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# Quality of outpatient parenteral antimicrobial therapy (OPAT) care from the patient's perspective: a qualitative study

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## ABSTRACT

**Objectives:** Current outpatient parenteral antimicrobial therapy (OPAT) guidelines recommend delivering patient-centered care. However, little is known about what patients define as good quality of OPAT care and what their needs and preferences are.

The aim of this qualitative study is to explore the patients' perspective on high quality care, and to explore what patient-centered care means to adult OPAT patients.

**Design and setting:** This is an explorative, descriptive study using qualitative methods. We conducted focus group interviews with adult patients who received OPAT, and individual semi-structured interviews with their informal caregivers in the Netherlands.

**Results:** Participants appointed several elements considered important for patient-centered OPAT care, like patient involvement in decision-making, a responsible OPAT lead, intensive collaboration between all disciplines involved, information provision, and adherence to hygiene guidelines. Two central values emerged as essential constituents of patient-centered OPAT care: freedom and safety. Both are heavily influenced by the behaviours of healthcare professionals and by organisational aspects beyond the direct influence of these professionals.

**Conclusion:** This study provides insights into the needs and preferences of adult patients who receive OPAT care. Future interventions directed at the improvement of patient-centeredness of OPAT care should focus on elements that enhance patients' feelings of freedom and safety.

**Keywords:** OPAT; Outpatient Parenteral Antimicrobial Therapy; Patient Experiences; Qualitative; patient-centeredness;

### Strength's and limitations of the study

- This is the first study that explored the needs and preferences of patients who receive OPAT care.
- We recruited patients from three different hospitals and used purposive sampling to recruit a diverse and representative study population.
- All 8 Picker dimensions of patient-centered care were discussed in the focus group interviews.
- Only one OPAT care model – administration by a visiting specialist nurse – was represented in our study.

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## INTRODUCTION

Outpatient parenteral antimicrobial therapy (OPAT) is a treatment option that enables patients to receive parenteral antimicrobials at home, as an alternative to inpatient care. OPAT has been used for over 40 years, and a growing body of research supports its clinical applicability and cost-effectiveness. The primary goals of outpatient therapy programs are to allow patients to complete treatment safely and effectively in the comfort of their home or another outpatient site, and to avoid the potential inconveniences, complications, and expense of hospitalization.[1]

Current guidelines for OPAT recommend the provision of high quality, patient-centered care that is easily accessible. [1, 2] The Institute of Medicine has defined patient-centered care as ‘providing care that is respective of and responsive to individual patient preferences, needs and values, and ensuring that patient values guide all clinical decisions’.[3] There is a growing body of evidence that improving the patient-centeredness of care can lead to positive clinical outcomes for patients.[4] Limited information about the patient-centeredness of OPAT care is available. Previous studies that have assessed patient experiences only focused on satisfaction and quality of life.[5-8] However, patient satisfaction and patient centeredness are different concepts [9]. To our knowledge, the needs and preferences of patients regarding OPAT care have not been determined.

The aim of this study is to explore patients’ needs, and preferences for high quality OPAT care, and to explore what “patient-centered care” means to adult OPAT patients.

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## Methods

We conducted focus group interviews with patients to explore all relevant preferences, and needs for patient-centered care, and individual interviews with caregivers. All interviews took place in March-May 2017.

### Focus group interviews

Recruitment for the focus group interviews took place through 3 hospitals in the Netherlands: one university hospital, one non-university teaching hospital, and one tertiary care hospital that specialises in prosthetic joint infections. We selected patients who received ≥2 doses of intravenous antibiotics at home, ≤ 3 months before the focus group meetings occurred. We used purposive sampling to ensure diversity of participants (i.e. age, gender, diagnosis, and treatment duration).[10]

Patients were invited to participate by their physician. Participants were informed by (e)mail about the study objectives, and subsequently asked to participate. The focus groups took place at the hospital where patients had been treated. The number of focus groups depended on the point of saturation, i.e. when no new information could be identified from the data.[11] We aimed for groups of four to eight participants.[12]

Focus group interviews were led by an experienced moderator (AO), in the presence of one researcher (MB). Each focus group interview commenced by explaining the goal of the meeting, introducing the researchers and the group participants.

We used a semi-structured focus group guide, based on the 8 principles of patient-centered care (Box 1), defined by the Picker Institute[13], and discussed the 3 phases of OPAT care: 1. Initiation of OPAT; 2. Transition of OPAT care from hospital to home; 3. OPAT care at home.

### Individual interviews

Patients' perceptions of care can differ from those of their informal caregivers. To explore these differences, we held individual interviews with informal caregivers for further exploration of the Picker principle 'involvement of family and friends'.[13] Focus group candidates were asked whether a relative was closely involved with OPAT care and would agree to participate in an interview.

The interview guide was based on the 8 Picker principles of patient-centered care and adjusted to the role of the relative.

### Ethics approval

All participants received written information about the project and its aims, and were subsequently invited to participate. We stressed that participation in this study was voluntary and withdrawal from the study was possible at any time. The anonymity of participants was maintained in the interview

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transcripts. Written informed consent was obtained from all participants. The Regional Review Board for Human Research, Arnhem-Nijmegen (CMO no. 2016-3107) assessed the study, and judged that ethics approval was not required under Dutch National Law.

### Data analysis

The focus groups and interviews were recorded with a digital voice recorder and transcribed verbatim by an independent transcriber. The transcripts were analysed using a thematic content analysis approach with the qualitative software programme Atlas.ti. To increase inter-coder reliability, the researcher and the moderator independently coded all transcripts. Any discrepancies in the analysis were discussed until consensus was reached.

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## RESULTS

*Study population*

We conducted 3 focus group interviews of 90-120 minutes each. A total of 18 patients intended to participate of whom 16 were present; 2 patients were unable to attend. Participant characteristics are listed in Table 1. We conducted 2 individual interviews with relatives: the son of a 86-year-old patient and the mother of a 22-year-old patient with a cognitive impairment.

*Initiation of OPAT*

All participants had been admitted to the hospital and had already received a course of intravenous antibiotics when the decision to continue treatment at home was made. Representative quotations related to the initiation phase are shown in Table 2.

Virtually all participants indicated that the decision to initiate OPAT was made by the physician without involving the patient and their relatives. Some participants felt this violated their autonomy: *"You're still dealing with people and in this case, in my personal case, it was just like: 'We're doing it, period. You don't have any say.'"*

One patient stated that he would have preferred to stay in the hospital for the remaining days of therapy, had he been given that option.

The insertion of an intravascular access device came as a surprise for some patients "*they don't explain the procedure at all, they just move you to the procedure room*", others received written as well as oral information and were able to watch the insertion of the device on a monitor during the procedure. Not knowing what was going to happen made patients feel unsafe, anxious and uncertain.

The type, amount, and quality of information provided about the entire OPAT process varied among the hospitals. Most patients indicated wanting more information about the antibiotics, the possible side effects and interactions. Sometimes, relatives participated in searching for information on the Internet. During the focus groups, the participants emphasized the importance of the presence of relatives during information sessions or patient-doctor conversations, which was supported by the informal caregivers.

According to patients, important topics to be discussed, were potential antibiotic side effects and instructions for use, information about intravascular access devices, potential complications and how to handle problems or complications, and information about treatment progress. Participants agreed that both written and oral information should be given. Well-informed patients seemed to feel safe and secure, while a lack of information could lead to feelings of concern.

*Transition of care from hospital to home*

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For this phase of OPAT care, vast differences between hospitals were found. In one hospital, the transition of OPAT was said to be delayed quite often. Lack of a responsible person and lack of collaboration between the disciplines involved was the main reason according to the patients. The additional admission days lead to feelings of uselessness and wasting money and resources: *"I was just lying there for no reason at all, I wasn't sick or anything. Well, then I can't stand being in a hospital, when I'm just waiting for the doctor all day."* (Table 3). Sometimes, discharge was postponed by several hours because of a delay in antibiotic preparation by the pharmacist. As long as patients were informed about the reasons of this delay, this was not seen as a major problem.

In another hospital, patients were well-prepared for discharge and knew what to expect at home. An employee of the home care team visited the patients and assisted with the transition of care by providing information, a 'starter package' (containing bandages, needles, fluids for infusion), and explaining the course of treatment after discharge.

An ongoing collaboration between the referring physician, the pharmacy, and the home care team was seen as a prerequisite for successful care transition. Some patients emphasized the lack of an OPAT expert who is responsible and coordinates care transition. According to those patients, the presence of an OPAT expert would really improve the quality of care, and would made them feel secure.

*OPAT care at home*

The majority of patients were very positive regarding the therapy at home, especially regarding the nurses of the home care team (Table 4). Patients appreciated their professionalism: a uniform and hygienic manner of working made them feel safe and secure. Additionally, participants valued nurses' attentiveness to both the patient's and family's emotional needs – showing compassion through not only attaching the antibiotic device, but by holistic nursing: *"I feel that I have a doctor who is at my bedside every day."*

All patients were provided with instructions regarding how to act in case of complications. Complications most frequently mentioned were related to the intravascular access device (obstruction, dislocation or bleeding). In those cases, patients had immediate access to care through the hospital's emergency department – patients appreciated this prudent policy of *"better to be safe than sorry"*. Questions regarding the antibiotics were settled less appropriately. Contradictory information was a source of great frustration, for example when questions arose regarding the amount of antibiotics that remained in the elastomeric pumps. Patients felt indignant that nobody was able to provide a definitive answer to their questions.

*Advantages and disadvantages of OPAT*

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The main advantage of OPAT was the possibility to go home, feelings of freedom, and a faster recovery compared to extended admission at the hospital. Adapting the visiting hours of the care provider to the patient's schedules was often mentioned a prerequisite. Most patients wanted to participate in social activities (e.g. a birthday party) and appreciated the flexibility of care providers. However, OPAT was considered an impairment too: both physically due to the device and the intravenous catheter (which hindered showering, walking, sleeping), and due to the impact on privacy and personal time: *"But I have a life too, a private life. OPAT is not only about antibiotics".* Another patient stated: *"It is an invasion of privacy"*. The impact of this impairment was different for distinct types of patients. Patients who received continuous infusion of antibiotics generally felt more impaired compared to those receiving a single daily administration. Tiredness was often mentioned as a hindrance for participating in social activities. For people without mobility limitations due to their underlying illness, OPAT negatively impacted their freedom, while people who were already limited in their mobility (e.g. joint prosthesis infection) did not experience OPAT as a substantial additional freedom impairment. Some patients also received home care for help with daily living activities, in addition to the specialist nurse who attached the antibiotic device. *"At a certain moment, I had 3 people around: first home care came to help with showering, then at 8.30am the cleaner visited me, and thereafter the OPAT nurse."*

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## DISCUSSION

To our knowledge, this is the first study investigating patient-centeredness of OPAT care, based on the experiences and preferences of patients and relatives. From our focus group interviews, two central values emerged as essential constituents of patient-centered OPAT care: freedom and safety. Different elements of the OPAT care process strengthen or undermine these values. These elements provide clear keystones to improve patient-centeredness of OPAT care.

In the context of OPAT care, freedom involves the ability to live and make decisions about one's life without being limited or restricted. A major advantage of OPAT care compared to in-hospital antibiotic administration is the ability to leave the hospital and go home, to one's own familiar environment, which greatly increases feelings of freedom. However, our findings indicate that freedom is sometimes negatively influenced by behaviour of healthcare professionals involved and by aspects beyond the direct control of these professionals (i.e., organisational factors). In many cases, it is the sensation of losing control of a situation that leads to a reduced sense of freedom. For example, participants described how multiple specialist nurse visits a day reduced their sense of privacy and control, as they had to schedule their day around these visits. Disease or therapy related symptoms, such as fatigue and the physical presence of the Peripherally Inserted Central Catheter (PICC) restricted participants' freedom too, as they were limited in activities such as showering and attending social functions.

Knowing that freedom is a core value for our participants, it was remarkable that decisions concerning the initiation of OPAT, hospital discharge, the choice of home care organisation, and scheduling time of antibiotic administration were often made by healthcare providers without input from the patient or carers. Other authors have also observed this lack of shared decision-making: that decisions *about* the patient are not always made *with* the patient.[14] This is an important area for improvement, as previous studies demonstrated that when providers, patients and family members work together, the patient-centeredness and quality of care increases.[15]

The second central value, safety, means feeling free from danger or harm. Patients receiving OPAT have an invasive infection which may cause serious harm and is potentially fatal. Participants described decreased trust in their bodies and worried about their well-being. Contradictory information, difficulty accessing appropriate expertise and care when encountering problems, and professionals not following hygiene guidelines, further contributed to these feelings of insecurity. One participant poignantly described the importance of trustworthy care and healthcare professionals in this context: *"For me […] the PICC line is a lifeline. There is no alternative. I cannot*

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*have another surgery, because my odds of survival are three percent. So this is literally and figuratively my lifeline… Because I have a bacterium somewhere and if it becomes active, it's over."*

In line with the good practice recommendations for OPAT [2], participants expressed the need for a medical lead, someone who is and feels responsible for OPAT care. Elements that inspire trust and contribute to a feeling of safety are clear and unambiguous communication and information, frequent feedback about treatment progress, and direct accessibility of hospital care if needed. Additionally, the confident and compassionate care of the specialist nurse at home was often emphasized as a major contribution to feelings of safety.

### *Strengths and limitations*

OPAT has been used for over 40 years and a wealth of evidence has accumulated supporting its clinical justification and cost-effectiveness. This is the first study that reported on patients' experiences and perspectives, and focused on quality of care instead of quality of life. Our study considered all 8 Picker principles of patient-centered care through a qualitative approach, which provides a more holistic view of patient experiences than previous quality of life studies.[16]

Although a qualitative study carries the risk of eliciting socially desirable responses from participants, we have reduced this risk by asking participants to describe their experiences rather than merely assessing their satisfaction[17], by using trained and experienced qualitative researchers to perform data collection and analysis, and by conducting multiple focus groups in different settings. We included a diverse and representative study population through purposive sampling.[18]

Currently, the Netherlands only uses one model of OPAT delivery: the administration by a visiting specialist nurse. The impact of other models, such as administration by a visiting general nurse or outpatient attendance at a healthcare facility were not investigated in this study. Nevertheless we believe that our results are also applicable to other settings, as in all models treatment is organized from an outpatient setting with the patient residing at home. Furthermore, our results are in line with the findings of recent qualitative research to the different OPAT services provided in Northern England.[19] Confidence in OPAT care appeared to be a major determinant of the feelings of safety.

### *Conclusions*

This study has increased our understanding of the patient-centeredness of OPAT care. The focus group interviews provided valuable insights into the needs, and preferences of patients who receive OPAT. We have shown that keystones in improving the patient-centeredness of OPAT care are

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focusing on elements that enhance patients' feelings of freedom and safety. Future interventions directed at the patient-centeredness of OPAT care should focus on these elements.

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## Box 1: Picker principles of patient centeredness

- Access to care
- Information, communication and education
- Respect for patient values, preferences and needs
- Physical comfort
- Coordination and integration of care
- Emotional support and alleviation of fear and anxiety
- Involvement of family and friends
- Continuity and transition

## Table 1: characteristics of focus group participants

| | **Focus group participants (n=16)** |
|---|---|
| **Male (%)** | 11 (69) |
| **Mean age (range)** | 68 (47-85) |
| **Hospital type** | |
| University (%) | 5 (31) |
| Teaching (%) | 5 (31) |
| Tertiary center (%) | 6 (38) |
| **Focus of infection** | |
| Joint prosthesis | 8 (50) |
| Urinary tract | 1 (6) |
| Vascular prosthesis | 5 (31) |
| Endocarditis | 2 (13) |
| **Treatment duration** | |
| 0-2 weeks | 2 (13) |
| 2-6 weeks | 4 (25) |
| 6-12 weeks | 4 (25) |
| >12 weeks | 6 (38) |

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337 **Table 2: Quotes related to the initiation phase of OPAT**

| Picker principle | Representative quotes |
|---|---|
| Respect | But in such a case, I'd like to see that there is a choice. That it's explained as, 'This is what we want to do. What do you think?' Not: 'This is what we're going to do. Period.' |
| Emotional support | That was because I was at my wits' end, the nursing staff themselves arranged to get me an antibiotic device so that I could at least go home on the Sunday afternoon. For a little while. |
| Information | At one point I was rolled away and a PICC was placed. I thought, 'What's going on? They could explain a little about how and what?' But they didn't. |
| Coordination | Yes, I had the impression that it *(OPAT)* was hardly ever done in the urology department. Because the doctors, the medical specialists, who... They all tell you something different. Look. If it has occurred more often, and if it has happened to a patient more often, then they start telling you everything all at once... |
| Involvement of family and friends | My husband came to visit me every morning at nine thirty because that's when they came round, uh, the doctors and so on. But things just went right over my head, just like that, and then he had stored it all up, and that was certainly important. |
| Involvement of family and friends | If a patient is competent in making decisions, as my father is, then I think if he knows things himself and can tell you, fine, but we must remember that my father is 85, and he can sometimes forget something. So it is always convenient to have an informal caregiver present who can translate that into what is essential, what's coming our way, and in the current trajectory, what is the best method to deal with it? |

338

339

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340 **Table 3: Quotes related to the transition phase of OPAT**

| Picker principle | Representative quotes |
|---|---|
| Respect | The only thing I had great difficulty with was that actually – yes, nothing against their home care organisation- but that they were forced on me somewhat. At a certain point I said, 'I have my own home care organisation.' 'No, we have contracts with a specific one.' I thought that in fact the patient still decides who does or does not come to his home. |
| Information | But if someone comes to me now 'I have to go home tomorrow and I'm getting a PICC', then I would just tell him what a day looked like for me. That's different for everyone personally. |
| Coordination | What also is a very big point, in my opinion, in terms of communication here, is that the first time I was to go home, it didn't happen. It appears that they had said in the department, 'You can go home with this antibiotic.' They had not taken this into account in the department: 3 days go by after they send off the application before they process it here and have the medicines ready. Three days in between, and they had forgotten that. – Forgotten, well, they did not know that. |
| Continuity and transition | They said that I could go home Tuesday, and then it was Friday because the antibiotic was not ready and so on, uhm. |
| Continuity and transition | It went pretty smoothly for me. They said to me on Thursday, 'We'll place a PICC for you.' That was done on Friday, and then they came to tell me, 'Tomorrow the Home Care will be there.' That was all very well arranged. |
| Physical comfort | Medication was administered continuously through the PICC for 6 weeks in the hospital, and now it's once a day, so this is just great for me. I'm also enjoying life. I am very happy. |

341

342

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343 **Table 4: Quotes related to OPAT care at home**

| Picker principle | Representative quotes |
|---|---|
| Access to care | But you can also contact Home Care 24/7. I liked that. |
| Respect | They have experienced nurses, which is very enjoyable. I feel that I have a doctor who checks everything completely and who is at my bedside every day. |
| Respect | *Interviewer:* What makes a really a nice home care nurse? A nurse who makes you think: those are the qualities that someone must have, or you think, 'I feel I can really depend on them.'<br>*Patient 1:* Have time for you, that you can tell your story.<br>*Patient 2:* Then we come back to that word, you know: human.<br>*Patient 3:* Not only to connect that thing and get out, but there were also some who sat down to eat at the table. |
| Emotional support | You have to... you're stuck with it every day. You eat beforehand, you make sure you tidy up a little and things like that, so you really have no vacation at all nor any rest of your own, not really. |
| Emotional support | They say, 'You are free.' But you're not at all. Two hours beforehand you have to take the stuff out of the fridge, they come sometime between 8 and 10 in the morning, so that's 4 hours, and they do that twice a day, so that's 8 hours a day, 8 of the 14 hours that you're up. Then you have little time left for yourself. Look, for a very long period, like months on end, super. Then it's a super system, but not for a period of ... yes, 6 days in my case. |
| Emotional support | I said this week to my specialist, in my personal case, then, 'Behind every door you expect an exit, but there is another door and yet another door.' |
| Information | I have not been told anything at all and I am a somewhat surprised, because I do not know how it will turn out. I had expected that at least an interim balance would be drawn up. Something like: 'How are we doing?' |
| Continuity and transition | Of course I had to deal with planning for the therapy at the hospital and consequently had to deal with the taxi company and with the Home Care. That was all rather difficult, especially the first few weeks. Things went wrong a number of times. If the first domino falls the wrong way, then the planning for the rest of the day falls apart. |
| Involvement of family and | Interviewer: Are there other things that people should know when they go home and administer this type of antibiotic at home? |

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| | |
|---|---|
| friends | F1P3: No. At least, I'll just have a look, in my case, because I am younger than all of you: warn people, bear in mind that it is also a violation of your privacy. Especially if you have children who live at home. The time will come when they start saying, 'Is Home Care here again??' So it does have an impact on your privacy. |
| Physical comfort | I only had Home Care for a few weeks, but I would have liked to have had it longer. A year on clindamycin; I have had more problems with that than with the PICC. |

344

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## DECLARATION OF INTERESTS

The authors declare that they have no competing interests.

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## AUTHOR'S CONTRIBUTION

MB, AO, JS, and MH conceived the study. MB and AO performed the data collection. MB, AO, and MH analysed and managed the data, including quality control. MT, BJK, and JtO advised on study design and reviewed the manuscript. MB and AO drafted the manuscript, all authors contributed substantially to its revision. MB takes responsibility for the paper as a whole.

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# Reporting checklist for qualitative study.

Based on the SRQR guidelines.

## Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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| | | Reporting Item | Page Number |
|---|---|---|---|
| | #1 | Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended | 1 |
| | #2 | Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions | 2 |
| Problem formulation | #3 | Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement | 3 |
| Purpose or research question | #4 | Purpose of the study and specific objectives or questions | 3 |
| Qualitative approach and research paradigm | #5 | Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and | 4 |

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| | | guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together. | |
| Researcher characteristics and reflexivity | #6 | Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability | 4 |
| Context | #7 | Setting / site and salient contextual factors; rationale | 4 |
| Sampling strategy | #8 | How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale | 4 |
| Ethical issues pertaining to human subjects | #9 | Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues | 4-5 |
| Data collection methods | #10 | Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale | 4 |
| Data collection instruments and technologies | #11 | Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study | 5 |
| Units of study | #12 | Number and relevant characteristics of participants, documents, or events included in the study; level of | 6, 14 |

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| | | | |
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| | | participation (could be reported in results) | |
| Data processing | #13 | Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts | 5 |
| Data analysis | #14 | Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale | 5 |
| Techniques to enhance trustworthiness | #15 | Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale | 5 |
| Syntheses and interpretation | #16 | Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory | 6-8 |
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| Intergration with prior work, implications, transferability and contribution(s) to the field | #18 | Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field | 9,10 |
| Limitations | #19 | Trustworthiness and limitations of findings | 10 |
| Conflicts of interest | #20 | Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed | 19 |
| Funding | #21 | Sources of funding and other support; role of funders in data collection, interpretation and reporting | 19 |

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# Quality of outpatient parenteral antimicrobial therapy (OPAT) care from the patient's perspective: a qualitative study

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# Quality of outpatient parenteral antimicrobial therapy (OPAT) care from the patient's perspective: a qualitative study

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## ABSTRACT

**Objectives:** Current outpatient parenteral antimicrobial therapy (OPAT) guidelines recommend delivering patient-centered care. However, little is known about what patients define as good quality of OPAT care and what their needs and preferences are.

The aim of this qualitative study is to explore the patients' perspective on high quality care, and to explore what patient-centered care means to adult OPAT patients.

**Design and setting:** This is an explorative, descriptive study using qualitative methods. We conducted focus group interviews with 16 adult patients (5 female, 11 male) from 3 different hospitals, who received OPAT, and 2 individual semi-structured interviews with their informal caregivers in the Netherlands. We used purposive sampling to ensure diversity of participants. We used the 8 Picker principles of patient-centeredness to guide data collection and analysis.

**Results:** Participants reported several elements considered as important for patient-centered OPAT care, like patient involvement in the decision-making process, a responsible OPAT lead, intensive collaboration between all disciplines involved, information provision and adherence to hygiene guidelines. Two central dimensions emerged as essential constituents of patient-centered OPAT care: freedom and safety. Both are heavily influenced by the behaviours of healthcare professionals and by organisational aspects beyond the direct influence of these professionals.

**Conclusion:** This study provides insights into the needs and preferences of adult patients who receive OPAT care. Future interventions directed at the improvement of patient-centeredness of OPAT care should focus on elements that enhance patients' feelings of freedom and safety.

**Keywords:** OPAT; Outpatient Parenteral Antimicrobial Therapy; Patient Experiences; Qualitative; patient-centeredness;

**Strength's and limitations of the study**

- This is the first study that explored the needs and preferences of adult patients who receive OPAT care based on the 8 Picker principles of patient-centeredness
- We recruited patients from three different hospitals and used purposive sampling for the selection of patients, which created a diverse study population.
- For all 8 Picker dimensions of patient-centered care views from participants were obtained
- Data saturation was reached, and in-depth interviewing was performed with 2 involved relatives to explore subdomains
- Only one OPAT care model (most prevalent in Dutch healthcare) was applicable to this study population

## INTRODUCTION

Outpatient parenteral antimicrobial therapy (OPAT) is a treatment option that enables patients to receive parenteral antimicrobials at home, as an alternative to inpatient care. OPAT has been used for over 40 years, and a growing body of research supports its clinical applicability and cost-effectiveness. The primary goals of outpatient therapy programs are to allow patients to complete treatment safely and effectively in the comfort of their home or another outpatient site, and to avoid the potential inconveniences, complications, and expense of hospitalization.[1] Current guidelines for OPAT recommend the provision of high quality, patient-centered care that is easily accessible. [1, 2] The Institute of Medicine has defined patient-centered care as 'providing care that is respective of and responsive to individual patient preferences, needs and values, and ensuring that patient values guide all clinical decisions'.[3] There is a growing body of evidence that improving the patient-centeredness of care can lead to positive clinical outcomes for patients.[4]

In 1988, the Picker Institute defined the term "patient-centered care" to call attention to the need for clinicians, staff, and health care systems to shift their focus away from diseases and back to the patient and family.[5] Using a wide range of focus groups—recently discharged patients, family members, physicians and non-physician hospital staff—combined with a literature review, eight dimensions of patient-centeredness were identified, which represent the most important indicators of quality and safety from the perspective of patients: respect for the patient's values, preferences, and expressed needs; coordinated and integrated care; clear, high-quality information and education for the patient and family; physical comfort, including pain management; emotional support and alleviation of fear and anxiety; involvement of family members and friends, as appropriate; continuity, including through care-site transitions; and access to care.[5]

Limited information about the patient-centeredness of current OPAT care is available. Previous studies that focused on patient experiences and perceptions showed that the safety of treatment at home is of great importance for OPAT patients.[6-9] Several other factors were found to be important (such as clear communication, coordination and integration of medical care and respect for patient preferences) highly depending on the social and cultural background of patients. Those studies did not systematically assess all domains of patient-centeredness.

The aim of this study is to explore patients' needs, and preferences for high quality OPAT care, and to explore what "patient-centered care" means to adult OPAT patients based on the 8 Picker principles of patient-centeredness.

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## Methods

We conducted focus group interviews with patients to explore all relevant preferences, and needs for patient-centered care, and individual interviews with caregivers. All interviews took place in March-May 2017.

### Focus group interviews

Recruitment for the focus group interviews took place in 3 Dutch hospitals: one university hospital, one non-university teaching hospital, and one tertiary care hospital that specialises in prosthetic joint infections. We selected patients who received ≥2 doses of intravenous antibiotics at home, ≤ 3 months before the focus group meetings occurred. We used purposive sampling to ensure diversity of participants (i.e. age, gender, diagnosis, and treatment duration).[10]

Patients were invited to participate by their physician. Participants were informed by (e)mail about the study objectives, and subsequently asked to participate. The focus groups took place at the hospital where patients had been treated. The number of focus groups depended on the point of saturation, i.e. when no new information could be identified from the data.[11] We aimed for groups of four to eight participants.[12]

Focus group interviews were led by an experienced moderator (AO), in the presence of one researcher (MB). Both interviewers had no treatment relationship with any of the patients. Each focus group interview commenced by explaining the goal of the meeting, introducing the researchers and the group participants.

We used a semi-structured focus group guide, based on the 8 principles of patient-centered care (Box 1), defined by the Picker Institute[5], and discussed the 3 phases of OPAT care: 1. Initiation of OPAT; 2. Transition of OPAT care from hospital to home; 3. OPAT care at home.

### Individual interviews

Patients' perceptions of care can differ from those of their informal caregivers. To explore these differences, we held individual interviews with informal caregivers for further exploration of the Picker principle 'involvement of family and friends'.[5] Focus group candidates were asked whether a relative was closely involved with OPAT care and would agree to participate in an interview.

The interview guide was based on the 8 Picker principles of patient-centered care and adjusted to the role of the relative.

### Ethics approval

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All participants received written information about the project and its aims, and were subsequently invited to participate. We stressed that participation in this study was voluntary and withdrawal from the study was possible at any time. The anonymity of participants was maintained in the interview transcripts. Written informed consent was obtained from all participants. The Regional Review Board for Human Research, Arnhem-Nijmegen (CMO no. 2016-3107) assessed the study, and judged that ethics approval was not required under Dutch National Law.

## Data analysis

The focus groups and interviews were recorded with a digital voice recorder and transcribed verbatim by an independent transcriber. The transcripts were analysed using a thematic content analysis approach based on the 8 Picker principles with the qualitative software programme Atlas.ti. To increase inter-coder reliability, the researcher and the moderator independently coded all transcripts. Any discrepancies in the analysis were discussed until consensus was reached.

After reaching consensus at code level, two researchers together agreed on a provisional categorization and overarching themes. The categories and themes were subsequently presented to and discussed with a third researcher (MH). This deliberative process resulted in the analysis presented in the manuscript.

## Patient and public involvement

Patients were not involved in the development of the research question, the design, recruitment or conduct of this study. The results of this study will be disseminated to interested study participants by e-mail.

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## RESULTS

*Study population*

We conducted 3 focus group interviews of 90-120 minutes each. A total of 18 patients intended to participate of whom 16 were present. Participant characteristics are listed in Table 1. We conducted 2 individual interviews with relatives: the son of a 86-year-old patient and the mother of a 22-year-old patient with a cognitive impairment.

*Initiation of OPAT*

All participants had been admitted to the hospital and had already received a course of intravenous antibiotics when the decision to continue treatment at home was made. Representative quotations related to the initiation phase are shown in Table 2.

Virtually all participants indicated that the decision to initiate OPAT was made by the physician without involving the patient and their relatives. Some participants felt this violated their autonomy: *"You're still dealing with people and in this case, in my personal case, it was just like: 'We're doing it, period. You don't have any say'" (male, 52yrs, <2 weeks).*

One patient stated that he would have preferred to stay in the hospital for the remaining days of therapy, had he been given that option.

The insertion of an intravascular access device came as a surprise for some patients "*they don't explain the procedure at all, they just move you to the procedure room" (female, 70 yrs, 7 weeks)*, others received written as well as oral information and were able to watch the insertion of the device on a monitor during the procedure. Not knowing what was going to happen made patients feel unsafe, anxious and uncertain.

The type, amount, and quality of information provided about the entire OPAT process varied among the hospitals (table 2). Most patients indicated they would have wanted more information about the antibiotics, the possible side effects and interactions. Sometimes, relatives participated in searching for information on the InternetPparticipants emphasized the importance of the presence of relatives during information sessions or patient-doctor conversations.

According to patients, important topics to be discussed, were potential antibiotic side effects and instructions for use, information about intravascular access devices, potential complications and how to handle problems or complications, and information about treatment progress. Participants agreed that both written and oral information should be given. Well-informed patients seemed to feel safe and secure, while a lack of information could lead to feelings of concern.

*Transition of care from hospital to home*

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For this phase of OPAT care, vast differences between hospitals were found. In one hospital, the transition of OPAT was said to be delayed quite often (see table 3 for representative quotes). Lack of a responsible person and lack of collaboration between the disciplines involved was the main reason according to the patients. The additional admission days lead to feelings of uselessness and wasting money and resources: *“I was just lying there for no reason at all, I wasn’t sick or anything. Well, then I can’t stand being in a hospital, when I’m just waiting for the doctor all day.” (Female, 71yrs, 6 weeks)* (Table 3). Sometimes, discharge was postponed by several hours because of a delay in antibiotic preparation by the pharmacist. As long as patients were informed about the reasons of this delay, this was not seen as a major problem.

In another hospital, patients were well-prepared for discharge and knew what to expect at home. An employee of the home care team visited the patients and assisted with the transition of care by providing information, a ‘starter package’ (containing bandages, needles, fluids for infusion), and explaining the course of treatment after discharge.

An ongoing collaboration between the referring physician, the pharmacy, and the home care team was seen as a prerequisite for successful care transition. Some patients emphasized the lack of an OPAT expert who is responsible and coordinates care transition. According to those patients, the presence of an OPAT expert would really improve the quality of care, and would made them feel secure.

### *OPAT care at home*

The majority of patients were very positive regarding the therapy at home, especially regarding the nurses of the home care team (see table 4 for representative quotes). Patients appreciated their professionalism: a uniform and hygienic manner of working made them feel safe and secure. Additionally, participants valued nurses’ attentiveness to both the patient’s and family’s emotional needs – showing compassion through not only attaching the antibiotic device, but by holistic nursing: *“I feel that I have a doctor who is at my bedside every day” (male, 80yrs, 8 weeks)*.

All patients were provided with instructions regarding how to act in case of complications. Complications most frequently mentioned were related to the intravascular access device (obstruction, dislocation or bleeding). In those cases, patients had immediate access to care through the hospital’s emergency department – patients appreciated this prudent policy of *“better to be safe than sorry” (female, 65yrs, 12 weeks)*. Questions regarding the antibiotics were settled less appropriately. Contradictory information was a source of great frustration, for example when questions arose regarding the amount of antibiotics that remained in the elastomeric pumps. Patients felt indignant that nobody was able to provide a definitive answer to their questions.

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*Advantages and disadvantages of OPAT*

The main advantage of OPAT for most participants was the possibility to go home, feeling of freedom, and a faster recovery compared to an extended hospital stay. Adapting the visiting hours of the care provider to the patient's schedules was often mentioned as a prerequisite. Most patients wanted to participate in social activities (e.g. a birthday party) and appreciated the flexibility of care providers.

However, OPAT was considered an impairment too: both physically due to the device and the intravenous catheter (which hindered showering, walking, sleeping), and due to the impact on privacy and personal time: "*But I have a life too, a private life. OPAT is not only about antibiotics" (male, 47yrs, 57 weeks)*. Another patient stated: "*It is an invasion of privacy" (male, 52yrs, 1 week)*. The impact of this impairment was different for distinct types of patients. Patients who received continuous infusion of antibiotics generally felt more impaired compared to those receiving a single daily administration. Tiredness was often mentioned as a hindrance for participating in social activities. For people without mobility limitations due to their underlying illness, OPAT negatively impacted their freedom, while people who were already limited in their mobility (e.g. joint prosthesis infection) did not experience OPAT as a substantial additional impairment of freedom. Some patients also received home care for help with daily living activities, in addition to the specialist nurse who attached the antibiotic device. "*At a certain moment, I had 3 people around: first home care came to help with showering, then at 8.30am the cleaner visited me, and thereafter the OPAT nurse" (female, 70yrs, 7 weeks).*

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## DISCUSSION

In this study, we investigated the patient-centeredness of OPAT care, based on the experiences and preferences of patients and relatives. From our focus group interviews, two central values emerged as essential constituents of patient-centered OPAT care: freedom and safety. Different elements of the OPAT care process strengthen or undermine these values. These elements provide clear keystones to improve patient-centeredness of OPAT care. Our findings are in line with other qualitative studies addressing patients' perspectives on antibiotic therapy. Bamford et al showed that patients want to be more involved in the decision to continue antibiotics at home[7]. Furthermore, in their study population patients worried about the organization and safety of OPAT.

In the context of OPAT care, freedom involves the ability to live and make decisions about one's life without being limited or restricted. A major advantage of OPAT care compared to in-hospital antibiotic administration is the ability to leave the hospital and go home, to one's own familiar environment, which greatly increases feelings of freedom. However, our findings indicate that freedom is sometimes negatively influenced by behaviour of healthcare professionals involved and by aspects beyond the direct control of these professionals (i.e., organisational factors). In many cases, it is the sensation of losing control of a situation that leads to a reduced sense of freedom. For example, participants described how multiple specialist nurse visits a day reduced their sense of privacy and control, as they had to schedule their day around these visits. Disease or therapy related symptoms, such as fatigue and the physical presence of the Peripherally Inserted Central Catheter (PICC) restricted participants' freedom too, as they were limited in activities such as showering and attending social functions. We confirmed the findings by Lehoux et al[8], who showed that OPAT patients tended to withdraw from social activities because of social stigmatization and technical barriers, furthermore daily activities were compromised due to technical factors of the equipment .

Knowing that freedom is a core value for our participants, it was remarkable that decisions concerning the initiation of OPAT, hospital discharge, the choice of home care organisation, and scheduling time of antibiotic administration were often made by healthcare providers without input from the patient or carers. Other authors have also observed this lack of shared decision-making: that decisions *about* the patient are not always made *with* the patient.[13] This is an important area for improvement, as previous studies demonstrated that when providers, patients and family members work together, the patient-centeredness and quality of care increases.[14]

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The second central value, safety, means feeling free from danger or harm. Patients receiving OPAT have an invasive infection which may cause serious harm and is potentially fatal. Participants described decreased trust in their bodies and worried about their well-being. Contradictory information, difficulty accessing appropriate expertise and care when encountering problems, and professionals not following hygiene guidelines, further contributed to these feelings of insecurity. Other studies also stressed the need for better communication about infection and treatment options in patients treated with antibiotics.[6, 7, 9]Recently, Twiddy et al. showed that many OPAT patients found looking after themselves more difficult than they had expected.[6] Good communication and information by medical staff is needed to create this (self)confidence.

One participant poignantly described the importance of trustworthy care and healthcare professionals in this context: *“For me […] the PICC line is a lifeline. There is no alternative. I cannot have another surgery, because my odds of survival are three percent. So this is literally and figuratively my lifeline… Because I have a bacterium somewhere and if it becomes active, it’s over.” (male, 47yrs, 57 weeks).*

Self-administration could enhance feelings of autonomy and freedom. Self-administration has been found safe in small cohort studies.[15-17] Nevertheless, some patients in our study addressed the importance of a nurse specialist administering OPAT, and would not dare to deliver ‘life-saving treatment’ to themselves. Only one patient in our study (male patient, vascular prosthesis infection) participated in the self-administration model; he did not report any safety concerns during his treatment. Further studies should compare the different OPAT models in relation to patient-centeredness and outcomes.

In line with the good practice recommendations for OPAT [2], participants expressed the need for a medical lead, someone who is and feels responsible for OPAT care. Elements that inspire trust and contribute to a feeling of safety are clear and unambiguous communication and information, frequent feedback about treatment progress, and direct accessibility of hospital care if needed. Additionally, the confident and compassionate care of the specialist nurse at home was often emphasized as a major contribution to feelings of safety.

### *Strengths and limitations*

OPAT has been used for over 40 years and a wealth of evidence has accumulated supporting its clinical justification and cost-effectiveness. Our study considered all 8 Picker principles of patient-

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centered care through a qualitative approach, which provides a more holistic view of patient experiences than previous quality of life studies.[18]

Although a qualitative study carries the risk of eliciting socially desirable responses from participants, we have reduced this risk by asking participants to describe their experiences rather than merely assessing their satisfaction[19], by using trained and experienced qualitative researchers to perform data collection and analysis, and by conducting multiple focus groups in different settings. We included a diverse and representative study population through purposive sampling.[20]

The absolute number of participants in our study was relatively small. However, when considering the labor-intensiveness of qualitative research and the suggested number of interviewees in the literature, the number of focus group participants was more than required[20], furthermore, we reached the point of data saturation.

Currently, the Netherlands only uses one model of OPAT delivery: the administration by a visiting specialist nurse. The impact of other models, such as administration by a visiting general nurse or outpatient attendance at a healthcare facility were not investigated in this study. Nevertheless we believe that our results are also applicable to other settings, as in all models treatment is organized from an outpatient setting with the patient residing at home. Furthermore, our results are in line with the findings of recent qualitative research to the different OPAT services provided in Northern England.[6] Confidence in OPAT care appeared to be a major determinant of the feelings of safety.

*Conclusions*

This study has increased our understanding of the patient-centeredness of OPAT care. The focus group interviews provided valuable insights into the needs, and preferences of patients who receive OPAT. We have shown that keystones in improving the patient-centeredness of OPAT care are focusing on elements that enhance patients' feelings of freedom and safety. Future interventions directed at the patient-centeredness of OPAT care should focus on these elements.

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**Box 1: Picker principles of patient centeredness**

- Access to care
- Information, communication and education
- Respect for patient values, preferences and needs
- Physical comfort
- Coordination and integration of care
- Emotional support and alleviation of fear and anxiety
- Involvement of family and friends
- Continuity and transition

**Table 1: characteristics of focus group participants**

| | **Focus group participants (n=16)** |
|---|---|
| **Male (%)** | 11 (69) |
| **Mean age (range)** | 68 (47-85) |
| **Hospital type** | |
| University (%) | 5 (31) |
| Teaching (%) | 5 (31) |
| Tertiary center (%) | 6 (38) |
| **Focus of infection** | |
| Joint prosthesis | 8 (50) |
| Urinary tract | 1 (6) |
| Vascular prosthesis | 5 (31) |
| Endocarditis | 2 (13) |
| **Treatment duration** | |
| 0-2 weeks | 2 (13) |
| 2-6 weeks | 4 (25) |
| 6-12 weeks | 4 (25) |
| >12 weeks | 6 (38) |

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382 **Table 2: Quotes related to the initiation phase of OPAT**

| **Picker principle** | **Representative quotes** | **Patient characteristics (gender, age, weeks of OPAT)** |
|---|---|---|
| Respect | But in such a case, I'd like to see that there is a choice. That it's explained as, 'This is what we want to do. What do you think?' Not: 'This is what we're going to do. Period.' | Male, 52 yrs, 1 week |
| Emotional support | That was because I was at my wits' end, the nursing staff themselves arranged to get me an antibiotic device so that I could at least go home on the Sunday afternoon. For a little while. | Female, 71yrs, 6 weeks |
| Information | At one point I was rolled away and a PICC was placed. I thought, 'What's going on? They could explain a little about how and what?' But they didn't. | Female, 70 yrs, 7 weeks |
| Coordination | Yes, I had the impression that it *(OPAT)* was hardly ever done in the urology department. Because the doctors, the medical specialists, who... They all tell you something different. Look. If it has occurred more often, and if it has happened to a patient more often, then they start telling you everything all at once... | Male, 52 yrs, 1 week |
| Involvement of family and friends | My husband came to visit me every morning at nine thirty because that's when they came round, uh, the doctors and so on. But things just went right over my head, just like that, and then he had stored it all up, and that was certainly important. | Female, 70 yrs, 3 weeks |
| Involvement of family and friends | If a patient is competent in making decisions, as my father is, then I think if he knows things himself and can tell you, fine, but we must remember that my father is 85, and he can sometimes forget something. So it is always convenient to have an informal caregiver present who can translate that into what is essential, what's coming our way, and in the current trajectory, what is the best method to deal with it? | Male relative |

383

384

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385 **Table 3: Quotes related to the transition phase of OPAT**

| Picker principle | Representative quotes | Patient characteristics (gender, age, weeks of OPAT) |
|---|---|---|
| Respect | The only thing I had great difficulty with was that actually – yes, nothing against their home care organisation- but that they were forced on me somewhat. At a certain point I said, 'I have my own home care organisation.' 'No, we have contracts with a specific one.' I thought that in fact the patient still decides who does or does not come to his home. | Male, 80 yrs 8 weeks |
| Information | But if someone comes to me now 'I have to go home tomorrow and I'm getting a PICC', then I would just tell him what a day looked like for me. That's different for everyone personally. | Male, 52 yrs, 1 week |
| Coordination | What also is a very big point, in my opinion, in terms of communication here, is that the first time I was to go home, it didn't happen. It appears that they had said in the department, 'You can go home with this antibiotic.' They had not taken this into account in the department: 3 days go by after they send off the application before they process it here and have the medicines ready. Three days in between, and they had forgotten that. – Forgotten, well, they did not know that. | Male, 52 yrs, 1 week |
| Continuity and transition | They said that I could go home Tuesday, and then it was Friday because the antibiotic was not ready and so on, uhm. | Female, 71yrs, 6 weeks |
| Continuity and transition | It went pretty smoothly for me. They said to me on Thursday, 'We'll place a PICC for you.' That was done on Friday, and then they came to tell me, 'Tomorrow the Home Care will be there.' That was all very well arranged. | Male, 57 yrs, 12 weeks |
| Physical comfort | Medication was administered continuously through the PICC for 6 weeks in the hospital, and now it's once a day, so this is just great for me. I'm also enjoying life. I am very happy. | Female, 65 yrs, 12 weeks |

386

387

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388 **Table 4: Quotes related to OPAT care at home**

| Picker principle | Representative quotes | Patient characteristics (gender, age, weeks of OPAT) |
|---|---|---|
| Access to care | But you can also contact Home Care 24/7. I liked that. | Female, 65 yrs, 12 weeks |
| Respect | They have experienced nurses, which is very enjoyable. I feel that I have a doctor who checks everything completely and who is at my bedside every day. | Male, 80 yrs 8 weeks |
| Respect | *Interviewer:* What makes a really a nice home care nurse? A nurse who makes you think: those are the qualities that someone must have, or you think, ‘I feel I can really depend on them.’<br>*Male 78yrs:* Have time for you, that you can tell your story.<br>*Male 52yrs:* Then we come back to that word, you know: human.<br>*Female 70yrs:* Not only to connect that thing and get out, but there were also some who sat down to eat at the table. | |
| Emotional support | You have to... you're stuck with it every day. You eat beforehand, you make sure you tidy up a little and things like that, so you really have no vacation at all nor any rest of your own, not really. | Female, 70 yrs, 3 weeks |
| Emotional support | They say, ‘You are free.’ But you’re not at all. Two hours beforehand you have to take the stuff out of the fridge, they come sometime between 8 and 10 in the morning, so that's 4 hours, and they do that twice a day, so that's 8 hours a day, 8 of the 14 hours that you're up. Then you have little time left for yourself.<br>Look, for a very long period, like months on end, super. Then it's a super system, but not for a period of ... yes, 6 days in my case. | Male, 52 yrs, 1 week |
| Emotional support | I said this week to my specialist, in my personal case, then, ‘Behind every door you expect an exit, but there is another door and yet another door.’ | Male, 52 yrs, 1 week |
| Information | I have not been told anything at all and I am a somewhat surprised, because I do not know how it will turn out. I had expected that at least an interim balance would be drawn up. Something like: ‘How | Male, 80 yrs, 8 weeks |

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| | | |
|---|---|---|
| | are we doing?’ | |
| Continuity and transition | Of course I had to deal with planning for the therapy at the hospital and consequently had to deal with the taxi company and with the Home Care. That was all rather difficult, especially the first few weeks. Things went wrong a number of times. If the first domino falls the wrong way, then the planning for the rest of the day falls apart. | Male, 65 yrs, 13 weeks |
| Involvement of family and friends | Interviewer: Are there other things that people should know when they go home and administer this type of antibiotic at home?<br>Male, 47 yrs: No. At least, I’ll just have a look, in my case, because I am younger than all of you: warn people, bear in mind that it is also a violation of your privacy. Especially if you have children who live at home. The time will come when they start saying, ‘Is Home Care here again??’ So it does have an impact on your privacy. | Male, 47 yrs, 57 weeks |
| Physical comfort | I only had Home Care for a few weeks, but I would have liked to have had it longer. A year on clindamycin; I have had more problems with that than with the PICC. | Male, 75 yrs, 1 week |

389

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## DECLARATION OF INTERESTS

The authors declare that they have no competing interests.

## ACKNOWLEDGEMENTS

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## AUTHOR'S CONTRIBUTION

MB, AO, JS, and MH conceived the study. MB and AO performed the data collection. MB, AO, and MH analysed and managed the data, including quality control. MT, BJK, and JtO advised on study design and reviewed the manuscript. MB and AO drafted the manuscript, all authors contributed substantially to its revision. MB takes responsibility for the paper as a whole.

## DATA SHARING STATEMENT

Interview guide and codebook available by request to the corresponding author.

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# Manuscript: *Quality of outpatient parenteral antimicrobial therapy (OPAT) care from the patient's perspective: a qualitative study*

M. Berrevoets, A. Oerlemans, M. Tromp, BJ. Kullberg, J. ten Oever, J. Schouten, M. Hulscher

# Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

| No. Item | Guide questions/description | Reported on Page # | Relevant passage in text |
|---|---|---|---|
| **Domain 1: Research team and reflexivity** | | | |
| *Personal Characteristics* | | | |
| 1. Interviewer/facilitator | Which author/s conducted the interview or focus group? | 21 | Marvin Berrevoets, MD, male resident in infectious diseases and PhD student.<br>Anke Oerlemans, PhD, female biomedical scientist and ethicist. Received extensive training in in-depth interviewing, moderatoring focus groups, and qualitative data analysis. Involved in qualitative research projects since 2005. |
| 2. Credentials | What were the researcher's credentials? E.g. PhD, MD | 21 | |
| 3. Occupation | What was their occupation at the time of the study? | 21 | |
| 4. Gender | Was the researcher male or female? | 21 | |
| 5. Experience and training | What experience or training did the researcher have? | 21 | |
| *Relationship with participants* | | | |
| 6. Relationship established | Was a relationship established prior to study commencement? | 6 | Patients were asked to participate by their treating physician and informed by email about the study goals |
| 7. Participant knowledge of the interviewer | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research | 6 | An invitation email was provided with the study setting and goals |
| 8. Interviewer characteristics | What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic | 21-22 | See also #1 - #5<br>Marvin Berrevoets, MD, male resident in infectious diseases and PhD student; OPAT care coordinator in a large teaching hospital, daily involved in the care of OPAT patients; |

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| | | | |
|---|---|---|---|
| | | | and Anke Oerlemans, PhD, female researcher. Not involved in OPAT care. Leads several research projects on shared decision-making.<br>This study is part of a PhD project |

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| No. Item | Guide questions/description | Reported on Page # | Relevant passage in text |
|---|---|---|---|
| **Domain 2: study design** | | | |
| *Theoretical framework* | | | |
| 9. Methodological orientation and Theory | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | 7 | The analysis included elements of a deductive and an inductive approach: we used the theoretical framework of the Picker principles to guide our analysis as well as additional thematic analysis with open coding to answer our research question. |
| *Participant selection* | | | |
| 10. Sampling | How were participants selected? e.g. purposive, convenience, consecutive, snowball | 6 | Purposive sampling |
| 11. Method of approach | How were participants approached? e.g. face-to-face, telephone, mail, email | 6 | Face-to-face by treating physician, subsequently by (e)mail about the study objectives |
| 12. Sample size | How many participants were in the study? | 8 | 16 study patients, 2 relatives |
| 13. Non-participation | How many people refused to participate or dropped out? Reasons? | 8 | 2 dropped out, 1 patient because of a concomitant appointment with his OPAT team, 1 provided no reason |
| *Setting* | | | |
| 14. Setting of data collection | Where was the data collected? e.g. home, clinic, workplace | 6 | Hospital where patients had been treated and OPAT care was initiated |
| 15. Presence of non-participants | Was anyone else present besides the participants and researchers? | 6 | Focus groups were led by a moderator in presence of one researcher |
| 16. Description of sample | What are the important characteristics of the sample? e.g. demographic data, date | 6 | Age, gender, diagnosis, and treatment duration |
| *Data collection* | | | |
| 17. Interview guide | Were questions, prompts, guides provided by the authors? Was it pilot tested? | 6 | Interview guide was based on the 8 Picker principles of patient-centered care and followed the chronology of the OPAT care process. The interview guide was drafted |

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| | | | |
|---|---|---|---|
| | | | by MB and AO, and discussed with and reviewed by JS and MH. |
| 18. Repeat interviews | Were repeat interviews carried out? If yes, how many? | 6 | All participants were interviewed once, no repeat interviews were conducted. |
| 19. Audio/visual recording | Did the research use audio or visual recording to collect the data? | 7 | Interviews were recorded with a digital voice recorder |
| 20. Field notes | Were field notes made during and/or after the interview or focus group? | 7 | The moderator and researcher made sporadic field notes during the focus groups, and debriefed immediately following the focus groups. The recorded data was transcribed verbatim by an independent transcriber |
| 21. Duration | What was the duration of the inter views or focus group? | 8 | 90-120 minutes each |
| 22. Data saturation | Was data saturation discussed? | 6 | Number of focus groups depended on the point of saturation |
| 23. Transcripts returned | Were transcripts returned to participants for comment and/or correction? | n/a | No |
| **Domain 3: analysis and findings** | | | |
| *Data analysis* | | | |
| 24. Number of data coders | How many data coders coded the data? | 7 | 2 in total (moderator and researcher) |
| 25. Description of the coding tree | Did authors provide a description of the coding tree? | n/a | No; overview of codes and categories available from the authors on request. |
| 26. Derivation of themes | Were themes identified in advance or derived from the data? | 7 | Yes and no: a priori codes based on the Picker principles, and open codes derived from data through thematic content analysis. |
| 27. Software | What software, if applicable, was used to manage the data? | 7 | Atlas.ti 7 |
| 28. Participant checking | Did participants provide feedback on the findings? | 7 | No |
| *Reporting* | | | |
| 29. Quotations presented | Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number | Table 2,3,4 | See corresponding tables |

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| | | | |
|---|---|---|---|
| 30. Data and findings consistent | Was there consistency between the data presented and the findings? | 8-13, Tables 2,3,4 | See relevant passages in manuscript |
| 31. Clarity of major themes | Were major themes clearly presented in the findings? | 11 | Two central values emerged: freedom and safety |
| 32. Clarity of minor themes | Is there a description of diverse cases or discussion of minor themes? | 11-13 | See relevant passages in the manuscript |

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