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RESEARCH ARTICLE

Medication management during transitions from hospital to home: a focus group study with hospital and primary healthcare providers in the Netherlands

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Abstract

Background Medication management is jeopardized during a patient's transition from hospital to home. Insight is required from both hospital and primary healthcare providers on how care should be organised to achieve continuity of medication management. *Objective* This study aimed to identify perspectives of hospital and primary healthcare providers on barriers to the continuity of medication management during a patient's transition from hospital to home and facilitators to overcome these. *Setting* A qualitative descriptive study was conducted within hospital and primary healthcare settings in the Netherlands. *Method* Two focus groups were performed with two community care registered nurses, two community pharmacists, four general practitioners, two hospital nurses, two hospital pharmacists, four outpatient pharmacists, two pharmacy technicians, and one physician. A semi-structured interview guide was used to identify perspectives of participants on barriers to continuity of medication management and facilitators to overcome these. Data were analysed following thematic content analysis. *Main outcome measure* Barriers to the continuity of medication management during a patient's transition from hospital to home would be enumerated, along with facilitators to overcome these barriers. *Results* Three main themes of barriers and facilitators were identified: (1) healthcare provider collaboration, including the transfer of medication information and effective collaboration; (2) patient's medication use, including information about medication, personalised care, and supervision after discharge; and (3) organisation of healthcare, including the connection between information systems and the supply of medication. *Conclusion* Barriers and facilitators to continuity of medication management during the transition from hospital to home occur at the provider, patient, and healthcare-system levels. Future interventions should focus on all levels through interprofessional healthcare teams, tailoring care to patient needs, and on the use of a uniform, nationwide patient electronic health record.

Keywords Continuity of patient care · Medication therapy management · Primary healthcare · Qualitative research · Hospital care · Transitional care

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Impacts on Practice

- Introducing effective collaboration among all members of a medication team (e.g., doctors, nurses, and pharmacists) is essential to overcoming barriers during the transition from hospital to home.
- Healthcare providers need to evaluate patients' capabilities and needs during each transition point of care and tailor the amount of support to what is needed.
- A nationwide, uniform patient electronic health record is needed to facilitate complete and timely information transfer between healthcare providers.

Introduction

Patient discharge from hospital to home is a widely recognised transition in which medication safety might be jeopardised [1]. Studies show that post-discharge, medication-related problems can devolve into adverse drug events and readmissions to the hospital [1–3]. A key factor responsible for these problems is that, presently, due to an increasing number of co-morbidities among patients and the increasing complexity of healthcare, patients receive care from many healthcare providers and move frequently within healthcare settings [4]. As healthcare providers limit the scope of their practice to a single setting, they lack insight into the specifics of how care is organised in other settings. Furthermore, no single healthcare provider takes responsibility for orchestrating continuity of medication management during all these transitions [5, 6].

Insight is required from both hospital and primary healthcare providers on how care can be organised for patients transitioning from hospital to home, to understand the opportunities that exist as well as the barriers to improving continuity of medication management.

Until now, most studies focused not on the continuity of medication management specifically, but on the general transition period from hospital to home [7, 8]. The studies that have focused on medication, however, have limited scope as they discussed only specific processes (e.g., medication reconciliation or information transfer) or studied only single healthcare provider groups [9–11]. One qualitative study involved different types of healthcare professionals; the researchers performed focus groups segregated according to profession [12]. Although this informs us about the viewpoints of each professional discipline—i.e., an intradisciplinary approach—the focus groups lacked interaction among the various disciplines—i.e., an interdisciplinary approach [13]. Through focus groups with healthcare providers of different professions, interaction among disciplines can be studied and knowledge can be integrated, resulting in new common perspectives.

Aim of the study

The present study aims to identify, through focus groups, perspectives of hospital and primary healthcare providers on barriers to the continuity of patients' medication management during a patient's transition from hospital to home, along with facilitators to overcome these barriers.

Ethics approval

The study was approved by the local ethics committee, Adviescommissie Wetenschappelijk Onderzoek-Medisch-Ethische Commissie (ACWO-MEC; OLVG Hospital, Amsterdam (ID WO: 15.067), and the board of directors of the BovenIJ Hospital, Amsterdam (ID WO: 5EMeh545)).

Methods

This qualitative study follows the Consolidated Criteria for Reporting Qualitative Research (COREQ) [14].

Study design and participants

A qualitative descriptive study was conducted in March 2017 in two hospitals (OLVG and BovenIJ) in the Netherlands to discuss the transition process [15]. To identify a purposive sample of participants, the following criteria had to be fulfilled for each participant: (1) a nurse, pharmacist, pharmacy technician, or physician working in one of the two hospitals, or a community pharmacist, community care registered nurse, or general practitioner working in Amsterdam [2] providing medication-related care to patients during the transition from hospital to home. In total, 22 healthcare providers were identified and contacted by email for participation in the focus groups.

Focus groups were chosen because this method enables in-depth discussion among participants. Compared to individual interviews, focus group interaction can produce a wider range of information, insights, and ideas [16]. Prior to every focus group, written informed consent was obtained to ensure anonymity and confidentiality of the information obtained.

Interview guide and procedure

The study employed a semi-structured interview guide, which was derived from literature and discussion with a panel of multidisciplinary experts consisting of clinicians

and researchers who have experience with medication-related problems due to transitions in care [17, 18].

The undertaken interviews consisted of a blend of open-ended questions, accompanied by follow-up 'why' or 'how' questions so researchers could develop a keen understanding of barriers to the continuity of medication management during a patient's transition from hospital to home and facilitators to overcome these. The main questions were:

(1) Which barriers with medication management are present during a patient's transition from hospital to home?
(2) Which facilitators are needed to overcome these barriers?

A trained focus group moderator, with a health background and expertise in pharmacy and health-related qualitative studies, moderated the focus groups using the interview guide. The first author assisted the moderator, if necessary, and observed and made field notes. Two focus group sessions were held; both took place in a hospital meeting room. The focus group sessions were audio-recorded and transcribed verbatim. To ensure correct interpretation of data, respondent validation took place through member checking [19]. After each focus group met, a summary of the session was sent to all participants by email. Each participant had the opportunity to respond. When respondents disagreed with the interpretation of the focus group session, adjustments were made.

Data analysis

Transcripts were systematically analysed using thematic analysis [20] in the software program MAXQDA version 12. This comprised the initial generation of codes, which were subsequently compared and grouped into themes, followed by a thorough review of the themes. First, the first and second author independently analysed, compared, and discussed the coding of the transcript from the first session until consensus was achieved. Next, the first author coded the transcript from the second session, and the coding was completely reviewed by the second author. At this point, any differences were discussed. The final codes were placed into categories and subsequently into sub- and main themes of barriers and the identified facilitators to overcome these barriers. The themes were thoroughly discussed in research group meetings until consensus was reached. All the themes were illustrated schematically and with quotes.

Results

In total, 22 healthcare providers were approached, of whom 19 participated. One focus group was conducted with nine healthcare providers and one with 10 healthcare providers. The focus group sessions lasted between 105 and 120 min (Table 1). Three main themes of barriers and facilitators were identified: (1) healthcare provider collaboration, (2) patient medication use, and (3) organisation of care (Fig. 1).

Healthcare provider collaboration

Barriers

Medication information transfer

The most prominent barrier experienced by all participants was the insufficient transfer of medication information among healthcare providers. Primary healthcare providers mentioned that they received limited information from the hospital on medication changes and the reasons thereof.

Table 1 Profession, gender and work experience (WE) of focus group participants

Focus group 1			Focus group 2		
Profession	Gender	WE* (years)	Profession	Gender	WE (years)
Community care registered nurse	Female	2	Community care registered nurse	Female	2
Community pharmacist	Male	14	Community pharmacist	Male	14
General practitioner	Female	8	General practitioner	Male	27
General practitioner	Male	13	General practitioner	Male	12
Hospital nurse	Female	2	Hospital nurse	Female	4
Hospital pharmacist	Female	11	Hospital pharmacist	Female	22
Outpatient pharmacist	Female	4	Outpatient pharmacist	Male	7
Outpatient pharmacist	Female	3	Outpatient pharmacist	Female	2
Pharmacy technician	Female	11	Pharmacy technician	Female	10
			Physician - internal medicine	Male	14

*Number of years of experience in current profession

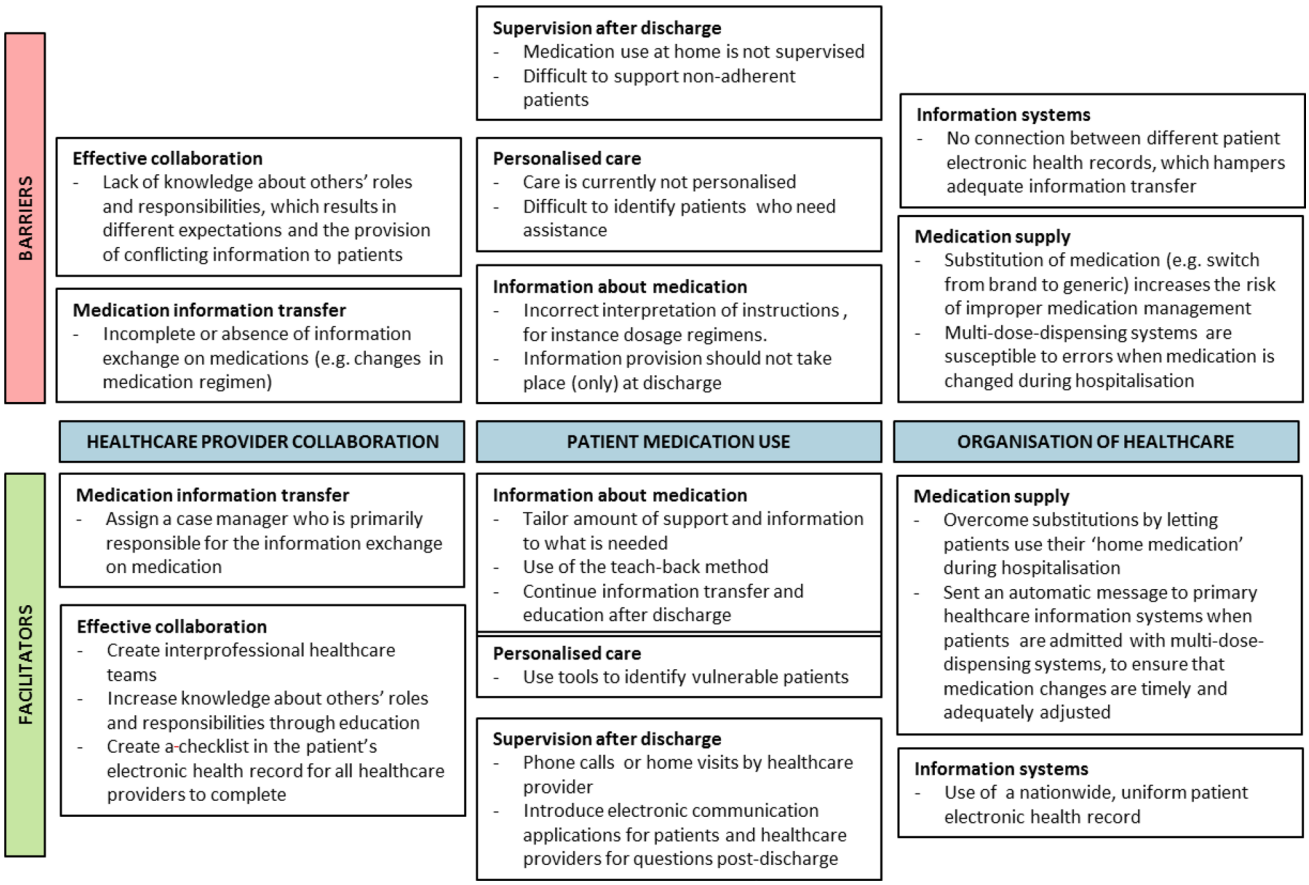

Fig. 1 Overview of identified barriers to the continuity of medication management during a patient's transition from hospital to home and facilitators to overcome these

This is troublesome when having to inform patients about their prescribed medication:

> We only get an overview of the medication and then I have to guess whether it is for heart rhythm or for blood pressure. So, I have to tell them [patients] a story about what the medicine is for and what it does, but I have no information. (Community pharmacist, male, 14 years of work experience (WE) in current profession)

Furthermore, a particular problem experienced by all the general practitioners included delayed discharge summaries. Also, the overload and complexity of information in the discharge summary often makes it difficult to extract the significant items that require attention.

Medical specialists emphasised that they have limited time to review all their patients' medications each visit, and requested that whenever patients visit the hospital, medication should be adequately documented in patient electronic health records to prevent potential medication errors:

> If everyone comes to the clinic with medication that is registered correctly in EPIC (patient electronic health record), that would save a lot of time, and ultimately a lot of mistakes. (Physician, internal medicine, male, 14 years WE)

Effective collaboration

Another important barrier perceived by all participants is a lack of knowledge about others' roles and procedures, such as the terminology and jargon used by different professions, the type of information needed in the different settings, and the responsibilities during the transition period:

> But it stands or falls with understanding that a community registered nurse has to take on this, the pharmacist has to get started with that…and if that realisation is not there, you can make rules for what you want, but then still nothing will happen. (General practitioner, male, 27 years WE)

Most importantly, the majority of the healthcare providers were worried that unclear responsibilities could result in the provision of conflicting information to their patients:

> The nurse does his part, the doctor does his part, and so does the pharmacist. We, therefore, sometimes repeat everything three times. That is…very confusing because the doctor might have told [the patient] to do something a certain way and the nurse told [the patient] something else. (Hospital pharmacist, female, 22 years WE)

Facilitators

Most participants agreed that assigning a case manager who is solely responsible for the transition from hospital to home could solve many problems. This case manager could, for instance, identify which specific part of the transition from hospital results in discontinuity of care, and create solutions for that specific part:

> That person [case manager] will find out which part of the chain has been broken by studying each case and will automatically end up with the responsible healthcare provider. And then he will identify the cause of the broken chain: Is it an error or is there something structurally wrong? Then we can try to do something about that. (Outpatient pharmacist, male, seven years WE)

Furthermore, healthcare providers suggested creating interprofessional healthcare teams, thereby raising awareness and understanding of others' expertise. To help in understanding others' expertise, participants mentioned that hospital pharmacists could educate resident physicians on prescribing medication and explain to them the importance of the transfer of accurate and complete medication information.

Also, one participant mentioned increasing transparency and improving communication among healthcare providers at discharge by creating a discharge checklist in the patient's electronic health record that would contain all the steps that should be completed by each healthcare provider responsible for the patient:

> Ideally, I would like to see one discharge form template in the patient's electronic health record, and let everyone [each discipline] ask their own questions, and if a…question has already been asked by a doctor, nurse, or pharmacist, it will be visible in the format as that question has already been filled out. Then this information can be checked again with the patient. (Hospital pharmacist, female, 22 years WE)

Patient medication use

Barriers

Information about medication

All participants expressed their concerns about whether information provided regarding medication is understood by patients, as some are unable to correctly interpret instructions and are at risk for improper medication use at home:

> The thing I often see going wrong is, for example, the misinterpretation of a dosage by the patient. The doctor says three times a day and the patient thinks once a day three times. (Community pharmacist, male, 14 years WE)

Furthermore, healthcare providers explained that patients receive information and instructions about their medication only once during hospitalisation, typically prior to discharge. However, at that time, patients are often eager to leave and pay little attention to the information provided. Therefore, some participants question the timing of patient counselling:

> Everything must be told in a very short period of time at discharge. And when you talk about the time frame, is that [discharge] really the right moment for a person to fully grasp the provided information? Perhaps he is much more concerned about what will happen at home or how to get groceries. Is he even interested in the story we want to tell? (Hospital pharmacist, female, 22 years WE)

Personalised care

Everyone agreed that each patient requires a different level of support with medication, as some manage adequately on their own, while others need assistance. However, currently, the same amount of care is provided to each patient:

> Now, we put the same amount of effort into all types of patients; while some patients are able to bear the responsibilities,…for others you have to work harder. (Hospital pharmacist, female, 11 years WE)

Older adults, in particular, were perceived as less empowered. Healthcare providers were worried that this may place them at risk for suboptimal medication use at home. Also, the level of education and health literacy was mentioned as a potential factor that can influence a patient's ability to manage medication. Nonetheless, one participant did remark that young and highly educated patients can also be at risk.

In addition, poor medication adherence was considered a major barrier. However, this problem was perceived as

complex, and not one that could be easily solved. One participant mentioned that even if every part of the transition process is organised perfectly, medication problems can still arise, as some patients intentionally fail to adhere to their medication regimen. Due to the multiple causes of non-adherence, healthcare providers experience difficulties in supporting these patients:

> Even if communication is successful, all medication lists are correct, and there are no discrepancies between the lists of the doctor, specialist, or pharmacy, still, patients can use their medication improperly. (Outpatient pharmacist, male, seven years WE)

Overall, healthcare providers agreed that it is not always easy to identify those patients that are in need of additional care and support:

> If you know your patients a little bit, which is not always the case, then you have a slight idea of who is vulnerable and who is not. (General practitioner, male, 27 years WE)

Supervision after discharge

According to the majority of the healthcare providers, the period following hospital discharge can be a difficult time for patients, mostly because during hospitalisation, medication is managed and supervised by the hospital staff, while post-discharge, patients often have to do this on their own:

> How quickly we notice in the hospital when someone is not feeling well or the medications are not going well, while in the home situation, there is not always a healthcare provider around who can look after the patient. There is a world of difference between the home and hospital setting. (Hospital nurse, female, four years WE)

Facilitators

The majority of participants mentioned that healthcare providers should, in the first instance, evaluate patients' capabilities and needs and tailor the amount of support to what is needed:

> So, you really have to look at each patient individually and assess what this person is capable of and how to prevent an emergency from occurring. (General practitioner, male, 13 years WE)

Those patients who are capable of addressing their medication needs should take the responsibility for their own medication use.

Furthermore, to ensure patients understand the information about their medication, several healthcare providers suggested that medication changes should be discussed step-by-step with patients. Afterwards, patients should be asked to restate the provided information, which is known as the teach-back method:

> (Ask the patient), What are you going to take at home? It is a bit childish; however, then you quickly find out whether the patient understands it all. And you also know when the patient does not understand it. (Community care registered nurse, female, two years WE)

Post-discharge phone calls or home visits were suggested to supervise medication use after discharge:

> I think you should have a continuation of information provision because even if you provide information at another moment, and someone is really listening, even then, information can be lost or not completely comprehended. Someone comes home, has different medicines. That could be very confusing for that person. Either the community care registered nurse, or you [pharmacy], or the medical practice assistant should pay a visit to the patient, create a follow-up moment, and between the involved healthcare providers there should be good communication. (General practitioner, male, 27 years WE)

During this follow-up contact, for instance, information and instructions about medication and medication changes can be reiterated. According to some participants, home visits provide in-depth insight into patients' habits, and any problems patients experience with medication are easily identified, particularly medication non-adherence. However, the majority of participants mentioned that a multitude of approaches are needed to solve non-adherence; most of all, adequate communication and understanding of patients is required. With regard to cost, home visits were perceived as necessary only for vulnerable patients, such as those with polypharmacy (use of five or more chronic medications).

Finally, some providers stated that patients who still have additional questions post-discharge should be given the opportunity to contact their healthcare provider directly, especially during the evening hours or weekend. This can be accomplished using a secure email address or an electronic application:

> It is often in the weekends or evening hours, or two weeks after the doctor's visit, when the patient wonders, Can I skip a dosage of my medication?, or something. At that moment, you [the patient] should

be able to discuss this with your doctor. (General practitioner, male, 13 years WE)

Organisation of healthcare

Barriers

Information systems

Overall, healthcare providers emphasised that due to the multitude of healthcare providers and the number of systems involved, the transition process is complex:

> It is partly the responsibility of the doctor, the specialist, the patient, the pharmacist, and the healthcare system. It is not one person or one thing responsible for everything. (Physician, internal medicine, male, 14 years WE)

Furthermore, they mentioned that, due the lack of a uniform patient electronic healthcare record, different systems have to be used and they are often not interoperable across different settings and professions. Therefore, information is frequently improperly or not transferred, which can lead to errors. Some participants mentioned being surprised that even with twenty-first century technology, this problem exists:

> It shouldn't be that difficult, in these days of computer technology, that when someone is discharged from the hospital or leaves the general practice that you just send a medication overview, just like that. (General practitioner, male, 27 years WE)

Medication supply

When transitioning from hospital to home, patients often have many changes in their medications due to substitution policies, such as a switch from brand-name to generic medication during the hospital stay. Participants emphasised that the majority of patients have little knowledge about their prescribed medications and may not be able to identify a substituted medicine, which can result in medication errors and harm to patients. Vulnerable patients who use multiple medications, in particular, may get confused:

> So, if you have no knowledge of medication, you do not know it is the same [medication] and then you just don't understand it anymore. (Pharmacy technician, female, 11 years WE)

Many participants stated that patients using multi-dose-dispensing (MDD) systems—machine-dispensed disposable sachets in which medications are packaged according to the intended time of administration—are susceptible to medication errors when medication regimens are adjusted during hospitalisation:

> Well, those (old multi-dose-dispensing systems) were just lying around in the house, he had not been in the house for weeks…and everything was just delivered at his home. (General practitioner, male, 12 years WE)

Facilitators

All healthcare providers highlighted the need for a uniform, nationwide patient electronic health record. This could facilitate timely information transfer and decrease the occurrence of errors due to a lack of insight into medication changes and the reasons for them.

With regard to substitution policies, a pharmacist suggested that patients could use their own 'home medication' during hospitalisation, which, additionally, increases patient involvement in the care process. However, some other healthcare providers expressed their concerns about patients' capability to adequately manage medication during a hospital stay:

> I also understand the hospital perspective. If I would be working in the hospital, I would also like patients not having full control over their medication. It can be very troublesome, when you are not certain if your patients have taken their medication and a pill is still left by the bed. (Community care registered nurse, female, two years WE)

Healthcare providers recommended that the use of an MDD system should be recorded in the patient's electronic health record. Whenever changes are implemented in the patient's medication regimen during hospitalisation, an automatic message should be sent to the primary healthcare information systems to inform them about the changes so they have time to properly adjust the patient's MDD system.

Discussion

This focus group study with hospital and primary healthcare providers reveals barriers to the continuity of patients' medication management during transitions from hospital to home and facilitators to overcome these. Three main themes were identified: healthcare provider collaboration, patient medication use, and organisation of care, indicating that barriers and facilitators occur at the provider, patient, and the healthcare-system levels.

Previous studies found that continuity of medication management is error-prone when multiple providers are involved, due to ineffective communication and sharing of information

and a lack of understanding others' roles and responsibilities [8, 21, 22]. An important facilitator identified in this study is creating healthcare teams in which different professional groups work together to solve problems, provide services, and enhance health outcomes [23]. No single profession can be the repository of all knowledge about medication. As identified in this study, there is willingness among healthcare providers to effectively collaborate. However, in order to do so, some important conditions must be fulfilled, including the providers knowing exactly what type of information the other providers need and also being financially reimbursed for additional time needed. The incorporation of a medication discharge checklist into the patient's electronic health record was suggested as a facilitator to create transparency among the different professions regarding which steps have been followed and which steps still have to be taken. This checklist reduces the risk of leaving out relevant information for the patient or providing conflicting information and stimulates multidisciplinary collaboration. Within multidisciplinary teams, healthcare providers of different professions work alongside each other to solve a common problem. Ultimately, they may reach a point past which no further progress can be made because they remain within the boundaries of their professional field. In interdisciplinary teams, however, they have to bring themselves to the verge of their own fields to form new ideas, and they must work together but still from a discipline-specific base to solve a shared problem [13]. During a complex process such as the transition from hospital to home, in which many different professionals are involved and coordination is essential, an interdisciplinary approach, therefore, could be beneficial [24]. Preferably, this approach should be introduced when attitudes are still being forged and skills imparted during the education of medicine, nursing, and pharmacy students to positively influence perceptions of teamwork [25]. Currently, academic courses focus on profession-specific education and lack programs in which students learn to think beyond the boundaries of their professional field. By implementing educational initiatives such as 'team-based or community service learning' [26], students will learn how to effectively collaborate with other potential healthcare team members to address real-life situations. This learning model may also help students to develop more awareness, understanding and valuing of their future colleagues when providing patient care during transitions of care, which can contribute to safe medication management [27].

Identifying patients who are vulnerable to medication-related problems was perceived as difficult. Indeed, a study recently identified at least 27 important risk factors [28]. Due to busy work schedules, it is often difficult for healthcare providers to assess each patient individually [29]. The integration of the teach-back method into the hospital discharge process was recommended as a facilitator to identify patients who have trouble understanding information about their medication (e.g., health illiteracy). Subsequently, primary healthcare providers can be informed about patients with a teach-back problem and can tailor follow-up care to their needs [30].

Organisational barriers were identified with regard to MDD systems. These systems have been introduced to improve medication safety and adherence, particularly for older patients who use multiple medications. What is worrying, however, is that MDD systems can cause incidents when changes in medication regimens are implemented and the MDD system is not timely or adequately adjusted at discharge. This can result in medication errors post-discharge [31]. To prevent this unintended consequence, an innovative facilitator was recommended, which is the development of an automatic message system. With this system, pharmacies will automatically receive a notification from the hospital when a patient using an MDD system is admitted. Subsequently, the pharmacy can temporarily stop the production of the MDD system until it receives another notification, at discharge, and deliver the adjusted MDD system.

Strengths and limitations

This study included cross-continuum perspectives of all involved healthcare providers during the transition from hospital to home. The same topic was also discussed with patients in our previous focus group study [32]. This facilitates an understanding of the breadth of the critical transition period and stakeholder engagement needed to improve continuity in medication management. For the first time, various facilitators were identified to achieve successful transitions from hospital to home.

Due to the small sample size, we cannot guarantee thematic saturation. However, during both focus groups, the same three themes were identified. Nonetheless, it cannot be ruled out that some subthemes have been missed. Also, this study was performed with healthcare providers from one city, potentially limiting generalisability of the research findings to other regions or countries.

Conclusion

This focus group study with hospital and primary healthcare providers sheds important light on the varied perspectives that influence care transitions, which can be used for transitional care improvements within and across settings. Future interventions should focus on improving continuity of medication management through interprofessional healthcare teams, by tailoring care to patients' needs and using a uniform, nationwide patient electronic health record. To

sensitize healthcare providers on the importance of continuity of medication management during transitions from hospital to home, interprofessional educational programs on effective collaboration should be incorporated in healthcare providers educational curricula.

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Compliance with ethical standards

Conflict of interest All authors declare no conflicts of interests.

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