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Exploring cooperation through a binder: A context for IT tools in elderly care at home

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Abstract. This paper examines the empirical findings of a study of the work and cooperation taking place within and between the home help service and home health care in a Swedish county. The aim is to explore the current context for the design and development of IT tools that may facilitate cooperation and coordination in elderly care at home. The focus of the study is the use of a tool, a binder, which collects material considered as important to sustain cooperation between and within the two services. The paper illustrates concrete aspects of how different types of material is utilised and how the actual use of the binder reveals both advantages and disadvantages. Through focusing on the binder, aspects that are crucial to consider also when designing IT tools are made visible. These aspects include the need to support the integration of home care information and the importance of assisting asynchronous communication through the facilitation of informal information. It is also necessary to consider the mobile nature of the home care work, and the importance of a patient-centric view that promotes information sharing between the heterogeneous network of actors involved in the home care process, including the care receiver and relatives.

Introduction

The challenges that face the developed countries in respect of elderly care urge health and social care systems to change their current work practices and to increase their collaborative activities. The growing number of elderly people, in combination with a decreasing number of young people, requires not only new

approaches to the organisation of elderly care but also new ways of working (Gröne and Garcia-Barbero, 2001; Leichsenring, 2004). In addition, there is an endeavour to make it possible for the elderly to live at home for as long as possible instead of moving them to an institution (Anderson and Hussey, 2000; SALAR, 2006). This challenge is complex and demands different kinds of solutions. One approach that is considered crucial when providing care of good quality to the elderly in the home is improving the cooperation between health care and social care providers (Bricon-Souf et al., 2005; Reed et al., 2005; SALAR, 2006). Furthermore, technology, and information technology (IT) in particular, is often proposed as a means to facilitate aspects of the work practice and to support cooperation between different care providers (Bricon-Souf et al., 2005; Koch, 2006; Koch et al., 2004; Vimarlund and Olve, 2005).

Research regarding IT tools for elderly care at home has been conducted by different research fields and various IT solutions have been discussed. Koch (2006) presents an overview of the research on IT in the home care setting. The overview shows that the majority of the papers concerns the measurement of vital signs and audio-video teleconsultation, while a minority of the research papers is focused on IT tools that improve information access and communication in order to facilitate cooperation. Furthermore, research conducted within the field of Computer Supported Cooperative Work (CSCW) has shown that cooperation is a complex issue that requires more than the improvement of information access and communication (Bannon and Schmidt, 1989; Heath and Luff, 1991; Schmidt, 1994).

Care settings are often collaborative in nature and studies conducted from a CSCW perspective have explored these settings. These studies focus on the use of medical records – paper-based as well as computerised (Heath and Luff, 1996; Luff and Heath, 1998) – transformations in the collaborative work caused by the introduction of new technology (Bardram et al., 2005), the use of a shared information system to coordinate work (Reddy et al., 2001), temporality in collaborative work (Reddy et al., 2006), the formal and informal character of information sharing (Hardstone et al., 2004) and the use of different non-digital artifacts (Bardram and Bossen, 2005) etc. CSCW studies relevant to this paper are focused on the work and cooperation carried out in different care settings with co-located personnel, in contrast to elderly care at home. In fact, in-home elderly care has not been extensively studied from a CSCW perspective. Only a few studies have explored the implications for design of IT tools intended to support the cooperation between health care and social care providers conducting elderly care at home (e.g. Bricon-Souf et al., 2005; Koch et al., 2004; Pinelle, 2004; Pinelle and Gutwin, 2003a; 2005). Most importantly, there is a lack of research on how the workers providing care for the elderly in their homes actually manage to work and cooperate at the present time, and how the workers use the tools currently available to support cooperation and coordination.

The aim of this paper is to explore the current context for the design and development of IT tools that may facilitate cooperation in elderly care at home. The paper analyses the empirical findings of a study of the work and cooperation taking place within and between home help services and home health care in a county in Sweden. The focus of the study is the actual use of a tool that supports cooperation and coordination. This tool is a binder that contains a collection of material considered as important for supporting cooperation between and within the two services. With the binder in focus, issues crucial to consider also when developing an IT tool are made visible. In contrast with the loosely coupled home care cooperation studied by Pinelle (2004) and Pinelle and Gutwin (2003a; 2005), the setting examined in this paper depends to a much greater extent on cooperation and coordination between workers. Furthermore, compared to hospital wards and medical units, in-home elderly care is clearly more complex. To begin with, the work is carried out in the care receivers'[1] homes, environments that cannot easily be changed. Secondly, the work activities need to be coordinated between different actors not only within but also across organisational boundaries. Thirdly, work activities need to be coordinated across time.

The paper is structured as follows; first I describe the research setting and method. Then, I give a general description of the binder and outline the material collected in the binder in detail. I also illustrate some concrete aspects of how the material in the binder is used to support cooperation and coordination. This is followed by an analysis and discussion of crucial aspects that must be considered also when developing IT tools related to elderly care at home. Finally, I conclude by summarising the findings from the analysis of the binder.

Research setting and method

The findings examined in this paper are the result of empirical material collected from a study of the work and cooperation conducted in elderly care at home in a county in Sweden during 2002-2004 (Broberg and Petrakou, 2003). In the county where the study took place, as in more than half of the counties in Sweden, two parties provide the elderly with care at home: social care at home is provided by the municipalities through the organisation of home help service groups (in Swedish: hemtjänst), while health care at home (in Swedish: hemsjukvård) is supplied by the county council. Therefore, care of an elderly person at home may well involve both organisations and engage different providers in the task. Several reports have shown that this cooperation does not always function properly and it is often suggested that the use of information technology may improve the situation

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1 A person in need of home help service is called a care receiver, while a person in need of home health care is called a patient. However, later on in the paper we will use the word 'care receiver' to indicate a person in need of both home help service and home health care.

(SALAR, 2006; SOU, 2004). The problems with cooperation between home help service and home health care were also observed by health and social care managers in the studied county and a project was therefore initiated with the purpose of improving the problematic situation. One part of the project consisted in a study of the work and cooperation taking place in and between home help service and home health care in order to define the problems that occurred in the daily work. In this paper, I examine some of the empirical material collected by that study.

The empirical material was collected through observational studies, interviews and group discussions. During the observational studies, a number of selected workers were observed during their work shift. A total of 30 work shifts taking place during the day, the evening and the night were observed. During these studies, field notes were taken and transcribed the day after the observations were conducted. To continue, some 15 interviews were conducted with managers in both organisations while district nurses, assistant nurses and home help service workers participated in the group discussions. The aim with the interviews was to enable a holistic understanding of the work and the cooperation between and within the two organisations. Questions were therefore asked concerning the rules and obligations for home help service and home health care. The group discussions focused on four themes: problematic issues concerning the inter-organisational cooperation between home help service and home health care, problematic issues concerning work activities, problematic issues concerning co-operative activities and finally general issues concerning information needs and tools.

Home help service

The home help service units (10 units) in the studied municipality belong to the Administration of Health and Social Care and are headed by a unit manager who is responsible for the staff, the budget and the administration. A home help service unit consists of two or more home help service groups. Every group has a meeting point, which is often situated in an apartment. The home help service units consist of 22 day shift groups that are reorganized in the evenings to form approximately 10 evening shift groups which cover different geographical areas. In addition, a unit also consists of 4 night groups that handle the entire municipality. The number of workers in each group varies between 10 to 15, depending on the number of care receivers in the area.

The home help service provides help with food, getting dressed, cleaning, care assistance, practical services and social care and they also respond to alarms. To apply for home help service, the care receiver or his/her relatives sends an application to a care administrator who is located in a special department within the care administration of the municipality. When an application is granted, a notifi-

cation is sent to the home help service group and to the unit manager. The group includes the new care receiver in their planning and a contact person is chosen from the staff. The contact person is ultimately responsible for the care receiver and for his/her living accommodation and care. For example, it is the contact person who should contact other care providers such as primary care if needed.

In order to obtain information about a new care receiver or to acquire updated information about a care receiver's needs, all meeting points have a fax machine. Fax messages with information regarding new care receivers and the care interventions they should receive are sent from the care administrator. In addition, the care workers send information through the fax machine to the care administrator if they observe a need to change the interventions.

The studied day shift group shared two mobile phones that were provided by the municipality. These mobile phones are used mainly for receiving alarms. Naturally, the mobile phones are also used if the care workers need to communicate. If they need information which is stored at the meeting point, they can call the fixed telephone which is located there. However, they cannot be certain that someone will answer since no one is assigned to monitor that phone. During the evening, all personnel have mobile phones, since only two people from each day shift group work during the evening. In addition, all night personnel have mobile phones.

Home health care

Health care in Sweden is provided by the county councils which are responsible for organising hospitals and primary care. Primary care is administered by primary care centres situated in every municipality. Every municipality is geographically divided into districts and a primary care centre is responsible for one or more districts depending on the number of inhabitants. The primary care centres are staffed by physicians, district nurses, nurses and assistant nurses. At the studied county council, home health care is a task performed by district nurses supported by assistant nurses in primary care. Home health care is provided during the day and in the evening. During the day, home health care is provided by every primary care centre. In the evening, an evening group handles all patients in the municipality.

The district nurses have a greater responsibility and conduct more advanced interventions than the assistant nurses. A district nurse may give a care diagnosis. This means that when a district nurse examines a patient, she judges if the patient should be treated through interventions provided by her (care interventions) or if the patient needs to consult a doctor to receive a medical diagnosis. Furthermore, the district nurses have a reception where the people of the district can make an appointment. The care interventions provided by district nurses both at the reception as well as in the patients' home include checking the blood pressure, binding

up wounds, giving insulin, taking samples for testing, insert pharmaceuticals into medical dispenser units, dispensing medicine and eye drops, helping with surgical stockings and also giving advice and support to their patient. Assistant nurses assist the district nurses with minor treatments such as helping with surgical stockings, binding up wounds, treating wounds with cream, administering eye drops and insulin. Some of the interventions conducted by assistant nurses in home health care could be delegated to the home help service workers.

The home health care personnel use a computerised patient record system which can only be accessed through computers located at the reception. This system is used within all primary care and contains functionalities other than the record system such as booking appointments at the reception and sending messages to personnel within primary care. Of the items included in the patient record, the nursing care plan (in Swedish: omvårdnadsplan) is the most important document for a district nurse. This plan is created at the beginning of a patient's care process. In addition to this, the district nurse needs to document every contact that she has had with the patient throughout the care process. She must thus specify what has been done during a visit, in what condition the patient was in when she arrived, and also which people have been contacted. While working in the patients' homes it is impossible to access the patient record system. If the nurse wants to bring information from the patient record to a home care visit, she has to print information from the system or enter the information into her calendar before she leaves her office. Otherwise she has to phone someone who is at the reception or go back to the reception herself to get the information needed. In contrast to home help service workers, all district nurses and assistant nurses have mobile phones.

Since the evening group also belongs to primary care, each person must document his or her interventions using the same computerised patient record system as the dayshift personnel use. However, workers in the evening group also send faxes to all the day shift districts to report items of special interest. Similarly, the dayshift personnel send faxes to the evening group if there is a new patient that is in need of home health care during the evening, and they also phone the evening group if there is something this group should pay special attention to.

Elderly care at home

Elderly care at home involves not only home health care and home help service but also, for instance, hospital visits, physiotherapy at the hospital, physiotherapy at the primary care unit as well as family and relatives. It is of utmost importance that the care process is discussed with the care receiver. Furthermore, during the late 1990s the National Board of Health and Welfare (SOSFS1996:32) issued new requirement regarding information sharing and cooperative care planning to the municipalities and county councils. Therefore, when an individual is scheduled to receive care at home for more than two weeks, a care plan meeting (in Swedish:

vårdplanering) with all parties involved is mandatory. Usually, this happens after an elderly person has been treated at the hospital. During this meeting, the care providers and the care receiver with relatives discuss the care interventions that need to be conducted in order for the care receiver to be able to live in his/her own home. Approximately 4-7 people attend these meetings; the nurse at the hospital who initiates the meeting, the care receiver and his/hers relatives, personnel from the home help service and home health care and finally the physiotherapists from both the hospital and from primary care if needed. Home health care is represented by a district nurse or in some cases an assistant nurse. The home help service is represented by the care administrator, who writes the application for home help service. If possible, the presumptive contact person is also at the meeting.

The SVOP binder: A tool for cooperation and coordination

In order for the home help service and the home health care workers to be able to cooperate and coordinate their efforts during the care process, there is a great need of information and communication. Since the new guidelines were issued in the late 1990s this is even more so the case. Therefore, in 2001-2002 a project called Rehab 300 was conducted. As a part of this project, workers and managers at the studied municipality and county council constructed an information and communication tool, the SVOP binder, that may provide sufficient material for cooperation. SVOP stands for "coordinated health care and care planning" (in Swedish: Samordnad Vård- och OmsorgsPlanering). The binder has been modified a couple of times over the years and is here described in its most recent form.

The SVOP binder, Figure 1, is considered the care receivers' property and is used for storing, documenting and communicating information about the care receiver and his/her care process. Essentially, when an elderly person is in need of both home health care and home help service, as detailed by the care plan meeting, the district nurse compiles the SVOP binder. The binder is placed in the care receiver's home (often in the kitchen) and consists of different types of material. The binder collects two types of material: material that used to be kept separately by the two organisations and material needed to support cooperation. What the latter type of material should consist of was initially discussed during the Rehab 300 project. Furthermore, the inside of the binder provides space for inserting cards such as the patient's identification card, needed when visiting primary care or the hospital. There is also space for inserting medical prescriptions and a pharmacy card shown when purchasing pharmaceutics from a pharmacy. See Table I for a complete description of the documents in the binder. If needed, addi-

tional material is included in the binder such as a wound status, catheter reports and fluid charts.

Figure 1. Left – The front of the SVOP binder. Right – A view of the inside of the binder.

In Table I, the documents collected in the binder are divided according to their function. “Read-only” refers to documents that are only updated when the complete document is replaced. “Writeable” refers to documents that may be annotated. “Other” is material that is not always required to coordinate the home care process but is needed in other situations. The table also describes the proposed use of each document, the worker/s responsible for updating each document and from where the document is collected. Along with the material in the binder, observation of the actual use of the binder showed that material was also attached *to* the binder such as post-it notes and/or a note pad. This is not included in the table but described later.

As shown in Table I, the binder consists of several documents which provide the workers with information for administering home care interventions and for supporting cooperation and coordination between the workers involved. During the observations, it was found that the actual use of the binder has both advantages and drawbacks. More importantly, the binder and its use highlight many important issues essential to cooperation. In what follows, I illustrate some concrete aspects of how some of the material collected in the binder is used.

Table I. The material in the SVOP binder

Read-only	Use	Responsible	Collected from
Work plan	Description of home help service interventions during morning, afternoon, evening and night.	Contact person	Home help service
Contact information	Information about all involved in the care process and their contact information.	District nurse and contact person	Only in the binder, facts collected from patient records and home help service
Summary of care interventions	Overview of the care receiver's social situation and health condition.	District nurse, contact person, care receiver and relatives.	Only in the binder
Prescribed pharmaceuticals	Information about medicines and prescriptions.	District nurse	Patient records from hospital and primary care.
Discharge information	Information from the hospital after discharge or from a physician in primary care after a visit.	Hospital personnel or physician in primary care	Hospital or physician in primary care
Physiotherapy interventions	Documented if needed by describing the problem, the procedure and the follow up.	Contact person	Only in the binder
Current health condition	Description of the care receiver's current health condition, which is needed during a hospital admission.	District nurse and contact person	Only in the binder
ADL status (Activities of Daily Living)	Description of the daily activities that the care receiver is able to handle personally and those which he/she needs help with.	Contact person	Home help service, Hospital
Writeable	**Use**	**Responsible**	**Collected from**
Current events document	Irregular events during the care process are documented but also messages between the care providers.	All personnel	Only in the binder
Signature list for pharmaceuticals	Confirms which medicine is given and by whom.	All personnel	Patient records
Signature list for physiotherapy interventions	Documents each visit by describing the problem, the procedure and the follow up.	All personnel	Only in the binder
Appointments	Appointments to the hospital, the primary care unit and other relevant places are documented.	All personnel, relatives and the care receiver	Only in the binder
Note pad	Care receiver and relatives write messages to the home care personnel.	Care receiver and relatives	Only in the binder
Other	**Use**	**Responsible**	**Collected from**
Signature clarification	Clarifies to whom the signature belongs.	All personnel	Only in the binder
Care receiver's approval	Care receiver signs this document to approve information sharing between the organisations.	District nurse and unit manager in home help service	Only in the binder

Read-only: Contact information

A SVOP binder is used mainly for elderly people who need multiple care interventions from both the home help service and home health care. These people are often in need of other types of care interventions such as physiotherapy treatment or they require continuous contact with the physicians at the primary care unit. In order to provide an overview of all the people involved in the care receiver's care process, the SVOP binder contains these people's contact information, including name, title and telephone number. Furthermore, the relatives' contact information is also included. If there is a need to contact some of these people during a home visit, this makes it easier to reach the right person at the right time. One such example was observed during a home help service visit:

> During a home visit the home help service worker asks an elderly care receiver how she slept the night. She describes a pain she felt all night. When the care worker helps the care receiver to get out of bed she complains about a pain in her arm. The care worker gets worried and tells the care receiver that if it hurts so much, they need to contact the district nurse. The care receiver agrees and the care worker looks in the SVOP binder for the telephone number to the district nurse. She phones the district nurse and informs her about the situation. The district nurse says that the care receiver must come to the emergency ward immediately. However, the care receiver does not want to go and the care worker tries to calm her. Since the care receiver is very anxious someone must be with her in the ambulance and at the emergency ward. The care worker consults the SVOP binder in search of a telephone number to a relative to discuss if he/she is able to meet the care receiver at the hospital…..

Having instant access to the contact information was essential in the above situation. With this, the care worker could contact both the district nurse and the relative so quickly. During the observation, the care worker declared that anxiety may have a detrimental effect on the health condition and that it was therefore necessary to contact the relative so he or she could be with the care receiver at the emergency ward and calm her down. Being able to contact the right person at the right time is often crucial in elderly care at home, not only in these situations, but also if the needed information is not available in the SVOP binder, as will be discussed later in the paper.

Writeable: Signature list for pharmaceuticals

One of the intentions with introducing the SVOP binder is to support the shared care interventions, that is, interventions that could be conducted by both the home help service and home health care workers. These interventions consist mainly of minor tasks such as administering insulin or prescribed pharmaceuticals, or treating minor wounds. When administering medicine, the workers must sign their names and write the time on a signature list. Therefore, the SVOP binder contains material for these interventions such as a document called prescribed pharmaceuticals and a signature list for pharmaceuticals. The general planning of who should do what and when is often done during the care plan meeting. However,

this plan can be changed during the care process if the health status of the care receiver alters. For example, if a care receiver has been prescribed pain killers that are supposed to be administered during night time, the medicine could instead be given during the evening if the care receiver is in a lot of pain. Thus, the signature list for pharmaceuticals also provides important information for the night personnel as illustrated by the following observed situation:

> The night group is visiting a care receiver who is in a lot of pain. There should be a pharmaceutical for this among the prescribed medicines that the night group is allowed to administer if necessary. However, they notice that there is no medicine to administer on this particular night. They start wondering why and look at the signature list for pharmaceuticals to see if anyone else administered the medicine. On the signing list they see that a care worker gave the medicine to the care receiver during the evening shift.

In this particular situation the signature list gave essential information to the night personnel; without it they could not have known why there was no medicine available. If the SVOP binder did not exist, the workers would have had to sign one document within each organisation since it is obligatory to document all such shared care interventions. It should also be noted that the signature list for pharmaceuticals not only provides information to the involved parties, it is also important when a care receiver's health status is followed up on.

Writeable: Current events document

One of the most important parts of the binder is considered to be the document called current events. In this document the workers involved write notes to inform each other and to report current and irregular events that occurred when they treated the care receiver. In this document, the workers can also find out if there is anything that the other care providers should pay special attention to. In addition, this document makes it possible to see patterns in the care receiver's physical condition during the home care process. For example, if it turns out that a care receiver often falls, this indicates that something is needed to prevent the person from falling and injuring him/herself, such as special shoes or an adjustment of the care interventions.

Although the current events document could in theory be a very important cooperation tool, it was found during the observations that it is used rarely. Since the binder, and thus the current events document, is located in the care receiver's home, the workers can only access this information when visiting the care receiver. This is unfortunate, since some of the information is needed before they visit the care receiver (this is so they can coordinate visits or prepare relevant material before the visit). Therefore, when the workers add to the current events document, they also try to reach the person who needs the information by phone, by leaving messages with other persons or, if possible, by using voice mail. Unfortunately, sometimes the messages do not reach the right person. The following

observed situation describes the actual consequences of a message not reaching the right person:

> The district nurse is visiting a care receiver that previously had a wound that was treated with cream. During this visit the district nurse observes that the wound has gotten worse again. Therefore, she writes in the current events document to the home help service workers that they should resume the treatment of the wound with cream. Since the binder is seldom used, it took a couple of days before the home help service worker saw this message.

Reaching personnel in home care by phone is not an unproblematic task. While all district nurses and assistant nurses have mobile phones, the home help service workers during dayshifts share only two mobile phones, and these are used primarily for receiving alarms. Therefore, district nurses often have trouble contacting a specific home help service worker. Instead of talking directly to the person that needs the information, district nurses often leave a message with another person who answers either one of the mobile phones or the fixed phone at the home help service meeting point. Sometimes, the day shift personnel do not even bother to make notes in the binder, especially when the information is intended for other day shift personnel. Instead, they prefer phoning each other to ensure that the right information will reach the right person at the right time, even though reaching people by phone may be difficult. Unfortunately, if the day shift personnel phone each other instead of making notes in the current events document, this can lead to difficulties for the night shift personnel, since there is no other way to keep informed during night visits. The following observed situation describes one such occurrence:

> When the nightshift personnel visit a care receiver, they notice that the care receiver has trouble breathing. The care workers discuss the possible reasons for this and study the SVOP binder to see if the other care providers have made notes about this. The information in the binder is not up-to-date and the care workers do not know what they should do. They know that the care receiver recently went to the hospital, but they do not know why. They decide to visit the care receiver several times during the night and talk to the dayshift group about the care receiver's condition. When the care workers report to the dayshift it is revealed that the day shift care workers already knew about this problem and discussed it with the district nurse. Finally, the day shift tells the night shift that the care receiver's condition will not improve and that there is nothing they can do.

The lack of adequate information not only complicated the work of the night shift personnel, it also made it more difficult to see patterns in the care receivers' physical condition during the home care process. In addition to this, since information is not always available in the SVOP binder, personnel must sometimes spend a great deal of time phoning the people that may have the required information.

Material attached to the binder

Another important aspect concerning the binder is the use of post-it notes and a note pad. Post-it notes and/or a note pad are often placed on the front of the

binder to highlight that information has been added to the binder, or to inform the other personnel of something that falls outside the scope of the current events document or of other document sections in the binder. For example, home help service workers may inform of interventions that have been postponed or left for other workers to do. Relatives also attach notes to the binder with messages to the home help service or home health care personnel such as shopping list. It is interesting to observe that there actually is a document called "note pad" included in the binder for the relatives to use, see Table I.

A context for IT tools in elderly care at home

The studied setting of elderly care at home is clearly complex. The care workers need to cooperate within their own group, within their own organisation between work shifts and also across organisations. In other words, the workers are required to cooperate and coordinate their efforts across both their disciplines and their organisational boundaries while being distributed across time and/or space. Furthermore, the work is conducted in the care receivers' homes, and these are environments that are difficult to change. Compared to the loosely coupled home care setting studied by Pinelle (2004) and Pinelle and Gutwin (2003a; 2005), the setting examined in this paper is much more dependent on cooperation and coordination between workers. In addition, there is a development towards even more extensive and tighter cooperation since health care and social care systems are required to increase their collaborative efforts in order to provide in-home elderly care of good quality. To meet these demands, the involved personnel have constructed a tool, the so called SVOP binder. This binder contains collected material that the care providers consider important for supporting cooperation between and within the two services.

In the previous section I illustrated some concrete aspects of how different types of material in the SVOP binder are used to facilitate this cooperation. The actual use of the binder reveals both advantages and drawbacks with its construction, and it highlights issues critical for cooperation in elderly care. In this section I analyse the findings from the binder case and discuss aspects that are crucial to consider when developing IT tools in the context of elderly care at home.

Coordinating by integrating home care information

One aspect that needs to be considered from the perspective of elderly care at home is the importance of coordinating the activities conducted across groups and organisations. The SVOP binder is intended to help gather and disseminate relevant information that may make cooperation and coordination easier for all involved care providers. By integrating information as shown in Table I, the SVOP binder aids care personnel awareness of the other care providers; it describes the

activities that have been conducted, and it outlines the events that have occurred during the home care process. Without the binder some of this information would not be known to co-workers from other groups, both within and across the organisations.

The integration of health care information has been the focus of studies regarding the development of electronic patient records, also called integrated care records (Fitzpatrick, 2004; Hardstone et al., 2004). An electronic patient record/integrated care record could certainly support some aspects of the cooperation in elderly care at home, but it is important to emphasize that the documents compiled in the SVOP binder cannot simply be replaced by an electronic patient record. Although some parts in the binder are gathered from the patient record, as illustrated in Table I, the SVOP binder is not a copy of the patient record. All the medical information of the patient record is not relevant for those involved in elderly care at home. Similarly, the binder does not provide all the home help information that is kept by the home help service. Furthermore, it should also be noted that while the electronic patient records contains information on a person's lifelong health record, the SVOP binder is focused on supporting information sharing and communication in the daily work. Fitzpatrick (2004) highlights a similar observation in a study of a medical unit at a hospital. In this study, the health care staff conducted their work by using what Fitzpatrick calls the working record. The working record is defined as a diverse collection of documents and forms used by the health care staff to help them plan and manage their work. This is similar to the intention with the SVOP binder, with the difference that all material is gathered in one specific place, namely in the binder.

Various degrees of informal information

Another important element of working with elderly care at home that the SVOP binder highlights is the need to communicate both asynchronously and informally. Since the home help service group of the case study only has two mobile phones to share, it is often problematic for the district nurses to reach the right person by phone. Providing all home help service workers with mobile phones might improve the situation to some extent, but phones will not eliminate the need for asynchronous communication. When administering care in the home the attention must be on the care receiver, and the care worker's main responsibility is not to be accessible by phone to everyone. As for the night shift personnel, they communicate primarily asynchronously. Therefore, asynchronous communication is essential for supporting the cooperation within and between home help service and home health care. Bricon-Souf et al. (2005) also highlight this issue by stating that a major feature of home care is its asynchronous character and that "team members cannot directly communicate during task realization or in an informal way during a meeting or a coffee break" (p. 811). Furthermore, the kind of asyn-

chronous communication that is needed is not only an exchange of formal information regarding the care receiver's health status, but also an informal discussion during the care process. The importance of supporting informal discussion has been emphasized by several researches. Hardstone et al. (2004) state that work gets done through the sharing of informal information within organisations. They also emphasize the importance of informal discussion and provisional judgement for effective cooperation within a multidisciplinary team. Furthermore, Westerberg (1999) shows how decisions are often reached in an informal way, through negotiations and discussions with others.

In this study, the current events document in the SVOP binder and the post-it notes attached to the SVOP binder allow asynchronous communication. The use of these two materials has not been legislated. Rather, they spring from a need to cooperate and to provide the best home care possible. Therefore, they also support different levels of informality, in contrast to the information gathering that characterises the construction of the patient record. Fitzpatrick (2004) makes a similar observation in her analysis of the working record where she finds various degrees of formality to coexist.

The current events document is much more formal than the post-it notes. In the current events document the personnel write notes to inform each other of irregular events that have occurred in relation to the care receiver, or if there is anything that the other care providers should pay special attention to. It is also possible to identify patterns by examining the irregular events that take place over time in a care process. The use of the current events document thus offers an overview which allows for easy monitoring of a care receiver's health progress. The notes in the current events document also make it possible to formally store the information. In contrast to the current events document, the post-it notes are not formally stored since the message is usually disposed of after it has been received. The post-it notes that are attached to the binder also have another type of function: they can be considered as asynchronous pointers. Even though the post-it notes might be viewed as containing redundant information, they are sometimes used to indicate that new information has been added, to remind care workers to search for information in the binder.

Patient-centric view

The third important aspect that needs to be considered in the context of elderly care at home is how the SVOP binder supports a patient-centric view. As a complement to the "clinician-centric view of work" described by Fitzpatrick (2004), the patient-centric view is essential to the context of elderly care at home. From the perspective of this context, the main intentions with the binder are to share information, to enable care providers to communicate with each other about the

care receiver and also to include the care receiver and the relatives in the care process.

The working record studied by Fitzpatrick (2004) provides a clinician-centric view of work. In that study, each member of the care team contributed to the official patient chart through progress notes, examination notes etc. They also worked with various forms and documents where they could reflect on "their own view of the patient and their role in the care of that patient" (Fitzpatrick, 2004, p. 294). These clinician-centric documents were always carried around by the health-care workers of the clinic, thus helping them plan and manage their work. In home care, the care providers also work with their own "clinician-centric" documents while conducting their individual work tasks and while coordinating work within their own group. As a complement to this, the SVOP binder as such is focused on the care receiver since it assembles the information and communication necessary for the heterogeneous network of actors surrounding the care receiver to cooperate. What is more, the SVOP binder makes it possible for relatives and the care receiver himself/herself to actively participate in the care process. Therefore, the binder can reflect the views of both formal and informal care providers as well as the views of the care receiver. It is also important to note that the binder is always with the care receiver as it is placed at home and follows the care receiver to hospital and to visits to primary care.

By providing a patient-centric view of care, the SVOP binder may be considered as a boundary object (Star and Griesemer, 1989) for the heterogeneous network of actors involved in the home care process.

> Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites … they have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds (Star and Griesemer, 1989, p. 393).

The SVOP binder serves as a boundary object in the sense that it provides all the involved actors with a common ground through supplying joint information material and enabling communication between different groups and individuals. In addition, the material and documents in the binder are not only used to coordinate the care process, but are also used to support involved individuals in daily work situations. For example, the current events document brings together current information regarding the care receiver's general health status, information that may indicate to individual care givers that they must make a particular contribution to the care process.

The management of tools that provide a patient-centric view differs slightly from the management of clinician-centric tools. The main difference is that care providers who work with patient-centric tools need to consider that the patient and his or her relatives should be able to access the documentation that the tool provides. Therefore, the care providers should not write messages to each other

that they do not want the relatives or the care receiver to read. Examples of such messages are informal medical remarks that might upset the care receiver. This constraint may be one of the reasons why the current events document is seldom used. In addition to this, privacy issues need also be considered since visitors are able to access the information in the SVOP binder.

The patient-centric view is valuable in the home care process as it facilitates the active participation of relatives and care receivers. However, the SVOP binder should not be regarded as a replacement of clinician-centric tools. Both views are required in order to provide in-home elderly care of good quality.

Accessibility and mobile work

In order to make proper use of the information and communication possibilities that the binder provides, it has been placed in the care receivers' homes and it is also considered the care receivers' property. The advantage of this is that the binder is easily accessible not only for the home help service and home health care, but also for all other care providers. For example, if a care receiver must go to the hospital, the SVOP binder is sent with the care receiver so that the personnel at the hospital can make notes in the binder or get a quick overview of what has happened during the home care process. Most importantly, the binder is accessible to the care receiver himself/herself and to relatives.

The placement of the binder in the care receivers' homes and the fact that it is considered as the care receiver's property certainly contribute to the patient-centric view described previously. However, it was observed that this placement also hampered accessibility and that it therefore failed to fully support the way the workers in home help service and home health care conduct their care. Since the binder is placed at the care receivers' home, the material in the binder is only accessible during the actual visit. This may be unfortunate since some of the information contained by the binder needs to be reviewed before the visit, for example the messages written in the current events document. Furthermore, the information on current events is evidently of such importance that the care workers try to reach each other by phone instead of making notes in the current events document. This has resulted in important information being left out of the binder, which in turn forces the care workers to phone each other in order to become updated by the people who presumably have the information. Synchronous communication may work during the day shift, but without proper information in the binder, the night shift personnel cannot know what has happened to the care receiver or comprehend the discussions that have been conducted between the care workers during the day. Due to the restricted accessibility of the binder, the potential for asynchronous communication provided by the SVOP binder is not fully realized.

Several researchers propose mobile technology such as PDAs and laptops to support home care since their work is mobile to a great extent (e.g. Bricon-Souf et al., 2005; Koch, et al., 2004; Pinelle and Gutwin, 2003b; Scandurra et al., 2004). Such technology may be applicable also in this case to support the mobile nature of this type of care work and to make it possible for workers in home help service and home health care to receive and disseminate information wherever they are. However, to substitute the SVOP binder with mobile technology intended to support home help service and home health care is not a straightforward task. It is of utmost importance to consider the advantages in cooperation currently provided by the SVOP binder. These advantages include the integration of home care information, the varying degrees of informal information and the participation of care receivers, relatives and other care providers.

Conclusions

In this paper I have examined empirical findings from a study of the work and cooperation taking place in the home help service and home health care. The focus of this study has been how a so called SVOP binder is used to support cooperation and coordination. With the binder in focus, issues crucial to consider also when developing an IT tool were made visible.

The binder was designed to meet the demands of the complexity of elderly care at home. Furthermore, the material collected in the binder has been carefully considered by workers and managers in the home help service and home health care. The care workers' holistic understanding of the elderly care process is one of the cornerstones of the SVOP binder. The binder integrates home care information with the relevant information needed for coordinating the home care process. However, the SVOP binder is not only a collection of information; it also helps support the degrees of informal information needed in the daily work characterising care service. Furthermore, the SVOP binder promotes a patient-centric view since the aim with the binder also is to inform and communicate with other care providers and to include the care receiver and relatives in the care process. In order to make this information accessible, and to facilitate communication between these parties, the binder has been placed in care receiver's home and is considered the care receiver's property. Clearly, the binder provides all involved in the elderly care context with useful material for cooperation and coordination. At the same time, the SVOP binder suffers from some problems. In particular, the placement of the binder in the care receiver's home means that the material is not accessible to the mobile care givers at all times. In addition to this, privacy issues must also be considered since everyone who visits the care receiver is able to access the information provided by the SVOP binder.

Mobile Technology such as PDAs may be used to make it possible for workers in the home help service and home health care to receive and disseminate infor-

mation wherever they are. However, to merely replace the information in the SVOP binder with a mobile tool for the home help service and the home health care workers may not be the ultimate solution. It is necessary to consider the advantage of various degrees of informal information that is supported by the post-it notes, the note pad and the current events document. There is also a need to consider how the information currently compiled in the SVOP binder can be made to accompany the care receiver in the care chain so that all care providers can access the information and communicate with each other. Finally, it is important to consider the inclusion of the care receiver and relatives in the care process when developing IT tools in the context of elderly care at home.

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