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Improving the Coordination of Patients' Medication Management: A Regional Finnish Development Project

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Abstract. In this paper, we present an overview of activities and results from a regional development project in Finland. The aim in this project was to analyze how healthcare providers produce and receive information on a patient's medication, and to identify opportunities to improve the quality, effectiveness, availability and collaboration of social and healthcare services in relation to medication information. The project focused on the most important points in patients' medication management such as home care and care transitions. In a regional development project, data was gathered by interviews and a multi professional workshop. The study revealed that medication information reached only some professionals and lay caregivers despite electronic patient record (EPR) systems and tools. Differences in work processes related to medication reconciliation and information management were discussed in the group meeting and were regarded as a considerable risk for patient safety.

Keywords. Medication management, regional development project, work process

Introduction

The growing number of elderly people staying at home with severe or mild health problems has created challenges for managing their medication information and reconciling their medication [1, 2]. Furthermore, confusion in medication is not uncommon when a patient is transferred between two healthcare providers. Despite various tools for medication review used in care transitions, information flow is fragmented across healthcare settings. Various actors, both professional and lay caregivers, administer medication. Adverse events and risks have been reported relation to medication orders, prescriptions as well as missing regimens. Various organizations and units have tried to improve medication management through new tools and work practices.

The documentation of patient data in the Finnish health care system is carried out electronically. Health care centers performed the transition from paper-based records to electronic records in the late 1990s, and hospitals did the same after the year 2000 [3].

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Currently, electronic patient data is utilized at the regional level, and electronic patient record (EPR) distribution covers 100% of both specialized (hospital districts) and primary (health care centers) care [4] in Finland. Many health care organizations and institutions utilize regional systems or services for exchanging patient data. Most of the hospital districts are capable of distributing data in their area at least through electronic referral and discharge systems. The health care centers use part of the regional data exchange system for the epicrisis or discharge summaries. Despite this, according to an analysis of regional information systems [4], patient information has not yet been available to doctors everywhere in Finland via the regional systems. Problems with inter-organizational data exchange have been among the most important information system challenges. Searching for information has been regarded as too laborious and time-consuming, and thus, in spite of the potential benefits, patient information has not been utilized in an optimal way. [4, 5]

All physicians in public health care have EPR applications and prescriptions are produced electronically within the EPR system to the national electronic prescription (ePrescription) center of the Finnish Social Insurance Institution (KELA). Electronic prescriptions from the general practitioners' are available through the national ePrescription center, from where pharmacies can retrieve them. Pharmacies send dispensation information on each prescription electronically to the national ePrescription center. In Finland, the patient needs only his/her a personal health insurance card (Kela card) to get direct subsidy at the pharmacy. [6, 7]

The EPR information sharing infrastructure in Finland is being organized at the national level, although many systems and services are maintained at a regional level. The national EPR architecture will consist of local EPR systems using common data structures and technical standards to be able to connect to the national EPR repository. The repository is a national electronic archive (eArchive) in which all EPR systems and will store the patient records and other EPR data which are made available to other professionals based on the patient's consent. In addition, it includes an electronic view (eView) for citizens, which provides them with access to their own patient data (including both prescriptions and EPR data) and log data. [7, 8]

Medication is a primary factor in patient safety incidents [9]. Most research on medication errors has focused on hospital inpatient settings, but little is known about medication errors in outpatient care [10-12]. Medication errors in outpatient care are probably even more common than in a hospital setting. In Finland more than 70% of all medicines are prescribed in outpatient care [13]. Errors in medication and medication management are common [11].

There are substantial risks related to medication confusions related to transfer of a patient is from one healthcare provider to another [11]. One of the reasons is that healthcare providers have different EPR systems which are not interconnected. Other risks stem from the fact that medication management involves various people with different education and training background. The development efforts for medication management have not been holistic but incoherent and fragmented. Furthermore, the possibilities of health technology and informatics have not been sufficiently utilized to support patient care and safety.

Within an EPR system, medication information is needed in various phases of the workflow and various parts of the care documentation. These include the physician's orders, the medication list, nursing care plans, nursing notes and in other parts of the patient information flow. At the moment, these components are not always interoperable even within a single EPR system. This means that health care

professionals have to make several disparate entries in various modules in order to fully document patients' medication information. In addition, changes in medication information should be updated at every entry in order to make the new information available to all professionals with a legitimate concern in medication of the patient. This increases risks of medication errors through duplicated documentation and copy and paste methods used across non-interoperable systems. As part of the national EPR infrastructure, a national level medication list has been planned, but is not yet operational. One of the main challenges to realize the national level plans in the near future is the upgrading of existing organizational and regional systems to the required national standards and interoperability requirements.

A regional project to study medication information management and to identify local and regional improvement suggestions was set up in Northern Savo, Finland from October 2012 to June 2013. The rationale of the project was to analyze medication management and reconciliation practices on regional level and focus on information flows related to patient-level medication between healthcare providers. The project was conducted with local social, health and homecare providers and other actors involved in the medication process. The aim of the project was to formulate a set of proposed development actions for patient-centered management of medication to be used at regional level.

1. Research setting and research methods

The regional project was started in the city of Kuopio. Kuopio provides primary health care for its 105.000 inhabitants, including health, mental and physical services. In addition, it increasingly develops preventive health care services encouraging the citizens' empowerment and their more active role in their own health [14]. In Northern Savo hospital district there is a university-level teaching hospital providing specialized health care, located in Kuopio. The hospital district is managed and funded by 20 municipalities. In addition, the university hospital has regional responsibility of tertiary care for 817.782 inhabitants in Eastern Finland. A referral from a licensed physician is needed for access to medical care provided in specialized health care hospital.

We utilized an Activity-Driven research approach [15] in the study and used interviews and group discussions in data gathering. Fifteen individuals were interviewed from different organizations related to the medication process: social, health and homecare services, pharmacies, national level authorities and patient organizations. The informants described the most salient points in patient medication management. The interviews provided us with a multi-faceted picture about the current practices and future plans of the participating organizations. In addition, we organized a workshop (42 attendees, representing several organizations) at the end of the January 2013. The workshop participants were divided into four groups, each having several professional roles represented and a named facilitator in the group guiding the discussion. The participants were provided with a short summary of the results of the interviews a few days prior to the workshop. In addition, two keynote presentations in the workshop facilitated thinking and discussions. The workshop with group discussions proved to be an effective means of bringing the different actors together and to discuss the development needs of the complex whole of medication management and to delineate directions towards possible solutions [16, 17]. We utilized a six

dimensioned framework for process and activity analysis (SOLEA6D, see [18]) to analyze and organize the findings in the case report [17].

2. Results

The study, particularly the multi professional group discussions in the workshop revealed that only part of medication information reached some professional and lay caregivers or relatives who participate in the medication management activities. It also emerged in the group discussions that there are differences in the work processes of the actors related to a medication process. Most participants considered that the variety of the work practices poses a significant risk to patient safety.

A key finding of the project was the need for multi-professional collaboration which was expressed by the majority of participants. As such, the existence of this need was not surprising, but there was a very strong consensus on this need in relation to various phases and activities of medication management in different contexts of care that was seen in the workshop. It was deemed necessary to further facilitate this cooperation through specification of health care professionals' roles through enhancing operational models and practices at regional level and through increasing awareness of medication information management practices, including various levels of medication reconciliation.

Both patients and health care professionals stressed the need to develop new tools and interoperability solutions for medication information management. Tools such as medication reminders can help patients to cope with their complex medication.

Another set of results was related to the fact that different professionals need constant training for maintaining and improving skills related to medication management: administration, counseling and documentation skills. Therefore there is a need for selecting and developing quality criteria and indicators for the medication management skills including patient medication information management.

3. Actions proposed at regional level

The results provided guidance for further actions at regional level as planned. The findings offer an objective grounding for planning and implementing further cooperation and development activities. The results stress the need for development of services and tools that support patients to cope with their medication at home by themselves and also by their lay caregivers. For instance the assessment of the capabilities of elderly people to perform medication tasks, easy access to the medication advice and different types of reminders are examples of such services. Personal medication cards which can be connected to low threshold Personal Health Records combined with access to medication orders and medication lists through national services such as eArchive and medication administration tools are examples of potential tools. The findings also emphasize the need to develop work processes to support medication reconciliation in care transitions by health care providers. Operational models and responsibilities for the different professionals must be defined and communicated in such work processes. For instance an operational model including roles and responsibilities for early medication check in patient's admissions and discharges should be specified and introduced.

The utilization of eArchiving for EPR – including medication information – and its integration in daily practices will be crucial. The Finnish Government obligates the use of the system as compulsory and aims at full implementation by 2016[7]. The full deployment of the national eArchiving will significantly change the Finnish health care services. Such significant changes in the information management systems unavoidably have impact on the daily work practices of all actors involved in the medication process. In addition to the core knowledge of medication as a medical treatment, also the information technology and documenting skills of individual actors as well as cross-organizational multi professional co-operational duties, responsibilities and skills must be defined and trained. Such features are needed in systematic educational programs for different professional groups as well as for patients and their lay caregivers.

4. Conclusion

The regional project presented many challenges and possibilities for further projects. These include clarification of concepts and understandability as well as education in best practices and operational models. In addition, knowledge services with low use threshold and encouragement and rewards for educating participants should be introduced. In summary, the project produced results which encourage further networked collaboration, knowledge sharing and collaborative development. A new development study will commence in January 2014 to utilize the results and continue the cooperation towards concrete specification, development, testing and deployment of new operational models and novel tools.

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