

Multiple data sources regarding patients` medication

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1 Introduction

When patients are admitted to a hospital, the physicians create a written list with the drugs the patient is using. This is referred to as the medication list. It has been focused on the quality of the content in those, and both domestic and international research have shown deviation between the medication lists and the medication the patient actually is using [1], [2], [3], [4].

A prerequisite to safe drug treatment is correct information about what drugs the patient are using. Unfortunately, medication errors and misunderstandings often occur when patients are admitted and discharged to hospitals. As a result, it is hard to control and keep track of the prescribed and administered medications. This leads to errors and deficiencies in the medication lists. The consequences for the patients might be increased risk of adverse effects, poor efficacy of the treatment or in worst-case toxic reactions and treatment failure to severe illness.

There are several reasons for the deviations. The patient is commonly self the source of information. There neither has been no systematically method to interview the patient to obtain the correct and complete information nor is the medication overview from the general practitioner (GP) to be trusted [5].

There is a general perception both from most health care professionals and from authorities that information technology like a national core record or an electronic medication management system (EMMS) could help improve the issues mentioned above and thereby improving the quality of the patient treatment. This leads to the following research questions:

How do clinicians today practice to find information about patients` medication?

How should this affect the implementation of an EMMS?

Based on this, we want to explore the work practice regarding obtaining patients` medication lists. We are taking a work practice perspective [6], [7], [8] and have performed a case study at the University Hospital of Northern Norway.

2 Theory

Ensuring high quality of treatment and care is a pressing issue for health authorities. In a 2000 US Institute of Medicine report, the Committee on Quality of

Health Care in America estimated that medical errors were the leading cause of death in the United States [9]. Such errors are generally associated with an increased burden of illness for patients and increased expenditures for hospital treatment [10], [11].

One reason for this is that patients' drug treatment is increasingly more complicated. In addition, some hospitalized patients will generate high volumes of data. Today easy access to all the important data and ability to present the data in an understandable way together with an overview of the medication is lacking. Needed information and data are saved in different electronic and paper-based systems. This makes it difficult and time consuming for health professionals to make well-founded decisions regarding patients' treatment.

One of the Norwegian authorities' goal is to utilize the potential of modern technology to increase quality and patient safety in the health care sector [12]. This include the intention to create a national core record that should be available for all relevant actors in the health care system. The core record is intended to contain important health information included drugs that the patients currently are using. Integrations between the core record and the EMMS are supposed to help in improving the patients' drug lists and provide the clinicians with important information about the patient.

Unfortunately, there are not much literature that support these perceptions of improved quality of the patient treatment by introducing information technology [13], [14].

3 Method

This is an interpretive field study of the medication process at the University Hospital of Northern Norway. The interpretive approach has the potential to produce deep insight into the medication processes [15]. We have studied and compared the medication management process across three wards: the Emergency Unit, the Cardiology Ward and the Gastro Surgical Unit. Different routines and practices at each ward makes it important to involve several wards in the study.

We have conducted observations and performed semi-structured interviews with six nurses and six physicians. The aim is to understand the medication process in detail. A digital voice recorder was used to record the interviews. The interviews were than transcribed word by word. We observed the physicians at the Emergency unit during their work on making a medication list. We observed two nurses at the Cardiology ward when they performed reconciliations of medication lists.

The first author is a pharmacist and a member of the North Region Health Organization. The benefit of being familiar with the organization and having knowledge about medication has made it easier to understand the medication process and to understand the challenges and problems that have been identified during the data collection. On the other hand has this knowledge included assumptions and preconceptions regarding the medication process prior to the investigation.

4 The case

We have included three wards in this study in order to reveal how clinicians in different settings find information about the patients' medication.

Jane is an intern at the Emergency Unit. She tells that some of the patients admitted does not know the name and doses of the drugs they are using. Many patients believe that the hospital has all the information needed about their medication. Jane said:

Some patients are using quite a lot. Actually quite large doses, without any idea why they are using it. They assume that we know, so they get grumpy when we ask: "Are you using this drug?" "Yes, but isn't that written in the papers?"

Both nurses and physicians means that the patients should be more aware of what kind of drugs they are using.

Some of the patients arriving have a referral from the GP including a drug list. But they don't trust the information they get.

Unfortunately, some GPs do not update their patient record. For instance, a ten-day antibiotic treatment from 2008 is still in the list containing the drugs the patient currently is using.

Sometimes the source of information is a relative to the patient. If the patient is using municipality health services, this could be another source for information.

Another source when information is missing:

Then you have to read old discharge rapports to look for information about changes.

This means that it is important that someone updates the information when changes are made. Very few cares about this task today. In addition, the data in the discharge rapports is not structured, but consists of prose. This makes it difficult and time consuming to find the information you need.

The process of listing the patient's medication takes time and it is often doubt about the content in the list. Brad, a residence physician, says:

Sometimes it is quick. Because some people have order in their affairs. If not, it usually takes very long time. And sometimes is it impossible because there is doubt and the patient don't know himself.

Paul is a residence physician at the Cardiology Ward. He says:

I know that the quality of the medication lists are a problem. You cannot trust one source, you have to speak with the patient, speak with the GP and... It is a bit like detective work.

The Cardiology Ward has decided to reconcile all medication lists. The nurses perform the reconciliation. And if the patient don't know the answer to the questions, the nurse commonly spend time calling the patients next of kin, the GP or other community health care services. One of the nurses says:

The goal is to perform reconciliations for all patients. But if it takes long time and you have five-six patient, then there just isn't enough time.

Another issue is that even if all the systems are communicating with each other in the future, and changes in the medication in one system automatically leads to changes in the other systems, you have to communicate with the patient:

Sometimes do the GP provides us with a correct list including all eight drugs the patient should be using. But the patient is only using the five drugs he wants to use. He is gladly listing the eight drugs, but if you ask more directly, he tells that he is actually only using five because for instance the diuretic is a bit troublesome.

The physicians at the Gastro Surgical Unit list the medication in the chart for the admitted patients. Both of the interviewed physicians find this task time consuming, and like at the Cardiology ward one of them describe it as detective work. One of them elaborate:

Yes, it takes time to figure out what they actually are using. Even if they already have a list, I have to check for changes. Yesterday I had a patient that was discharged two weeks ago with a list including 18 drugs. So I was prepared that it was what he should get this time as well, but it turned out that he only had two drugs left, Creon and Somac.

5 Discussion

Information about the patients' medication is hard to find and the clinicians have to look in several different systems. The case shows that common sources for information are the patient him or her selves, the GP, the home care service, the patient record from a previous hospital stay or the patients' next of kind. Since there is no source about the patients' medication that really could be trusted, the quality of the drug lists is often uncertain even if several sources mentioned above are searched. The hope for the future is a national core record containing a correct drug list. The core record is supposed to fetch information from the e-prescription mediator that contain prescriptions from all health care services. But there will still be issues regarding updating the lists. A prescription stays in the e-prescription mediator for three months. If a physician make changes during this time, he has to discontinue or change the previous prescription to ensure correct drug lists. In addition will no over the counter drugs be included in the core record. This implies that there still will be a need for manual updating of drug information. Updating the lists is a task that is not prioritized today, and it is not obvious that technology would change this.

A new EMMS and national core record would not change the fact that improved quality of the medication lists entails increased effort from clinicians at several different levels in the health care system. And it depends on how much work and time they are willing and have the opportunity to use on the task.

The patients are not aware of the poor quality of their drug lists. They believe that changes made in the medication at one health care service are known by other health

services they attend, and most patients have insufficient overview over their own medication. The result is poor quality in the majority of the drug lists. This is intimidating considering the consequences this might lead to for the hospital expenditure and especially for the patients.

In the future with updated drug lists in the core record, some will not see the need to communicate with the patient regarding their drugs. This could make the physician miss important information about compliance. Like the example in the case where the patient is supposed to use eighth drugs, but are choosing to just use five of the prescribed drugs. Technology would not solve the fact that the patient do not comply with the medication list from the health care service. To detect this, you have to speak with the patient.

6 Conclusion

The quality of the medication lists in hospitals should not be taken for granted. The patients are not aware of the poor quality. The clinicians are aware, and they are frustrated due to all the different sources they have to look for information in and because they cannot trust that the sources have correct information.

Technology alone is not enough to solve the quality problem. Work practices have to be improved as well.

In addition, we do know that successful implementation of new IT-systems in health care is hard to achieve. It will most likely be a gap between the reality and the purpose of the implementation.

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