BMJ Open

BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (http://bmjopen.bmj.com).

If you have any questions on BMJ Open's open peer review process please email info.bmjopen@bmj.com

BMJ Open

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

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2018-024564
Article Type:	Research
Date Submitted by the Author:	01-Jun-2018
Complete List of Authors:	Berrevoets, Marvin; Radboudumc, Infectious diseases Oerlemans, Anke; Radboudumc, Infectious diseases Tromp, Mirjam; Radboudumc, Infectious diseases Kullberg, Bart Jan; Radboudumc, Infectious diseases ten Oever , Jaap; Radboud University Nijmegen Medical Centre, Schouten, Jeroen; Radboudumc, Infectious diseases Hulscher, M; Radboud University Medical Center
Keywords:	OPAT, Outpatient Parenteral Antimicrobial Therapy, Patient Experiences, QUALITATIVE RESEARCH, patient-centeredness

SCHOLARONE™
Manuscripts

For peer review only

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

Marvin A.H. Berrevoets[1,2]*, Anke J.M. Oerlemans[2], Mirjam Tromp[1], Bart Jan Kullberg[1], Jaap ten Oever[1], Jeroen A. Schouten[1,2], Marlies E. Hulscher[1,2]

Affiliations:

[1] Radboud Center for Infectious Diseases, Radboud university medical center, Nijmegen, the Netherlands

[2]Scientific Center for Quality of Healthcare, Radboud Institute for Health Sciences, Radboud university medical center, Nijmegen, the Netherlands.

*Corresponding author:
Marvin A.H. Berrevoets, M.D.
Department of Internal Medicine and Infectious Diseases
P.O. box 9101, 6500 HB, Nijmegen, the Netherlands
E-mail: Marvin.Berrevoets@radboudumc.nl

Conflicts of interest: none
Word count: 2647 words

Running title: Patients' perspectives on OPAT care

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

111 transcripts. Written informed consent was obtained from all participants. The Regional Review Board
112 for Human Research, Arnhem-Nijmegen (CMO no. 2016-3107) assessed the study, and judged that
113 ethics approval was not required under Dutch National Law.
114

115 **Data analysis**

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

121

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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."*

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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*

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3 275 **REFERENCES**

276 **1** Tice AD, Rehm SJ, Dalovisio JR, et al. Practice guidelines for outpatient parenteral
277 antimicrobial therapy. IDSA guidelines. *Clin Infect Dis*. 2004;**38**(12):1651-72.
278 **2** Chapman AL, Seaton RA, Cooper MA, et al. Good practice recommendations for outpatient
279 parenteral antimicrobial therapy (OPAT) in adults in the UK: a consensus statement. *J Antimicrob*
280 *Chemother*. 2012;**67**(5):1053-62.
281 **3** Institute of Medicine Committee on Quality of Health Care in A. Crossing the Quality Chasm:
282 A New Health System for the 21st Century. Washington (DC): National Academies Press (US)
283 Copyright 2001 by the National Academy of Sciences. All rights reserved.; 2001.
284 **4** Rathert C, Williams ES, McCaughey D, Ishqaidef G. Patient perceptions of patient-centred
285 care: empirical test of a theoretical model. *Health Expect*. 2015;**18**(2):199-209.
286 **5** Wolter JM, Bowler SD, Nolan PJ, McCormack JG. Home intravenous therapy in cystic fibrosis:
287 a prospective randomized trial examining clinical, quality of life and cost aspects. *Eur Respir J*.
288 1997;**10**(4):896-900.
289 **6** Lemelin J, Hogg WE, Dahrouge S, et al. Patient, informal caregiver and care provider
290 acceptance of a hospital in the home program in Ontario, Canada. *BMC Health Serv Res*. 2007;**7**:130.
291 **7** Al Ansari A, Al Alawi S, Al Qahtani M, Darwish A. Outpatient parenteral antimicrobial therapy
292 (OPAT) in the kingdom of bahrain: Efficacy, patient satisfaction and cost effectiveness. *Open*
293 *Infectious Diseases Journal*. 2013;**7**(1):90-5.
294 **8** Elsey L. Service Evaluation of a Cystic Fibrosis Home Intravenous Antibiotic Service Provided
295 by a Nhs Foundation Trust. *Arch Dis Child*. 2016;**101**(9):e2.
296 **9** Kupfer JM, Bond EU. Patient satisfaction and patient-centered care: necessary but not equal.
297 *JAMA*. 2012;**308**(2):139-40.
298 **10** Seidman I. Interviewing as Qualitative Research: A Guide for Researchers in Education and
299 the Social Sciences: Teachers College Press; 2006.
300 **11** Corbin JM, Strauss A. Grounded theory research: Procedures, canons, and evaluative criteria.
301 *Qualitative Sociology*. 1990;**13**(1):3-21.
302 **12** Kitzinger J. Qualitative research. Introducing focus groups. *BMJ*. 1995;**311**(7000):299-302.
303 **13** Picker Institute. The eight Picker principles of patient centered care. Oxford: Picker Institute,
304 2013.; Available at: http://pickerinstitute.org.
305 **14** Hesselink G, Flink M, Olsson M, et al. Are patients discharged with care? A qualitative study
306 of perceptions and experiences of patients, family members and care providers. *BMJ quality &*
307 *safety*. 2012;**21 Suppl 1**:i39-49.
308 **15** Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J*
309 *Fam Pract*. 2000;**49**(9):796-804.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

16 Goodfellow AF, Wai AO, Frighetto L, et al. Quality-of-life assessment in an outpatient parenteral antibiotic program. *Ann Pharmacother*. 2002;**36**(12):1851-5.

17 Coulter A, Cleary PD. Patients' experiences with hospital care in five countries. *Health Aff (Millwood)*. 2001;**20**(3):244-52.

18 Guest G, Namey E, McKenna K. How Many Focus Groups Are Enough? Building an Evidence Base for Nonprobability Sample Sizes. *Field Method*. 2017;**29**(1):3-22.

19 Twiddy M, Czoski Murray CJ, Mason SJ, et al. A qualitative study of patients' feedback about Outpatient Parenteral Antimicrobial Therapy (OPAT) services in Northern England: implications for service improvement. *BMJ open*. 2018;**8**(1):e019099.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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)

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

For peer review only

1
2
3 340 **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

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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.' *Patient 1:* Have time for you, that you can tell your story. *Patient 2:* Then we come back to that word, you know: human. *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?

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

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

16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

1
2
3 345 **DECLARATION OF INTERESTS**
4
5 346 The authors declare that they have no competing interests.
6
7 347 **ACKNOWLEDGEMENTS**
8
9 348 We are grateful to those interviewed for their generous participation, and to dr. T. Sprong, dr. D.
10
11 349 Telgt, dr. F. Vos, ms. H. De Gouw, dr. M. Dautzenberg for facilitating the performance of the study.
12
13 350 **FUNDING**
14
15
16 351 This research received no specific grant from any funding agency in the public, commercial or not-
17 352 for-profit sectors
18
19 353 **AUTHOR'S CONTRIBUTION**
20
21
22 354 MB, AO, JS, and MH conceived the study. MB and AO performed the data collection. MB, AO, and
23
24 355 MH analysed and managed the data, including quality control. MT, BJK, and JtO advised on study
25 356 design and reviewed the manuscript. MB and AO drafted the manuscript, all authors contributed
26
27 357 substantially to its revision. MB takes responsibility for the paper as a whole.
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

		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

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

		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

For peer review only

		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
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6,7
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

The SRQR checklist is distributed with permission of Wolters Kluwer © 2014 by the Association of American Medical Colleges. This checklist was completed on 30. May 2018 using http://www.goodreports.org/, a tool made by the EQUATOR Network in collaboration with Penelope.ai

For peer review only

BMJ Open

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

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2018-024564.R1
Article Type:	Research
Date Submitted by the Author:	13-Aug-2018
Complete List of Authors:	Berrevoets, Marvin; Radboudumc, Infectious diseases Oerlemans, Anke; Radboudumc, Infectious diseases Tromp, Mirjam; Radboudumc, Infectious diseases Kullberg, Bart Jan; Radboudumc, Infectious diseases ten Oever , Jaap; Radboud University Nijmegen Medical Centre, Schouten, Jeroen; Radboudumc, Infectious diseases Hulscher, M; Radboud University Medical Center
Primary Subject Heading:	Infectious diseases
Secondary Subject Heading:	Patient-centred medicine, Qualitative research, Infectious diseases
Keywords:	OPAT, Outpatient Parenteral Antimicrobial Therapy, Patient Experiences, QUALITATIVE RESEARCH, patient-centeredness

SCHOLARONE™
Manuscripts

only

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

Marvin A.H. Berrevoets[1,2]*, Anke J.M. Oerlemans[2], Mirjam Tromp[1], Bart Jan Kullberg[1], Jaap ten Oever[1], Jeroen A. Schouten[1,2], Marlies E. Hulscher[1,2]

Affiliations:

[1] Radboud Center for Infectious Diseases, Radboud university medical center, Nijmegen, the Netherlands

[2]Scientific Center for Quality of Healthcare, Radboud Institute for Health Sciences, Radboud university medical center, Nijmegen, the Netherlands.

*Corresponding author:

Marvin A.H. Berrevoets, M.D.

Department of Internal Medicine and Infectious Diseases

P.O. box 9101, 6500 HB, Nijmegen, the Netherlands

E-mail: mberrevoets@gmail.com

Conflicts of interest: none

Word count: 3190 words

Running title: Patients' perspectives on OPAT care

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3 57 **INTRODUCTION**

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
143 **RESULTS**
144 *Study population*
145 We conducted 3 focus group interviews of 90-120 minutes each. A total of 18 patients intended to
146 participate of whom 16 were present. Participant characteristics are listed in Table 1. We conducted
147 2 individual interviews with relatives: the son of a 86-year-old patient and the mother of a 22-year-
148 old patient with a cognitive impairment.
149
150 *Initiation of OPAT*
151 All participants had been admitted to the hospital and had already received a course of intravenous
152 antibiotics when the decision to continue treatment at home was made. Representative quotations
153 related to the initiation phase are shown in Table 2.
154 Virtually all participants indicated that the decision to initiate OPAT was made by the physician
155 without involving the patient and their relatives. Some participants felt this violated their autonomy:
156 *"You're still dealing with people and in this case, in my personal case, it was just like: 'We're doing it,*
157 *period. You don't have any say'" (male, 52yrs, <2 weeks).*
158 One patient stated that he would have preferred to stay in the hospital for the remaining days of
159 therapy, had he been given that option.
160 The insertion of an intravascular access device came as a surprise for some patients "*they don't*
161 *explain the procedure at all, they just move you to the procedure room" (female, 70 yrs, 7 weeks)*,
162 others received written as well as oral information and were able to watch the insertion of the device
163 on a monitor during the procedure. Not knowing what was going to happen made patients feel
164 unsafe, anxious and uncertain.
165 The type, amount, and quality of information provided about the entire OPAT process varied among
166 the hospitals (table 2). Most patients indicated they would have wanted more information about the
167 antibiotics, the possible side effects and interactions. Sometimes, relatives participated in searching
168 for information on the InternetPparticipants emphasized the importance of the presence of relatives
169 during information sessions or patient-doctor conversations.
170 According to patients, important topics to be discussed, were potential antibiotic side effects and
171 instructions for use, information about intravascular access devices, potential complications and how
172 to handle problems or complications, and information about treatment progress. Participants agreed
173 that both written and oral information should be given. Well-informed patients seemed to feel safe
174 and secure, while a lack of information could lead to feelings of concern.
175
176 *Transition of care from hospital to home*

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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).*

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

233 **DISCUSSION**

234 In this study, we investigated the patient-centeredness of OPAT care, based on the experiences and 235 preferences of patients and relatives. From our focus group interviews, two central values emerged 236 as essential constituents of patient-centered OPAT care: freedom and safety. Different elements of 237 the OPAT care process strengthen or undermine these values. These elements provide clear 238 keystones to improve patient-centeredness of OPAT care. Our findings are in line with other 239 qualitative studies addressing patients' perspectives on antibiotic therapy. Bamford et al showed that 240 patients want to be more involved in the decision to continue antibiotics at home[7]. Furthermore, in 241 their study population patients worried about the organization and safety of OPAT.

242 In the context of OPAT care, freedom involves the ability to live and make decisions about one's life 243 without being limited or restricted. A major advantage of OPAT care compared to in-hospital 244 antibiotic administration is the ability to leave the hospital and go home, to one's own familiar 245 environment, which greatly increases feelings of freedom. However, our findings indicate that 246 freedom is sometimes negatively influenced by behaviour of healthcare professionals involved and 247 by aspects beyond the direct control of these professionals (i.e., organisational factors). In many 248 cases, it is the sensation of losing control of a situation that leads to a reduced sense of freedom. For 249 example, participants described how multiple specialist nurse visits a day reduced their sense of 250 privacy and control, as they had to schedule their day around these visits. Disease or therapy related 251 symptoms, such as fatigue and the physical presence of the Peripherally Inserted Central Catheter 252 (PICC) restricted participants' freedom too, as they were limited in activities such as showering and 253 attending social functions. We confirmed the findings by Lehoux et al[8], who showed that OPAT 254 patients tended to withdraw from social activities because of social stigmatization and technical 255 barriers, furthermore daily activities were compromised due to technical factors of the equipment .

256 Knowing that freedom is a core value for our participants, it was remarkable that decisions 257 concerning the initiation of OPAT, hospital discharge, the choice of home care organisation, and 258 scheduling time of antibiotic administration were often made by healthcare providers without input 259 from the patient or carers. Other authors have also observed this lack of shared decision-making: 260 that decisions *about* the patient are not always made *with* the patient.[13] This is an important area for 261 improvement, as previous studies demonstrated that when providers, patients and family members 262 work together, the patient-centeredness and quality of care increases.[14]

263

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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-

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3 319 **REFERENCES**

1 Tice AD, Rehm SJ, Dalovisio JR, et al. Practice guidelines for outpatient parenteral antimicrobial therapy. IDSA guidelines. *Clin Infect Dis*. 2004;38(12):1651-72.

2 Chapman AL, Seaton RA, Cooper MA, et al. Good practice recommendations for outpatient parenteral antimicrobial therapy (OPAT) in adults in the UK: a consensus statement. *J Antimicrob Chemother*. 2012;67(5):1053-62.

3 Institute of Medicine. Crossing the Quality Chasm. A new health system for the 21st century. Washington, DC: National Academy Press, 2001.

4 Rathert C, Williams ES, McCaughey D, Ishqaidef G. Patient perceptions of patient-centred care: empirical test of a theoretical model. *Health Expect*. 2015;18(2):199-209.

5 Picker Institute. The eight Picker principles of patient centered care. Oxford: Picker Institute, 2013. Available at http://pickerinstitute.org Last accessed 13 August 2018.

6 Twiddy M, Czoski Murray CJ, Mason SJ, et al. A qualitative study of patients' feedback about Outpatient Parenteral Antimicrobial Therapy (OPAT) services in Northern England: implications for service improvement. *BMJ open*. 2018;8(1):e019099.

7 Bamford KB, Desai M, Aruede MJ, Lawson W, Jacklin A, Franklin BD. Patients' views and experience of intravenous and oral antimicrobial therapy: room for change. *Injury*. 2011;42 Suppl 5:S24-7.

8 Lehoux P. Patients' perspectives on high-tech home care: a qualitative inquiry into the user-friendliness of four technologies. *BMC Health Serv Res*. 2004;4(1):28.

9 Zanichelli V, Monnier AA, Tebano G, et al. Views and experiences with regard to antibiotic use of hospitalized patients in five European countries: a qualitative descriptive study. *Clin Microbiol Infect*. 2018.

10 Seidman I. Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences: Teachers College Press; 2006.

11 Corbin JM, Strauss A. Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*. 1990;13(1):3-21.

12 Kitzinger J. Qualitative research. Introducing focus groups. *BMJ*. 1995;311(7000):299-302.

13 Hesselink G, Flink M, Olsson M, et al. Are patients discharged with care? A qualitative study of perceptions and experiences of patients, family members and care providers. *BMJ quality & safety*. 2012;21 Suppl 1:i39-49.

14 Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract*. 2000;49(9):796-804.

15 Barr DA, Semple L, Seaton RA. Self-administration of outpatient parenteral antibiotic therapy and risk of catheter-related adverse events: a retrospective cohort study. *Eur J Clin Microbiol Infect Dis*. 2012;31(10):2611-9.

16 Eaves K, Thornton J, Chapman AL. Patient retention of training in self-administration of intravenous antibiotic therapy in an outpatient parenteral antibiotic therapy service. *J Clin Nurs*. 2014;23(9-10):1318-22.

17 Matthews PC, Conlon CP, Berendt AR, et al. Outpatient parenteral antimicrobial therapy (OPAT): is it safe for selected patients to self-administer at home? A retrospective analysis of a large cohort over 13 years. *J Antimicrob Chemother*. 2007;60(2):356-62.

18 Goodfellow AF, Wai AO, Frighetto L, et al. Quality-of-life assessment in an outpatient parenteral antibiotic program. *Ann Pharmacother*. 2002;36(12):1851-5.

19 Coulter A, Cleary PD. Patients' experiences with hospital care in five countries. *Health Aff (Millwood)*. 2001;20(3):244-52.

20 Guest G, Namey E, McKenna K. How Many Focus Groups Are Enough? Building an Evidence Base for Nonprobability Sample Sizes. *Field Method*. 2017;29(1):3-22.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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)

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

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.' *Male 78yrs:* Have time for you, that you can tell your story. *Male 52yrs:* Then we come back to that word, you know: human. *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. 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

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

	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? 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

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

DECLARATION OF INTERESTS

The authors declare that they have no competing interests.

ACKNOWLEDGEMENTS

We are grateful to those interviewed for their generous participation, and to dr. T. Sprong, dr. D. Telgt, dr. F. Vos, ms. H. De Gouw, dr. M. Dautzenberg for facilitating the performance of the study.

FUNDING

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors

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.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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

For peer review only

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. 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 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;

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

For peer review only

			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

For peer review only

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

For peer review only