis Zwolle.

Contact gegevens Milou Geerdink:

[m.m.geerdink@isala.nl](mailto:m.m.geerdink@isala.nl)

Jeroen Rekveldt

Physician assistant Orthopedie, Isala

Contactgegevens Jeroen Rekveldt:

[j.c.rekveldt@isala.nl](mailto:j.c.rekveldt@isala.nl)

### **Klachtenfunctionaris Isala:**

Mail: [klachtenopvang@isala.nl](mailto:klachtenopvang@isala.nl)

Tel: 038-424 47 27

Via post:

Isala klachtenopvang, t.a.v. klachtenfunctionaris

Postbus 10400, 8000 GK Zwolle.

### **Functionaris voor de Gegevensbescherming van Isala:**

Liesbeth van Boekel

Mail: [e.w.boekel@isala.nl](mailto:e.w.boekel@isala.nl)

Tel. 038-4247955

Voor meer informatie over uw rechten: [www.isala.nl](http://www.isala.nl)

## **Bijlage [B]: toestemmingsformulier proefpersoon**

Ervaring met medicatie thuis vanuit de patiënt en zorgprofessional.

- Ik heb de informatiebrief gelezen. Ook kon ik vragen stellen. Mijn vragen zijn voldoende beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.
- Ik weet dat meedoen vrijwillig is. Ook weet ik dat ik op ieder moment kan beslissen om toch niet mee te doen of te stoppen met het onderzoek. Daarvoor hoef ik geen reden te geven.
- Ik geef toestemming voor het informeren van mijn behandelend arts dat ik meedoe aan dit onderzoek.
- Ik geef toestemming voor het opvragen van informatie bij mijn behandelend arts op de afdeling orthopedie van Isala over de behandeling van mijn prothese infectie.
- Ik geef toestemming om tijdens het interview opnames (geluid / beeld) te maken en mijn antwoorden uit te werken in een transcript.
- Ik geef toestemming om mijn antwoorden te gebruiken voor citaten in de onderzoek publicaties.
- Ik wil meedoen aan dit onderzoek.

Naam proefpersoon:

Handtekening:

Datum : \_\_ / \_\_ / \_\_

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### **Verklaring onderzoeker**

Ik verklaar dat ik deze proefpersoon volledig heb geïnformeerd over het genoemde onderzoek.

Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de proefpersoon zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam onderzoeker (of diens vertegenwoordiger):

Handtekening:

Datum: \_\_ / \_\_ / \_\_

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*De proefpersoon krijgt een volledige informatiebrief mee, samen met een getekende versie van het toestemmingsformulier.*

### 3. Information letter professionals

#### **Informatie voor deelname aan medisch-wetenschappelijk onderzoek**

##### **Ervaring met medicatie thuis vanuit de patiënt en zorgprofessional.**

*Ervaring van patiënten en zorgverleners met de behandeling van infectie aan heup- of knieprothese middels antibiotica via het infuus in de thuissituatie van de patiënt.*

Geachte heer/mevrouw,

Graag wil ik u vragen voor uw deelname aan een onderzoek naar de ervaring van patiënt en zorgprofessional met de huidige behandeling middels intraveneuze antibiotica thuis bij patiënten met een prothese infectie. Mijn naam is Milou Geerdink en ik voer dit onderzoek uit als afstudeerproject voor de masteropleiding Health Sciences aan de Universiteit Twente in opdracht van de afdeling orthopedie van het Isala ziekenhuis Zwolle.

Als u deel wilt nemen aan dit onderzoek, betekent dit dat u eenmalig geïnterviewd zult worden over uw ervaring binnen het behandelingsproces van patiënten met een prothese infectie in de thuissituatie. Dit interview zal ongeveer 15-20 minuten duren.

##### **Achtergrond van het onderzoek**

Er zijn steeds meer oudere mensen, wat op den duur zal zorgen voor meer vraag naar zorg. Om er voor te zorgen dat deze groeiende vraag naar zorg geen probleem gaat worden, zijn er veranderingen in de zorg nodig. Een van de mogelijke veranderingen is om de toediening van medicatie in het ziekenhuis naar de thuissituatie te verplaatsen. Het is om deze reden belangrijk om in kaart te brengen welke factoren bijdragen aan de ervaring van een goede kwaliteit van zorg, bij toediening van antibiotica met gebruik van het infuus in de thuissituatie.

In de huidige situatie is het doel om de patiënt na 4 dagen in het ziekenhuis te ontslaan en thuis verder te gaan met de behandeling met de juiste gerichte intraveneuze antibiotica. De afdeling orthopedie van het Isala ziekenhuis wil in de toekomst dit doel van 4 dagen verlagen naar 2 dagen. Om dit in goede banen te laten leiden is het belangrijk dat er een evaluatie komt van het huidige proces van de behandeling met intraveneuze antibiotica in de thuissituatie van de patiënt met een prothese infectie aan heup of knie.

##### **Doel van het onderzoek**

U bent een belangrijk onderdeel van de behandeling van patiënten met een prothese infectie in de thuissituatie met intraveneuze antibiotica. Het doel van dit onderzoek is uitzoeken welke factoren belangrijk zijn binnen de behandeling voor zowel patiënt als zorgprofessional. Het is belangrijk voor dit onderzoek om te weten hoe u de huidige manier van uw werk binnen deze behandeling ervaren heeft. Op deze manier kan het proces van alle kanten geëvalueerd worden.



Aan de hand van de resultaten van alle interviews zal in de resultaten gepresenteerd worden wat de sterke- en zwakke punten van het huidige proces zijn en waar eventuele verbeter mogelijkheden liggen. Aan de hand hiervan zullen aanbevelingen gedaan worden naar het ziekenhuis, zodat bij eerder ontslag van de patiënten in de toekomst het proces aangescherpt kan zijn.

### **Vertrouwelijkheid van uw gegevens**

Om uw privacy te beschermen worden de uitgeschreven interviews geanonimiseerd opgeslagen. Dit houdt in dat met de bestanden die gebruikt worden in het onderzoek geen mogelijkheid is dit naar uw gegevens te herleiden. Ook in de rapporten en publicaties over het onderzoek zijn de gegevens niet tot u te herleiden. Opname materiaal wordt direct na het transcriberen verwijderd.

### **Meer informatie over uw rechten bij verwerking van gegevens**

Voor algemene informatie over uw rechten bij verwerking van uw persoonsgegevens kunt u terecht op de website van Isala. [www.isala.nl](http://www.isala.nl)

Daarnaast kunt u in het geval van vragen of klachten in het kader van gegevensbescherming contact opnemen met de functionaris voor de Gegevensbescherming Isala, Liesbeth van Boekel:

[e.w.boekel@isala.nl](mailto:e.w.boekel@isala.nl), Tel. 038-4247955

### **Heeft u vragen?**

Bij vragen kunt u contact opnemen met Milou Geerdink (onderzoeker) of Jeroen Rekveldt (physician assistant orthopedie). Zij weten veel over het onderzoek. Contactgegevens staan vermeldt in **bijlage A**.

Indien u klachten heeft over het onderzoek, kunt u dit bespreken met één van de onderzoekers of met uw behandelend arts. Wilt u dit liever niet wilt, dan kunt u contact opnemen met de klachtenfunctionaris, telefoon: 038-424 47 27, mail: [klachtenopvang@isala.nl](mailto:klachtenopvang@isala.nl) of via de post: Isala klachtenopvang, t.a.v. klachtenfunctionaris Postbus 10400, 8000 GK Zwolle. Alle gegevens vindt u in **bijlage A**: Contactgegevens.

### **Ondertekening toestemmingsformulier**

In de bijlage vindt u een toestemmingsformulier. Indien u deel wilt nemen aan het onderzoek ontvang ik deze graag getekend retour. Voor aanvang van het interview zal u het door ons beide getekende formulier ontvangen.

Graag hoor ik van u of u deel wilt nemen aan het onderzoek en met wie ik in dat geval contact op kan nemen. Voor deelname kunt u direct contact opnemen met mij (Milou Geerdink). Indien u deel wilt nemen aan het onderzoek, wilt u mij in dat geval een aantal beschikbare momenten mailen voor het interview. Dan zal ik zo spoedig mogelijk contact met u opnemen om een moment met u te plannen.

Heel erg bedankt voor uw aandacht en mogelijke interesse in dit onderzoek.

## **Bijlage A: contactgegevens**

### **Onderzoekers:**

Dr. H.B. Ettema

Orthopedisch Chirurg, Isala

Milou Geerdink

Master student Gezondheidswetenschappen aan de Universiteit Twente, onderzoek wordt uitgevoerd in opdracht van de afdeling orthopedie van het Isala ziekenhuis Zwolle.

Contact gegevens Milou Geerdink:

[m.m.geerdink@isala.nl](mailto:m.m.geerdink@isala.nl)

Jeroen Rekveldt

Physician assistant Orthopedie, Isala

Contactgegevens Jeroen Rekveldt:

[j.c.rekveldt@isala.nl](mailto:j.c.rekveldt@isala.nl)

### **Klachtenfunctionaris Isala:**

Mail: [klachtenopvang@isala.nl](mailto:klachtenopvang@isala.nl)

Tel: 038-424 47 27

Via post:

Isala klachtenopvang, t.a.v. klachtenfunctionaris

Postbus 10400, 8000 GK Zwolle.

### **Functionaris voor de Gegevensbescherming van Isala:**

Liesbeth van Boekel

Mail: [e.w.boekel@isala.nl](mailto:e.w.boekel@isala.nl)

Tel. 038-4247955

Voor meer informatie over uw rechten: [www.isala.nl](http://www.isala.nl)

## **Bijlage B: toestemmingsformulier zorgprofessional**

### **Titel onderzoek:**

Experiences of quality of care from a patient and professional perspective with the use of intravenous antibiotics at home for patients with a prosthetic joint infection

- Ik heb de mail met informatie goed doorgelezen. Ook kon ik vragen stellen. Mijn vragen zijn voldoende beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.
- Ik weet dat meedoen vrijwillig is. Ook weet ik dat ik op ieder moment kan beslissen om toch niet mee te doen of te stoppen met het onderzoek. Daarvoor hoef ik geen reden te geven.
- Ik geef toestemming om tijdens het interview opnames (geluid / beeld) te maken en mijn antwoorden uit te werken in een transcript.
- Ik geef toestemming om mijn antwoorden te gebruiken voor citaten in de onderzoek publicaties.
  
- Ik wil meedoen aan dit onderzoek.

Naam proefpersoon:

Handtekening:

Datum : \_\_ / \_\_ / \_\_

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### **Verklaring onderzoeker**

Ik verklaar dat ik deze proefpersoon volledig heb geïnformeerd over het genoemde onderzoek.

Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de proefpersoon zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam onderzoeker (of diens vertegenwoordiger):

Handtekening:

Datum: \_\_ / \_\_ / \_\_

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