

Self-management of medication during hospitalisation: health care providers' and patients' perspectives.

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ABSTRACT

Aims and objectives; This study aimed to explore health care providers' and patients' perspectives on self-management of medication during the patients' hospital stay.

Background; Self-administration of medications relates to the process in which hospitalised patients - instead of health care professionals - prepare and consume medications by themselves. Literature suggests possible advantages of medication self-management such as increased patient satisfaction, adherence to pharmacotherapy, and self-care competence.

Design; A qualitative descriptive study design was adopted, using semi-structured interviews and qualitative content analysis to examine data.

Methods; Six physicians, 11 nurses, six hospital pharmacists and seven patients were recruited from one regional hospital and two university hospitals, situated in Belgium. Interviews were conducted between October 2014 and January 2015.

Results; Strengths of medication self-management were described by participants, relating to benefits of self-management for patients, timesaving benefits for nurses and benefits for better collaboration between patients and health care providers. Weaknesses were also apparent for patients as well as for nurses and physicians. Opportunities for self-management of medication were described, relating to the organisation, the patient and the process for implementing self-management. Threats for self-management of medication included obstacles related to implementation of self-managed medications and the actual process of providing medication self-management. A structured overview of conditions that should be fulfilled before allowing self-management of medication concerned patient-related conditions, the self-managed medication and the organisation of self-management of medication.

Conclusions; This study provides new insights on the strengths, weaknesses, opportunities and threats from the perspectives of key stakeholders. Interpretation of these findings resulted in an overview of

adaptations in the medication management process to facilitate implementation of self-management of medication. **Relevance to clinical practice;** A medication management process for self-management of medication was proposed. Further interventional studies are needed to test and refine this process before implementing it in daily practice.

Key words: hospitalisation, inpatients, medication, nursing, self-management, perspectives, health care providers, qualitative

What does this paper contribute to the wider global clinical community?

- This paper provides new insights on the strengths, weaknesses, opportunities and threats regarding self-management of medication from the perspectives of patients, nurses, physicians and hospital pharmacists.
- The study findings show lack of clarity concerning prerequisites for implementation of medication self-management in hospital. Therefore, this paper provides a medication management process for self-management of medication in hospital to facilitate implementation in daily practice.
- The suggested medication management process for self-management of medication should be validated during future research in order to facilitate its use in daily practice.

INTRODUCTION

In hospitals, there has been a shift from a paternalistic approach, in which a patient receives health care in a passive way, towards an approach in which the patient becomes an active partner in health and disease management (Barlow et al., 2002; Trappenburg et al., 2013). Approaching patients as active partners is supported by the World Health Organization, as demonstrated by the Framework on Integrated People-Centred Health Services and the Orem Self-Care Theory (Meleis, 2012; Orem, 2001; WHO, 2016). An example of providing and enhancing active participation of patients in hospitals is allowing and supporting self-management.

As defined by Huber et al., health is “the ability to adapt and self manage in the face of social, physical, and emotional challenges” (Huber et al., 2011). In contemporary society, self-management is a major way in which individuals can actively be involved in their health care regimen. Trappenburg et al. examined determinants of self-management by undertaking pooled evidence of studies of patients with chronic heart failure, hypertension, asthma, chronic obstructive pulmonary disease (COPD), type-2 diabetes mellitus, musculoskeletal pain, and patients taking oral anticoagulation. They found that

self-management positively affected a variety of outcomes, such as clinical outcomes, quality of life, self-management behaviour and reduced healthcare costs (Trappenburg et al., 2013). This paper focuses on self-management of medications, which is one component of self-management.

BACKGROUND

Self-administration of medication relates to the process in which patients prepare and consume medications themselves rather than a health professional taking on this role. Self-administration of medication in hospital was first mentioned in the literature in 1959 and it has been studied internationally for many years (Parnell, 1959; Richardson, Brooks, Bramley, & Coleman, 2014; Wright, Emerson, Stephens, & Lennan, 2006). Compared to self-administration of medication, self-management of medication includes more than allowing the patient to perform the act of self-administering medication. Self-management of medication in hospital includes a broader range of activities such as patient education about medication, and monitoring patients while self-managing their medication (Vanwesemael, Van Rompaey, Petrovic, Boussery, & Dilles, 2017).

Literature suggests that self-administration of medication provides some advantages over administration of medication by nurses, such as increased patient satisfaction, and improved adherence to pharmacotherapy and self-care competences. Results on the impact of medication administration errors (MAEs) are not conclusive. Studies on the prevalence and the causes of MAEs in hospitals, indicate that the prevalence of errors is high (8.6–28.3%), and multiple systems factors influence this prevalence (Keers, Williams, Cooke, & Ashcroft, 2013a, 2013b). Studies on self-administration MAEs lack methodological rigour; therefore, more experimental studies are needed (Barnason, Zimmerman, Hertzog, & Schulz, 2010; Richardson et al., 2014; Tran, Elliott, Taylor, & Woodward, 2011; Wright et al., 2006).

A cross-sectional multicentre observational study of Belgian hospitals showed that 22% of the 1269 patients did self-administer at least one medication during their hospitalisation. Nurses stated that 41% of the hospitalised patients would have been able to self-administer their medication during their hospital stay. Only few wards had a procedure or screening tool to assess the competences of the patients to self-administer their medication. None of the wards had a validated procedure (Vanwesemael, Van Rompaey, Petrovic, Boussery, & Dilles, 2017). A national survey of inpatient medication systems in English National Health Service (NHS) hospitals by McLeod et al. concluded that 39% of the hospitals had a self-administration of medication policy (n = 100) (McLeod, Ahmed, Barber, & Franklin, 2014).

In Belgium, it is legally possible to allow self-management of medications in hospital. Yet, this has to be registered in the patients' personal medical file, and it has to be clearly defined which medications the

patient self-manages and which are administered by nurses. During hospitalisation, health care providers have a 'duty of care', and a 'duty of surveillance'. If problems concerning medication arise, these have to be registered in the patients' personal medical file. The treating physician is responsible for allowing and evaluating self-management of medication (Care inspection of the Flemish division of Wellbeing, Public Health and Family, 2015). The London Audit Commission encouraged self-management of medication in hospital by patients, and described it as a quality standard and a target for medicines management in their report on medicines management in NHS hospitals (London Audit Commission, 2001). Recently, Palmer, Finnegan, & Darko published a guideline for patient self-administration of medication during hospitalisation (Palmer, Finnegan, & Darko, 2014).

In order to increase the implementation of self-management of medication, it is necessary to have an insight into the perspectives of stakeholders concerning this topic. At the moment, it is unclear how various aspects of self-management of medication are managed in different hospitals, and the factors that facilitate or impede implementation. Furthermore, there is a relatively small body of evidence that addresses the opinions of key stakeholders including patients, nurses, physicians and hospital pharmacists. Nevertheless, they remain key stakeholders and are a crucial factor in implementing self-management on a daily basis in practice. Hence, the aim of this research was to explore health care providers' and patients' perspectives concerning self-management of medication in hospital.

METHODS

Design

A qualitative descriptive research design was used. This type of research design was appropriate, because as described by Sandelowski this design is "especially amenable to obtaining straight and largely unadorned (i.e., minimally theorized or otherwise transformed or spun) answers to questions of special relevance to practitioners and policy makers." This design was adopted to explore health care providers' and patients' perspectives concerning the strengths, weaknesses, opportunities and threats of self-management of medication during patients' hospitalisation (Sandelowski, 2000).

Sample

We sought to capture many different perceptions on self-management of medication, and therefore used a purposive sampling strategy (Palinkas et al., 2015; Patton, 2002). Under the assumption that there would be differences in medication management, procedures or protocols, we recruited one regional private hospital (451 beds), one public university hospital (1061 beds), and one private university hospital (573 beds) in Belgium. All hospital management teams consented to participate. The following wards were excluded because of limited opportunities for self-management of

medication: paediatrics, maternity, palliative care units, emergency departments, intensive care units, operation rooms, and day hospitals.

Health care providers were selected after consultation with the director of nursing. Inclusion criteria for health care providers consisted of individuals who were directly involved in management of patients' medication, and were employed as a nurse, physician, or hospital pharmacist. To obtain as many physicians and nurses with different specialties as possible, no more than two healthcare professionals from the same speciality were included from each hospital. With respect to gender parity, both male and female health care providers were included. Exclusion criteria comprised nurses, physicians, or hospital pharmacists who were not directly involved in management of patients' medication or who were temporarily employed health professionals.

In consultation with the head nurse or representative, potential patients were identified for the study. Patients were included if the following inclusion criteria were fulfilled. Patients had to be admitted to wards that were involved in the study, were aged older than 18 years, and were mentally and physically able to articulate an opinion about the topic, as assessed by the head nurse. To obtain patients from different wards, no more than one patient per ward was included. Exclusion criteria comprised patients who were physiologically or mentally unstable.

We aimed to obtain a diverse sample of health care providers and patients by recruiting individuals of different age and situated in various settings. Data collection of new participants was ceased when no new themes arose from the interviews, and as such, saturation was reached. This process was assessed during the process of data analysis and after reflection with one co-author. Data collection and analysis therefore occurred in parallel with each other.

Topic guide

The topic guide was based on a literature review and a pilot study. First, a review of literature was undertaken on self-management of medication, with particular reference to possible strengths, weaknesses, opportunities, and threats of self-management of medication. This process resulted in a topic guide with four questions (Box 1, question 1 to 4). Afterwards, the semi-structured interview schedule was pilot-tested for comprehensibility. This test was conducted with 3 nurses, 3 patients, and a hospital pharmacist. The questions were found to be clear and comprehensible. Interviews were conducted in Dutch. Additional information was collected on the gender and type of ward or health care discipline for health care providers and on the gender and hospital ward for patients.

Data collection

Data were collected using a semi-structured interview approach. The interviews were conducted in Dutch, between October 2014 and January 2015, and a topic guide was used (see Box 1). The interviews were audio-recorded and conducted by one member of the research team. All interviews took place in a quiet room in the hospital ward. If necessary, terms such as opportunities or threats were explained. Strengths were described as characteristics of self-management that provide advantages, and weaknesses were described as characteristics of self-management that provide disadvantages. Opportunities were described as characteristics that make self-management possible, while threats were described as characteristics that make self-management impossible.

Data analysis

The interviews were transcribed verbatim by the interviewer. The data were managed using the NVivo

Box 1. Main questions from the topic guide

1. What would be the strengths for patients or health care providers (doctors, nurses, hospital pharmacists) if patients self-manage their medication whilst in hospital?
2. What would be the weaknesses for patients or health care providers (doctors, nurses, hospital pharmacists) if patients self-manage their medication whilst in hospital?
3. Which threats are present for patients or health care providers to self-manage medication whilst in hospital?
4. Which opportunities are present for patients or health care providers to self-manage medication whilst in hospital?
5. Which conditions should be fulfilled before you would allow self-management of medication?

10[®] program and undertaking a qualitative content analysis (Hsieh & Shannon, 2005). For each group; nurses, hospital pharmacists, physicians, and patients, data were repeatedly read to obtain familiarisation. For each health care discipline group, several codes emerged out of the data. These codes were clustered in line of the research question; strengths, weaknesses, opportunities, and threat (SWOT). Because of a large amount of different codes for the SWOT grouping, codes were assigned to categories, resulting in meaningful clusters, e.g. benefits for patients. To increase the trustworthiness, each step of the analyses was discussed with a co-author (Vaismoradi, Turunen, & Bondas, 2013). A language editing service performed the translations of the quotations.

Ethical considerations

Before the commencement of this study, the Ethics Committee of the University Hospital of Antwerp provided approval (reference B300201422410). Each participant signed informed consent, agreeing the interview was audio taped. Participation was voluntary and confidentiality was assured for all

participants of interviews. Participants were informed that they could withdraw from the study at any time.

Rigour of the research process

To obtain rigour during the data collection process, the first author conducted all interviews with participants to ensure consistency of approach. All interviews were conducted using a semi-structured topic guide. To obtain rigour during the data analysis, the data transcripts were read several times. To increase the trustworthiness, each step of the analyses was discussed with one co-author. Any disagreement was resolved through discussion.

RESULTS

Population

A total of six physicians, eleven nurses, six hospital pharmacists and seven patients were interviewed. Table one shows more details on the sample who has been interviewed. The interviews ranged from eight to 42 minutes. On average, an interview with a physician took 24 minutes [range 20-29 minutes], a nurse took 25 minutes [range 19-43 minutes], a hospital pharmacist took 25 minutes [range 19-29 minutes] and a patient took 12 minutes [range 8-20 minutes].

Strengths of self-management of medication

Health care providers and patients believed that self-management of medication could have a number of strengths. These strengths were subdivided into three main themes; benefits for patients, benefits for nurses and benefits for collaboration (see Table 3).

Benefits for patients

In general, health care providers mostly reported the same benefits as patients. One benefit was the possibility of continuing the medication management routines from home whilst in hospital. This process allowed patients to take their medication at exactly the same time as they were used to at home. Participants were convinced this approach would also enhance medication adherence.

“Well, if I could self-manage my medication during hospitalisation, I can just take my medication as I am used to do so at home, at exactly the same time as I am used to.” Patient 3

“Because we often see that if we prescribe something we then have feedback from the patient saying ‘no, I take that one in the evening’; we obviously know that we give it at another time and that causes resentment, perhaps too strong a word, as the patients do speak to us about it. So that obviously needs to change. If they administer it themselves then they can take it at the same time as they do at home.” Physician 3

“And they can self-administer medication as they are used to doing, as opposed to the nurse giving it. Then it is

at exactly 8 o'clock, while on the ward not so much attention is paid to medication that really should be taken on an empty stomach." Nurse 3

All health care providers and patients stated it would be beneficial for patients to practise their self-management program during their hospital admission, in a controlled environment. From the perspective of physicians and hospital pharmacists, medication adherence after discharge might improve because of supervision of medication intake and independency training within self-management of medication during admission. Both nurses and hospital pharmacists believed education and supervised training while self-managing medication could increase patients' knowledge about medication. Furthermore, nurses stated that patients who already tried to self-manage their medication therapy in hospital could be more confident concerning their medication management before discharge.

"... as you also have to do at home (self-manage medication); you have to be able to before you can go home."

Patient 6

"... a patient who gets it wrong at home will also get it wrong here. A patient who gets it correct at home will probably also get it correct here. ... If the patient is doing it wrong, then this is possibly an opportunity to educate the patient by saying, look, you would be better taking that medication in the evening or you would be better taking it twice a day. That is in fact also the time to correct things." Hospital pharmacist 5

"I think that for the patient there is certainly an advantage in learning about our medication, certainly if new medication is started in the hospital because afterwards the patient is allowed home and has to self-administer it there as well." Hospital pharmacist 1

Health care providers and patients were convinced that patients would feel more autonomous and independent, and patient satisfaction would increase when given the opportunity to self-manage medication. Moreover, patients emphasised the benefit of being in control of their own medication. Patients indicated that full medication management by nurses resulted in constant questioning from patients about when and which types of medication would be administered by nurses. In case of self-management, this approach was not considered a burden, as patients were able to fully control their medication. They felt that they could be sure that they took the right medication at the right time and felt more in control about their health.

"... the big advantage is that what people could do before, you hand back to them. In fact, this is about independence and autonomy, and respect for that autonomy." Nurse 6

"Also, because I have more control. Which they (nurses) give me, because as I have a lot of medication, it causes a lot of difficulties for the nurses, with, what is that now and what is that now. They have trouble understanding it

while I know all about it. ...if I am in charge I know that I have taken them correctly and yes, that gives me peace of mind.” Patient 5

“... the empowerment, or a bit more emphasis given to the knowledge and experience of the patient means that people feel more involved and respected, and this possibly does give better patient satisfaction.” Physician 3

Another benefit for patients was suggested by patients, nurses and physicians. They stated self-management of medication would benefit the safety of patients. Patients recalled events involving not receiving medication or receiving the wrong medication from health care providers. Nurses confirmed that some patients had better medication knowledge, compared to nurses. They also emphasised that, if medication was self-administered, it would be taken on time. An example involved a patient who had to take his Parkinson medication before breakfast.

“Yes, medication error. ... In the morning, I had to ask twice where is my medicine, it is not here. That is why for this second hospitalisation I said, ‘I will keep my medicines with me’ I won’t hand them over, I will take them myself.” Patient 3

“... a lot of studies show that many mistakes in medication administration in hospitals occur because so many steps have to be gone through... It may even be that self-management of medication will lead to fewer mistakes than via the hospital, so that is something that needs to be looked at.” Physician 3

Benefits for nurses

Health care providers and patients also perceived the time-saving aspect of self-management as a benefit for nurses. Patients discussed they did not want to unnecessarily bother nurses concerning medication and therefore believed that self-management would save nurses’ time. Health care providers, indicated that self-management would lead to preparing and administering medication by patients themselves, which would also save time for other nursing tasks.

“If I can help the nurses with this so that they have less work, because they are so busy anyway... I also try and trouble the nurses as little as possible.” Patient 6

“...if you don’t have to prepare all, or at least some of the medication, you have more opportunity to do other things... you also see that even if there are fewer patients on your ward.” Nurse 3

Benefits for collaboration

Lastly, health care providers mentioned two benefits concerning collaboration between all stakeholders. Nurses suggested self-management of medication would result in improved communication between physicians, nurses and patients concerning possible changes in the medication schedule. Hospital pharmacists and physicians also indicated self-management would result in a better patient-health care provider relationship.

“Physicians often change medication and we sometimes forget to tell the patient. But if the patient self-administers we are obliged to inform the patient. I think that that is an advantage for both the patient and the nurse. They are informed in the same way, directly from the physician.” Nurse 10

“I think this (discussion about self-management of medication) opens more possibilities for improving the connection between the patient and the team, not patient and doctor but patient and care team.” Physician 2

Weaknesses of self-management of medication

Weaknesses generally differed between health care providers and patients. Three main themes emerged from the data; disadvantages for patients, disadvantages for nurses, and disadvantages for physicians. Physicians mentioned the most disadvantages (see Table 4).

Disadvantages for patients

A disadvantage that physicians and patients agreed on was the possible abuse of self-managed medication. For example, patients that self-managed their medication could take an overdose of painkillers. Physicians also stated that self-managed medication could be stolen and abused by other patients.

“... how should I explain, maybe there are patients who take too much medication. I mean painkillers. ... This might lead to an addiction, I would be rather careful.” Patient 3

“Some types of medication might be very interesting for a specific type of patients. If you share your room with four other patients, and there is a box full of tranquilizers available... This might be stolen in some way!” Physician 6

Hospital pharmacists and physicians were concerned about the risks of medication errors. In particular, hospital pharmacists stated that patients, who already administered medication incorrectly at home, would continue this practice during self-management of medication in hospital. Physicians stated there was a risk of medication errors occurring, and there was the possibility of not achieving the expected outcome of therapy because of these medication errors.

“Misuse of sleeping tablets, for example, is often a problem (in self-management of medication) and then you no longer have any oversight.” Physician 6

Since patients needed to take medication from the hospital formulary, patients, nurses and hospital pharmacists questioned whether patients would be able to recognise generic alternatives of their home medications. Generic or brand alternatives might lead to confusion for patients who self-manage their medication.

“That also means that the patient doesn’t recognise his medication as it normally has a pink hearted shape – something he needs to take for his heart – but now in the hospital it is, for example, no longer a pink pill but a white one.” Nurse 9

Another consequence of self-management of medication was mentioned by one patient. When removing medication from the container herself, other patients in the room could observe the exact amount of medication that she needed to take. She perceived the visibility of the act of preparing the medication herself as losing her privacy in hospital.

“They (fellow patients) also see that you are taking medication but everything is together in one container. But if you take it yourself... then it stands out more. That you are taking several pills or that you get them in a little container.” Patient 3

An additional disadvantage as voiced by physicians, was the situation involving medications that were partially self-managed by a patient and partially administered by nurses as this change in responsibility could lead to confusion for the patient.

“I think that it is also difficult for a patient if he takes his pills from home ... and then the nurse comes in and she gives another extra container of medication.” Physician 6

Disadvantages for nurses

Nurses and physicians suggested providing education during self-management of medication was a time-consuming intervention. Given the current working environment, nurses already lacked time during their shifts.

“The greatest disadvantage for care givers is that if the patient still has to be taught (to self-administer medication), it takes more time.” Nurse 7

“In order to work patient centred, we need to have some resources to deliver this quality. At this moment, we are confronted with staff cut backs. We got the feeling we cannot deliver the quality we would like to.” Nurse 6

Disadvantages for physicians

Also for physicians, one specific disadvantage was discussed. It was perceived that physicians would feel personally responsible, if medication errors occurred during self-management of medication.

Opportunities for self-management of medication

Many opportunities were discussed during the interviews (see Table 5). Because of their diversity, they were subdivided into opportunities related to the organisation, the patient and implementation.

Opportunities related to the organisation

An opportunity considered by patients, nurses and physicians was that bedside lockers were already available in the patient’s room. As such, medications could easily be locked up. This is, however, not

the case in all hospitals. Patients also mentioned it was possible to take medication in almost every room of the hospital. In addition, patients could retrieve water or coffee in their room, and in every corridor. This retrieval would facilitate the intake of self-managed medication.

“As far as I know in every patient room there are lockers... why shouldn't you keep medication in there?”
Physician 1

“If it is urgent (taking medication) then I take them with me. I can always get a glass of water here.” Patient 1

Some nurses stated they did have a well-designed software application for medication self-management. This software provided a clear overview of self-managed medication and medication administered by nurses. This is, however, not the case in all hospitals. Another opportunity for self-management was the possible provision of unit dose medication at the hospital pharmacy. Hospital pharmacists also confirmed that the current logistic process for medication distribution could be used for patients that self-managed their medication.

“It is very noticeable (self-managed medication), it is obvious for anyone to see, it is a big red cross.” Nurse 1

“That they (pharmaceutical companies) provide packaging that is all in dosage units. ... A number of companies already do this, but not all.” Hospital pharmacist 6

Opportunities related to the patient

Two specific opportunities for self-management of medication were related to the patient. Nurses mentioned the presence of intrinsically motivated patients for self-management of medication. These patients already asked about the possibility to self-manage their medication. Patients, nurses and hospital pharmacists agreed that patients sometimes had better medication knowledge, compared to the nurse or the treating physician.

“For medication that the patient already knows and which the patient is in fact taking at home when he is admitted here for another operation or disease, then I can see advantages for the nursing staff of self-management of that medication. In that sense, the patient often knows all his (self-managed) medication better than the nurses or the treating physician, because it often involves something completely different to the disease for which he is being treated.” Hospital pharmacist 1

Opportunities related to the implementation

Lastly, some opportunities directly related to the implementation of self-management of medication. Nurses, hospital pharmacists and patients emphasised that self-management of medication was actually being conducted on some wards. Moreover, some nurses stated that their team was already willing to allow and implement self-management of medication.

“Yes, they always give a good explanation about how you should do it (self-injection of insulin during hospitalisation).” Patient 6

Patients mentioned that when they self-managed their medication, health care providers already monitored their medication intake. Patients and hospital pharmacists also emphasised that education before discharge was already provided. One patient referred to the pharmacy assistants as an opportunity for providing education concerning medication, as they were present at the hospital pharmacy.

“So that (education) is, naturally, now partly done by the nurse, even if it is not self-managed it is nevertheless stated how I should take it and when and how after discharge from hospital.” Hospital pharmacist 2

“She (pharmacy assistant) can also explain about (self-management of medication) before meals, after meals, yes that sort of thing.” Patient 3

Threats for self-management of medication

Some threats for self-management of medication were expressed by health care providers. These threats concerned obstacles related to the implementation of self-managed medication and obstacles concerning the medication itself. In comparison to nurses, who stated a lot of threats, hospital pharmacists and physicians stated fewer threats (see Table 6).

Obstacles related to the implementation

Four obstacles were identified relating to the implementation of self-management of medication. A much-debated obstacle during the interviews, and one about which all health care providers were unanimous about, was the absence of a clearly defined legal context in which responsibilities were determined. In addition, physicians also stated the challenge of how to decide who was able to self-manage. A structured way of approaching this ‘selection’ of patients of who were able to self-manage their medication was lacking.

“Surely it is important that everyone knows who is responsible and for what, and to what degree? And if the hospital pharmacist is involved ... then procedures have to be established ... a decision tree with which the patient has to comply, if it happens under these conditions it can be done.” Hospital pharmacist 2

Another obstacle concerned nurses’ and physicians’ worries about the adoption of other ways of approaching medication management. Changing the current fixed routine of medication management in hospital might be challenging. Moreover, nurses and hospital pharmacists perceived the current work environment and limited time as obstacles for educating patients during self-management of their medication.

“It is of course a completely different attitude and approach by care workers and will require another approach, another way of thinking. On one side, it will be time-saving for the nursing staff, on the other, they will have to give other information because something like this is different and it needs to be looked at differently.” Physician

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Obstacles concerning medication

Other important threats for self-management of medication were some obstacles related to medication. During hospitalisation, it was mandatory that medication was delivered by the hospital pharmacy; therefore, patients would receive medication from the present medicines formulary of that specific hospital. It was also a well-known problem in hospital pharmacies to make sure that medication arrived on time on the wards. Hence, problems on stock shortages or rare medications were common.

“We work with the pharmacy which is not so efficient here ... the medication arrives here but it is not always on time.” Nurse 5

Other perceived obstacles related to the medication schedule. Many nurses stated that changes in the medication schedule could cause problems. These changes could be caused by medical examinations that implied adaptations in the medication schedule due to, for example, fasting before having surgery. Otherwise, changes could be linked to non-stable medication schedules, for example patients on warfarin. Furthermore, nurses were worried about self-management of fragile or high risk medication, for example medication for kidney transplant patients.

“If a patient with acute heart failure deteriorates, his medication will be adjusted. The type of medication might also change during hospitalisation. If so, I think he cannot self-manage as long as his medication schedule is unstable.” Nurse 7

“Medication for kidney patients is so delicate, so precise that they (care team) want to have it all in their own hands. We will rarely be able to put a red star next to a kidney patient [mark of self-management of medication].” Nurse 1

Practically, there was a lack of a well-designed software application for medication self-management. Health care providers believed this software would enable caregivers to tick off one self-managed medication at a time, thereby providing a clear overview on which medication was self-managed and which was managed by nurses. Also, it was perceived that this overview should be available for all nurses, physicians, and hospital pharmacists involved in the patients' care.

In the end, not every hospital had lockers in their patient rooms in order to be able to lock away self-managed medication. Therefore, in some cases this was an obstacle for self-management of medication.

“Our electronic patient file also doesn’t lend itself to indicating: what is electronic, under individual control? We could put home medication completely under the individual’s control but then you can’t directly see what that patient is taking.” Nurse 7

Conditions for allowing self-management of medication

Health care providers and patients mentioned important conditions for allowing self-management of medication. Hence, question 5 was added after the first three interviews (see Box 1). As shown in Table 7, these conditions were subdivided into conditions related to the patient, the medication and the organisation.

Conditions related to the patient

The anticipated conditions that patients had to meet were very clear; the patient had to be self-managing at home before and after hospitalisation, had to be willing to self-manage medication whilst in hospital, and had to be able -mentally and physically- to self-manage medication. In addition to these conditions, patients had to take their part of the responsibility, and they should have knowledge on the self-managed medication. Not only did patients’ characteristics have to be evaluated, but also the type, the amount of different medication and the administration route of the medication had to be identified.

Conditions related to the medication

Physicians and nurses cited some prerequisite requirements that medication had to meet. Self-managed medication had to be low risk medication, patients should not self-manage too many different types of medication, and patients could not self-manage medication which had to be administered intravenously, intramuscularly or subcutaneously.

Conditions related to the organisation

Moreover, specific conditions were described that had to be met by the organisation in order to self-manage medication. These conditions involved a clear legal context with defined responsibilities in case of self-management, a well-designed software application for self-management which included an overview of both self-managed medication, as well as medication administered by nurses. Furthermore, a medication review could be performed on both self-managed medications as well as medications administered by nurses. Also, both health care providers and patients preferred a system to monitor medication self-management and lockers to safely hide away self-managed medication.

Health care providers agreed the logistic process concerning self-management had to be clear and had to be considered in discussions with all stakeholders. It had to be clear where to store self-managed

medication in the patients' room, how to preserve certain medication and how to label medication correctly. Furthermore, health care providers and patients needed to be notified if any changes occurred in the self-managed medication schedule.

DISCUSSION

Main findings

This study identified comprehensively the strengths, weaknesses, opportunities and threats of self-management of medication in hospital (see Table 2). Overall, it is possible to conclude that self-management of medication was found to be very beneficial especially for patients and for nurses, and the process facilitated collaboration between all stakeholders. Most strengths were previously described in a qualitative patients' perspective study and in a systematic review (Manias, Beanland, Riley, & Baker, 2004; Richardson et al., 2014). The benefits for patients being able to practice medication intake and management - resulting in an increased patient confidence before discharge and an improved therapeutic adherence after discharge - were also described in a study concerning the supporting measures by the healthcare team in kidney transplant patients (Williams, Low, Manias, & Crawford, 2016). Weaknesses of self-management of medication concerned disadvantages for patients, nurses and physicians. While aspects of these results have been previously described, insights from physicians on this topic have been lacking until now (Richardson et al., 2014; Williams et al., 2016). Self-management of medication created possible tensions between enabling patients to self-manage medication - resulting in several benefits -, and the possible misuse of medication or increased incidence of medication errors. At this moment, a small body of evidence suggests that self-management of medication would result in reduced medication errors (Richardson et al., 2014). In addition, participants indicated that patients might know their own medication better compared to nurses or the treating physician on the ward. This increased knowledge might be related to the benefit of creating a safer medication management.

The opportunities described in this study were not previously explored. They reveal the differences in implementing self-management of medication in different hospitals, as some hospitals had lockers in the patients' room and some hospitals did not. Also, some hospitals did have a medication management program which was suitable for self-management, others did not. This variation resulted in some items were being described as obstacles, if they were absent or inadequate or opportunities if available. The threats of self-management concerned overall threats, such as the lack of a clearly defined context and an assessment to define the appropriateness of patients, the changes in routines and habits, and the limited time within the current work environment, were similar to the threats described in the literature (Manias et al., 2004; Richardson et al., 2014). Further interpretation of the

study results, and specifically the effect of self-management on time management, indicated that some aspects of self-management (i.e. providing education), will result in a time-consuming intervention, while others (i.e. less preparation of medication by nurses) will result in a time-saving effect. A study on the effect of self-management on staff satisfaction identified they believed self-management of medication would be time consuming and increase work stress. Other studies indicated that self-management increased time spent on medication management, and patient education. Nevertheless, also reports from a reduction of time spent on medication administration by nurses were found. These diverse findings suggest further research should focus on the impact of self-management on time management for every stakeholder (Richardson et al., 2014).

Implications for practice - process changes advised for implementing self-management of medication

The findings of this study result in potentially important implications for practice. They provided comprehensive insights on the viewpoints of all relevant stakeholders concerning self-management of medication. Findings also indicated some aspects for implementing self-management of medication are lacking. For example, there is the need for a protocol or procedure including tailor made agreements on medication logistic for every hospital or ward when self-managing medication. Also, a protocol or procedure would create clarity on how to assess the competences of the eligible patient population, how medication delivery will take place, the management of self-managed high risk medication, and how to monitor medication intake. This policy should consist of a procedure on self-management of medication during hospitalisation; an assessment to decide whether patients are able to self-manage their medication; a monitoring tool for medication intake during self-management of their medication and support both for patients and involved caregivers. A clear social and legal context should be provided to facilitate self-management of medication and to facilitate smooth promotion of the self-management of medication process.

Overall, the results of this study gave new insights on the actual implementation of self-management. Therefore, the research team explored the feasibility of self-management of medication. The medication management process as described by the Nursing and Midwifery Council, and the nursing medication processes as described by Dilles et al, were used as guides to describe adaptations in the medication management process to enable implementation of self-management of medication (Dilles, Elseviers, Van Rompaey, Van Bortel, & Stichele, 2011; Nursing and Midwifery Council, 2007). A flowchart was created including advised process changes for implementing self-management of medication (see Figure 1).

The medication management process starts with a prescription for medication. During the *first* step nurses collect data on the patients' competences to self-manage their medication. To evaluate these

competences, an assessment is needed. During interviews, health care providers and patients comprehensively provided their opinions on the type of patients and specific conditions that had to be met before allowing self-administration of medication. The conditions that were related to the patient were also described in the qualitative study by Manias et al. and were included in the Self-Administration of Medication (SAM) tool, which was validated by these authors (Anderson, Manias, Kusljic, & Finch, 2014; Manias et al., 2004).

During the *second* step, if a screening tool indicates that a patient is competent for self-management; these medication needs to be supplied. Hospital pharmacists articulated that medication shortages in hospital pharmacies were a barrier for this supply. These shortages were not directly related to self-management, although, they had a considerable influence on medication management. Participants described the use of home medicines brought into hospital by patients in order to be able to continue the patients' therapy in hospital. This issue has been extensively described in a survey by the European Association of Hospital Pharmacists (EAHP) in 2014 (Preece & Price, 2014). Self-managed medication should be supplied in unit dose, hence cutting each medicine out of a medication blister strip results in medication which cannot be recognised or identified by the patient, nor can expiration dates or lot numbers be retrieved. Furthermore, hospital pharmacies supply medication as recommended by their formulary; hence it might be difficult for patients to recognise generic and brand names. It would be ideal to supply medication which is known by the patient; nevertheless, it is not possible to prescribe outside the formulary. Also, the software application of the hospital should provide an overview of self-managed and medication managed by nurses. This software should be able to show health care providers an up to date medication chart at all time.

The *third* step, dispensing medication, might have been influenced by stock shortages or rare medications that were difficult to obtain. It is desirable that (self-managed) medication is delivered directly on the hospital ward.

The abovementioned three steps indicate that hospital pharmacies and their current logistic process of preparing, supplying and dispensing medication, might need some adaptation.

In the next phase of the medication management process, during the *fourth* step, planning the action of medication (self-) management is essential. If a patient is allowed to self-manage medication, a well-designed software application was deemed necessary. This software should provide nurses with an overview of self-managed medicines and the possibility to tick off medicine by medicine if they had been taken for consumption.

During the *fifth* step, the actual action of self-management of medication starts. This medication needs to be stored in a safe manner; therefore, it is recommended that lockers should be provided in the patient room. Additionally, the administration of self-managed medication implies supporting and informing patients by providing education on self-managed medication. This might also overcome problems when patients need to take generic or brand medication that they did not recognise. A systematic review on existing self-management programmes indicated most of the programs already provide an educational aspect (Richardson et al., 2014). While patients self-manage their medication, monitoring (i.e. type of medicine taken, number of medicines taken, medication errors) is essential. A review on the literature of studies on patient self-management measured outcomes such as medication errors or patient compliance; most of these studies used pill counts and patient self-reported compliance (Richardson et al., 2014).

During the entire process of self-management of medication, self-management will result in changes in medication management routines which have to be managed. Nurses will, instead of preparing and administering medication, assess patients' competence or appropriateness concerning self-management of medication, support and provide education concerning medication and evaluate the possibility of self-management of medication during the entire hospital stay.

Also, the responsibilities of every stakeholder should be clearly defined. In Belgian hospitals, it is legally possible to allow self-management. If implemented, this has to be noted in the patients' personal medical file and it has to be clearly described which medication the patient self-manages and which are administered by nurses. During hospitalisation, health care providers have a 'duty of care', and a 'duty of surveillance'. If problems concerning medication arise, these have to be noted in the patients' personal medical file. The treating physician is then held responsible (Care inspection of the Flemish division of Wellbeing, 2015).

Self-management of medication should be a multidisciplinary intervention. The importance of this approach has already been described as an important factor to achieve improved patient safety (Adhikari, Tocher, Smith, Corcoran, & MacArthur, 2014). Given the strengths, weaknesses, opportunities and threats stated by nurses, it is possible to conclude nurses play a key-role within this multi-disciplinary approach (Adhikari et al., 2014).

Before implementing this specific medication management process for self-management of medication in daily practice, additional research is recommended. The validity and feasibility for the use in clinical practice should be tested. Afterwards, in an interventional study the effect of the adjusted process of self-management of medication on outcome parameters (i.e. time management, medication administration errors) could be tested. Next to the process of self-management, additional

tools should be developed and tested. This concerns for example a screening tool to screen patients' abilities or competences to self-manage medication in hospital, a tool to monitor the patients' medication intake, and supportive tools to support patients while self-managing medication.

Strengths and limitations

The key strength of the study was the inclusion of the perception of all stakeholders comprising nurses, physicians, hospital pharmacists and patients who were situated in three different hospitals. A limitation of the study was the short duration of patient interviews, compared to the interviews with health care providers. It is possible that since self-management of medication is not actively followed in hospital settings, the process of patients reflecting on the topic of self-management of medication might be difficult. Not all patients in this study did self-manage their medication. Additional studies might focus on the perspectives of patients that structurally self-manage their medication in hospital, and should include a larger sample, with both male and female participants. The views expressed in this study may have reflected on the fact that individuals who participated were interested and in favour of the practice of self-management of medication compared with those who did not participate.

CONCLUSION

This study provides unique insights on the possible strengths, weaknesses, opportunities and threats for self-management concerning four important stakeholders; patients, nurses, hospital pharmacists, and physicians. Strengths of self-management were mostly perceived as benefits for patients and nurses, and benefits for collaboration between stakeholders. Weaknesses concerned possible disadvantages for patients, nurses, and physicians. Opportunities for self-management were mostly related to the organisation, the patients itself and some factors for facilitating the implementation. Nevertheless, some factors impede implementation, also some obstacles concerning medication were described as threats for self-management. After interpreting the study findings, adaptations in the medication management process were described. This newly described process provides the basics to start implementing self-management of medication in daily practice. Further research to validate and test the process, and to develop practical additional tools is recommended.

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Characteristics (n= 30)	Hospital 1	Hospital 2	Hospital 3
Hospital characteristics			
Type of hospital	regional private hospital	private university hospital	public university hospital
Number of hospital beds	451	573	1061
Codes interviewed groups *			
<i>Specialty area</i>			
Patients	P1, P3, P4 <i>gastro-oncology, pulmonology-nephrology, general surgery</i>	P5, P7 <i>gastroenterology, cardiology-nephrology</i>	P6, P8 <i>endocrinology nephrology</i>
Nurses	N1 - N4 <i>pulmonology-nephrology, gastro-oncology, geriatrics, general surgery</i>	N5 - N8 <i>gastroenterology, geriatrics, cardiology-nephrology, geriatrics</i>	N9 - N11 <i>endocrinology, nephrology, neurology</i>
Treating physicians	TP1 - TP3 <i>pulmonologist, geriatrician, endocrinologist</i>	TP4 <i>geriatrician</i>	TP5, TP6 <i>cardiologist, nephrologist</i>
Hospital pharmacists	HP1, HP2 <i>hospital pharmacy</i>	HP3, HP4 <i>hospital pharmacy</i>	HP5, HP6 <i>hospital pharmacy</i>
Patients			
Male	0	0	1
Female	3	2	1
Nurses			
Male	0	0	1
Female	4	4	2
Treating physicians			
Male	2	1	1
Female	1	0	1
Hospital pharmacists			
Male	1	0	2
Female	1	2	0

Duration of the interviews (minutes, mean, SD)

Patients	13 [9-20]	12 [11-13]	11 [8-13]
Nurses	23 [19-29]	27 [19-43]	27 [20-32]
Treating physicians	24 [20-28]	29	23 [18-27]
Hospital pharmacists	29 [29-29]	22 [19-24]	24 [20-28]

* For each person in each group an individualised code was used; P: patient, N: nurse, TP: treating physician, HP: hospital pharmacist.

Table 1 Characteristics of the interviewed groups per hospital.

Strengths of self-management of medication

- Benefits for patients
- Benefits for nurses
- Benefits for collaboration

Weaknesses of self-management of medication

- Disadvantages for patients
- Disadvantages for nurses
- Disadvantages for physicians

Opportunities for self-management of medication

- Opportunities related to the organisation
- Opportunities related to the patient
- Opportunities related to the implementation

Threats for self-management of medication

- Obstacles related to the implementation
- Obstacles concerning medication

Table 2 Themes and subthemes of the SWOT-analysis

Strengths of self-management of medication		Stated by			
Benefits for patients		Nurses	Hospital pharmacists	Physicians	Patients
	- continuing the medication management routines from home whilst in hospital	x	x	x	x
	- enhancing medication adherence	x	x	x	x
	- practicing their therapy in a controlled hospital environment	x	x	x	x
	- practicing medication will result in a better therapeutic adherence after discharge		x	x	
	- practicing medication will result in an increased patient confidence towards medication management before discharge	x			
	- increased medication knowledge caused by education and independency training	x	x		
	- patients would feel more autonomous and independent	x	x	x	x
	- increased patient satisfaction			x	
	- patients can let go of the roll of controlling nurses of administering medication correct				x
	- patients can control their medication intake and therefor have full control on their health/illness				x
	- safer medication management	x		x	x
Benefits for nurses					
	- self-management of medication is time-saving for nurses because patients do prepare and administer medication themselves	x	x	x	
	- self-management of medication is time-saving for nurses because nurses do not need to be unnecessary bothered by patients concerning medication				x

Benefits for collaboration				
- improved communication between physicians and nurses/patients, concerning changes in medication schedules	x			
- improved relationship between patients and the health care providing team caused by self-management		x	x	

Table 3 Strengths of self-management of medication

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Weaknesses of self-management of medication		Stated by			
		Nurses	Hospital pharmacists	Physicians	Patients
Disadvantages for patients					
	- possible misuse of self-managed medication			X	X
	- medication could be stolen and abused by other patients			X	
	- risk for medication errors because patients already take medication wrong at home and continue this in self-management whilst in hospital		X		
	- risk for medication errors			X	
	- not getting the expected outcome of the therapy caused by medication errors			X	
	- use of medicines formulary results in less recognisability of medication	X	X		X
	- other patients will be able to see the exact amount different medication when preparing				X
	- patients will receive both self-managed medication and medication administered by nurses			X	
Disadvantages for nurses					
	- providing education results in a more time-consuming intervention compared to preparing medication by nurses	X		X	
Disadvantages for physicians					
	- responsible if medication errors occur during self-management			X	

Table 4 Weaknesses of self-management of medication

Opportunities for self-management of medication	Stated by			
Opportunities related to the organisation	Nurses	Hospital pharmacists	Physicians	Patients
- lockers are already available at the patient's room	x		x	x
- possibility to take medication everywhere in the hospital				x
- a clear overview of self-managed medication and medication administered by nurses	x			
- unit dose medication is provided at the hospital pharmacy		x		
- delivery of self-managed medication can be the same as medication administered by nurses		x		
Opportunities related to the patient				
- intrinsically motivated patients for self-management of medication	x			
- patients sometimes know their medication better in comparison with the nurse or treating physician	x	x		x
Opportunities related to the implementation				
- self-management of medication does already occur at their ward	x	x		x
- a team of nurses who are willing to allow/implement self-management of medication	x			
- when self-administering medication health care providers already monitor medication intake				x
- education before discharge is already provided		x		x
- pharmacists assistants are possibly available to provide education				x

Table 5 Opportunities for self-management of medication

Threats for self-management of medication	Stated by			
	Nurses	Hospital pharmacists	Physicians	Patients
Obstacles related to the implementation				
- absence of a clearly defined legal context in which responsibilities were determined	x	x	x	
- assessing the patients' competences in order to self-administer			x	
- changes in medication management routines and habits at the hospital	x		x	
- current work environment and the limited time for both nurses and hospital pharmacists to educate patients	x	x		
Obstacles concerning medication				
- medication has to be provided from the present formulary	x	x		
- the delivery of medication at the right time	x	x		
- changes in this medication schedule caused by medical examinations during hospitalisation	x		x	
- a continuously changing or non-stable medication schedule	x			
- a medication schedule with fragile medication or high risk medication	x			
- the lack of medication program who allows to tick of one medicine at a time	x			
- the lack of medication program who allows to show an overview of the medication schedule for the hospital pharmacist and other health care providers	x	x		
- the lack of a locker to safely hide the medication itself	x			

Table 6 Threats for self-management of medication

Conditions for allowing self-management of medication		Stated by			
Conditions related to the patient		Nurses	Hospital pharmacists	Physicians	Patients
- patient already self-managed medication at home/before admission		x	x	x	
- patient will self-manage medication after discharge		x			
- patient is willing to self-manage medication whilst in hospital		x			
- patient is willing to take his responsibility during self-management				x	
- patient's mental and physical condition is adequate		x	x	x	x
- patient needs to have knowledge about the self-managed medication				x	
Conditions related to the medication					
- patient needs to take low risk medication				x	
- patient does not take too many different types of medication				x	
- patient cannot self-administer intravenous, intramuscular or subcutaneous medication		x			
Conditions related to the organisation of self-management of medication					
- presence of a clear legal context with defined responsibilities in case of self-management of medication		x	x	x	
- an overview of both self-managed medication as medication administered by nurses for every health care provider		x	x	x	
- a medication review of both self-managed medication as medication administered by nurses		x	x	x	
- a monitoring system for the medication intake of patients self-administering		x	x	x	x

- ability to lock away self-managed medication	x	x	x	x
- an agreement concerning self-managed medication logistics i.e. supply of stock at the patient room, correct preservation and labelling of medication	x	x	x	
- if the medication schedule has been changed, health care providers and patients have to be notified	x			

Table 7 Conditions for allowing self-management of medication

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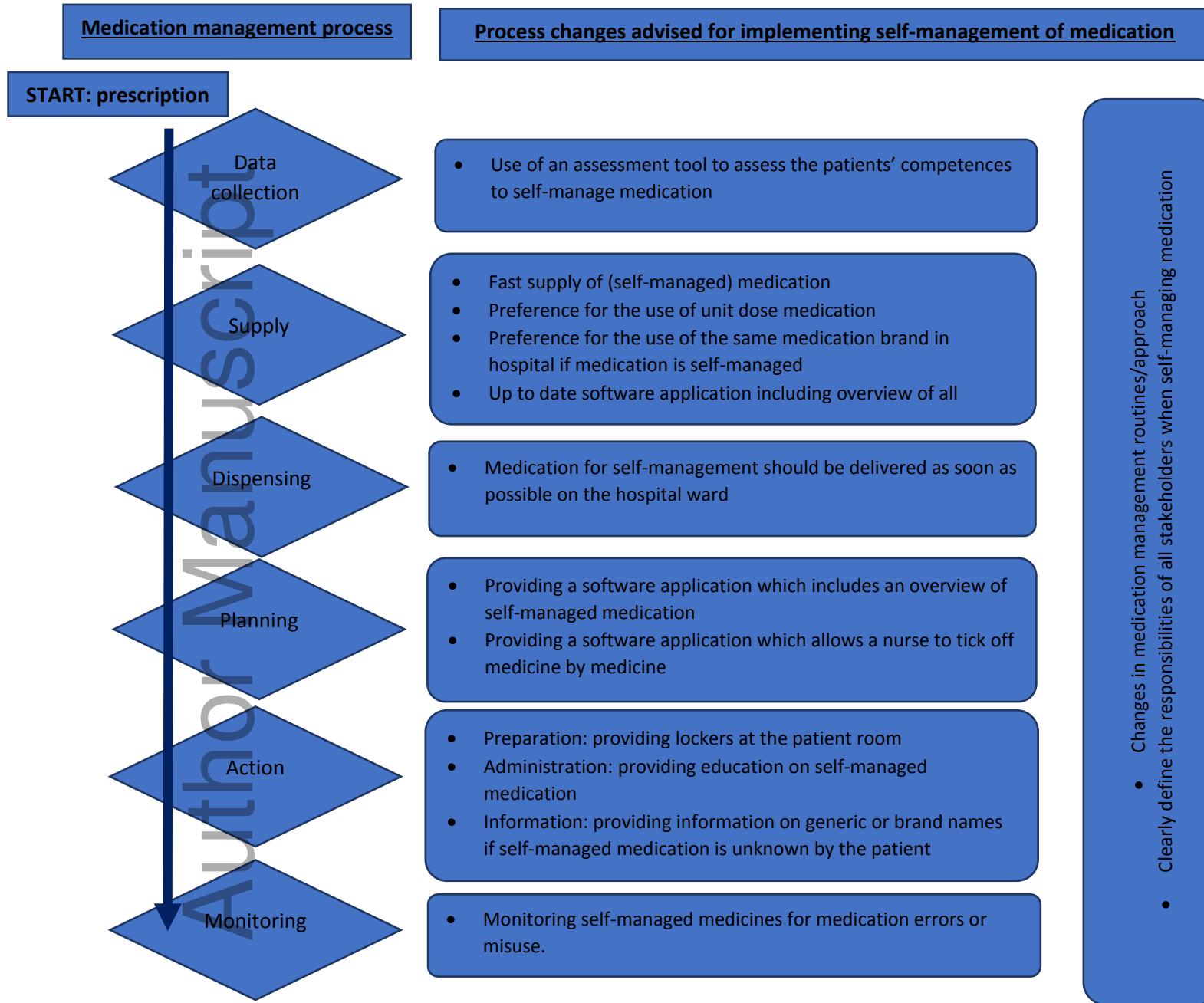


Figure 1. Advised changes in the medication management process for implementing self-management of medication