Nurses' information management at patients' discharge from hospital to home care

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Abstract

Purpose: The purpose of this paper is to explore and compare hospital and home care nurses' assessment of their information management at patients' discharge from hospital to home care before and after the hospital implemented an electronic nursing discharge note.

Theory: This paper draws on the concept of inter-organizational continuity of care, and specifically addresses the contribution of the implementation of an electronic patient record (EPR).

Methods: The study has a prospective descriptive design. A questionnaire addressing the information that hospital and home care nurses exchange when patients need continuing care after hospitalization was developed and used.

Results: Hospital and home care nurses differed in the way they assessed the structures and content of the information they exchanged, both before and after the EPR implementation.

Conclusion and discussion: There is a need to take account of the different organizational contexts within which the two nursing groups work. The organizational context (hospital versus home care) has implications for the nurses' assessment of the information they exchange. In further development of EPR, it is therefore essential to clarify the context-related information needs of the various health care provider groups as part of the commitment to patient safety.

Keywords

inter-organizational continuity of care, hospital and home care nurses, nursing discharge note, exchange of information

Introduction

This paper reports on a subset of data from a prospective study that describes hospital and home care nurses' information management before and after the hospital nurses started to use EPR. The Norwegian Ministry of Health and Care Services has set the improvement of communication and coordination between the hospitals and municipal health systems as one of its top priorities [1]. The hospitals and the health care systems in the municipalities in Norway are divided into two organizational structures with different owners and different responsibilities for patients governed by different laws. Information technology in general and the implementation of electronic patient records (EPR) in particular are regarded as a prerequisite to ensure that patients experience seamless and coordinated health care and to ensure and improve continuity of care [2–4]. According to the Norwegian Health Personnel Act all health care providers, including nurses, are obligated to exchange relevant and necessary information for ensuring continuing care. A discharge note is developed and integrated in the EPR for this purpose [5].

Yet the implementation and use of EPR in Norwegian hospitals has not progressed as far as expected [6]. In the municipalities almost all the doctors use EPR, but only 50% receive the doctor's discharge note electronically from the hospital doctors [7]. It has been suggested that the hospital doctors' discharge note provides sufficient information from the hospital at a

patient's discharge [8]. The doctors' EPR systems in the municipalities, however, are not integrated with the nurses' EPR system and do not communicate with it. Gaps in information exchange and discontinuity tend to follow organizational and institutional boundaries, for example when patients are transferred from hospital to home health care [9]. Rognstad (2004) found serious discrepancies between municipal doctors' and nurses' medication lists for the same patients due to flaws in their information exchange within the same municipalities [10]. Medication errors are reported to be a cause for concern. A nursing discharge note is regarded as essential when the patient needs continuing care after an episode of hospitalization [11–16] and should be one of the components in the EPR [17]. Cook et al. (2000) state that gaps in complex health care systems are inevitable [9]. The gaps need to be identified and bridged. They suggest that the discharge planning documents might serve as a bridge between different organizational boundaries.

Continuity of care is found to be a condition for quality [18]. Continuity of care is described as an ongoing, uninterrupted, and coordinated sequence of activities [19–22]. Continuity of care, however, is mostly described on an individual level as a person-to-person relationship between a provider and a patient or family within the community health care system. For pat-ients admitted to hospital, an intra-organizational relationship which goes beyond the personal perspective must have an organized and multidisciplinary perspective to ensure continuity of care [23]. According to Shortell and Kalunzy (1983), hospitals and community-based services are interdependent organizations, especially for patients needing health care across the boundaries [24]. Hellesø et al. (2004) state that both an individual and an organizational perspective are dimensions of inter-organizational continuity of care. Aspects of the individual perspective are networking, communication and information exchange between those involved in planning and providing patient care (providers, patient and next of kin). Formal structures and coordination mechanisms are organizational pre-requisites [25]. Access to valid patient information enhances patient safety and inter-organizational continuity of care [9]. Furthermore, preparing the patient for post-hospital nursing care at home requires a multidisciplinary approach in the discharge planning process [26]. Hospitals and home care services are regarded as interdependent organizations [27]. The hospital and home care services, however, are asymmetric in their organizations, legislation framework and perspectives on the patient's need [28–30]. Philipsen et al. (1997) stated that the hospitals have a disease orientation towards patients in need of short-term care, while chronically ill patients in need of long-term

care across organizational boundaries meet problems in this asymmetry [29].

Timely transfer of contemporaneous and relevant information across the organizations is important to ensure effective patient care [31]. However, providers in different organizational structures have different perspectives, work in different situations and have varying experience. According to Procter (2000) these factors have implications for how persons perceive the information they exchange [32]. In general, shortcomings are reported in the information that nurses exchange, concerning patients who need nursing care after a hospital stay [9, 31, 33, 34]. Sometimes the home care nurses do not receive information at all when the patient is discharged [34], or the information is inadequate [35]. Discrepancies in what hospital and home care nurses identify as the most important information to exchange is reported [28]. Home care nurses have also reported dissatisfaction with the information they exchange [12]. Divergent perspectives and recommendations about what information nurses need to exchange are reported, depending on whether the recommendations are made with regard to a specific medical diagnosis [36] or as general recommendations [37, 38]. The implementation of EPR is considered to improve continuity of care [3, 39]. For EPR to serve as a purposeful and appropriate tool that contributes to seamless post-hospital nursing care, knowledge about nurses' exchange of information management within their organizational setting is required. Gaps are found in the research literature that explores nurses' perspectives on information management in general and the EPR contribution to information management in particular.

- The purpose of this paper is to explore and compare hospital and home care nurses' appraisal of their information management at patients' discharge from hospital to home care before and after the hospital implemented an electronic nursing discharge note, with regard to:
- who is participating in the discharge planning process
- which documents the hospital nurses provide to the home care nurses before and after the EPR implementation
- what is the content of the paper-based versus the electronic nursing discharge note
- are there differences in the way that each nursing group reports on the information management before and after the EPR implementation.

Methods

Setting

The study was conducted at a university hospital and the affiliated home care agencies in Oslo, the capital

of Norway. At the time the present study was conducted, no other hospital in Norway had implemented nursing documents in the EPR. The hospital started to implement the DocuLive® EPR system in 1996, and from 1998 the doctors, physiotherapists, social workers and occupational therapists could initially document their care in specifically designed notes. From the second half of 2002 the hospital conducted a step-wise implementation where four different nursing notes for documentation nursing care during the patient's hospital stay and a nursing discharge note were integrated in the EPR [40]. The EPR system generates some information elements automatically when a nurse creates, for example, a nursing discharge note. The EPR implementation was accomplished in a natural setting without the researchers' intervention.

We selected hospital departments where we expected to find the highest proportion of patients who would need continuing care post-hospital, to ensure that the nurses would have experience with discharge planning and information exchange [41]. Ten wards in the department of internal medicine and two wards in the cardiopulmonary department were therefore invited to participate in the study.

The university hospital collaborated with 11 of the 25 community health districts in Oslo. All 11 districts were invited to participate in the study, but two of the districts responded that they were not able to participate. The districts organize the home care agencies as an administrative department with health care providers who assess the patient's needs and decide on the level of care, while another department staffed primarily with nurses and nursing assistants provides the direct care for the patient based on these decisions. In contrast to the hospital the community health districts had all implemented EPR before this study was conducted. However, the EPR system could not communicate with the hospital EPR system, i.e. it was not possible to exchange information electronically. Neither was there any communication between the nurses' and physicians' EPR in the community health system.

Participants

Hospital nurses and home care nurses were asked to answer a questionnaire before and after the hospital implemented EPR. Together with the questionnaire, each nurse received a personal invitation letter with information about the study, how the data would be managed and their rights. Participants from both the hospital and the home care agencies were selected using a convenience sample [42], and were eligible if they met all the following criteria:

- head nurse, staff nurse, or clinical nursing specialist
- employed in the same position for at least six months
- able to read and understand Norwegian.

Participants could be either temporary or permanent employees, working either part-time or full-time.

Since each home care agency consisted of an administrative department whose health care providers decided the goals of the patient care and the nurses who provided the direct care for the patient, it was decided to include all the nurses, those in the administrative office as well as the direct care providers.

Discussions with contact persons during the planning process of this study revealed that it would have been impossible to track the individual nurses before and after EPR implementation, due to high turnover of staff. Therefore all nurses at both the pre- and post implementation data collection stages who met the inclusion criteria were invited to participate.

Data collection procedure

Before the data collection started, the researcher organized meetings with all the wards and informed the nurses about the study. In addition each ward received written information about the project, and whom the nurses could contact if there were any questions. A contact person on each ward and at each home care agency in the municipalities was responsible both for distribution and for reminding the nurses about the questionnaire. The contact persons decided how many nurses within their ward fulfilled the inclusion criteria, and then received that number of questionnaires for distribution. In total 507 questionnaires were distributed to the nurses: 138 questionnaires were distributed to the hospital nurses and 115 to the home-care nurses during the pre-implementation phase. In the post-implementation data collection, i.e. after the hospital had implemented an electronic nursing discharge note, 149 hospital nurses and 105 home care nurses received a questionnaire.

The first data collection was conducted early in 2002 prior to the EPR integration of nursing discharge notes and the second was conducted between March and September 2003, at least three months after the nurses in the hospital had started to use electronic documentation.

Ethical considerations

No completed questionnaire could be traced back to an individual nurse. Answering the questionnaire was taken as consent to participate in the study. The regional ethical committee for medical research

approved the project. The Norwegian Social Science Data Service was informed about the project.

Questionnaire

A researcher-developed questionnaire was used. Questionnaires aiming to explore aspects of continuity of care were assessed. There were, however, no questionnaires that specifically covered the research questions for this study. Therefore questions relevant for this study were developed based on previous literature about patients' transfer from hospital to home and related to continuity of care [43–46]. The first section of the questionnaire contained demographic information about the participants. Studies [18, 26] addressing continuity of care have emphasized the need for multidisciplinary cooperation to prepare for a patient's discharge. So the nurses were asked how often and who, beside themselves, they identified as participating in the discharge planning process as well as what type of documents they exchanged. The items regarding the type of documents they exchanged were based on the terms used in the literature [17, 47]. The items also took into account the guidelines both of the Norwegian health authorities and of the hospital [48].

Content validity of the questionnaire was based on the conceptualization of inter-organizational care [25, 46]. An expert panel, consisting of two nurse researchers, two hospital nurses, two home-care nurses and one nurse with long experience in helping patients who need a nurse during their transfer from hospital, was used to evaluate the questionnaire. A content validity index was used for rating the items' relevance following Polit and Beck's (2004) recommendations [42]. In addition, an ease of measurement index was used [49]. For items with low agreements the items were discussed with the panel. The items were deleted or reformulated until agreement was reached. The expert panel was also invited to point out any items which were missing. After a revision the instrument was pilot-tested by 9 home-care nurses and 16 hospital nurses. Some minor revisions were made after the pilot test.

Questions from the sections addressing what documents and the content of the information the nurses' exchange are presented in this paper (see Table 1). The 16 content items were adapted from a previously developed and validated questionnaire [46]. The questions were, however, adjusted with permission from the developer, to conform to the Norwegian health care system and terminology familiar to Norwegian nurses.

Table 1. The questions addressed in this paper

Issue	Hospital nurses were asked	Home care nurses were asked
Participants in discharge planning	To what extent do different providers participate in the discharge planning process? (6 items)	To what extent do different providers in your municipalities participate in the discharge planning process? (6 items)
Documents to exchange	What written materials about the patient do you exchange to the home care nurses? (5 items)	What written materials about the patient do you receive from the hospital? (5 items)
	Do you think the nursing discharge note is an appropriate document to inform the home care nurses? (1 item)	Do you think the nursing discharge note is an appropriate document to inform the home care nurses? (1 item)
Content	What do you document in the nursing discharge note? (16 items)	What information about the patient is documented in the nursing discharge note you receive from the hospital? (16 items)
Satisfaction	How satisfied are you with the discharge planning process at your ward? (1 item)	How satisfied are you with the hospital discharge planning process? (1 item)
	How satisfied are you with the collaboration with the home care agencies? (1 item)	How satisfied are you with the collaboration with the hospital? (1 item)
	How satisfied are you with the information you exchange with the home care agency? (2 items)	How satisfied are you with the information you exchange with the hospital? (2 items)

Table 2. Demographic characteristics of the study participants

Demographic information	Before EPR implementation			After EPR implementation		
	Hospital nurses (N=88)	Home care nurses (N=80)	p-value	Hospital nurses (N=97)	Home care nurses (N=64)	p-value
Gender	78/8	72/8		89/6	61/3	
Female/Male N (%)	(90.7/9.3)	(90.0/10.0)		(93.7/6.3)	(95.3/4.7)	
Age mean (SD)	31.7 (8.4)	39.8 (8.7)	*** Ψ	31.5 (8.3)	40.7 (8.4)	*** Ψ
Total years of experience	5.6 (5.4)	12.5 (8.8)	*** Ψ	5.6 (6.4)	12.8 (7.5)	*** Ψ
Mean (SD)						
Experience in present position	3.2 (2.9)	4.2 (4.1)		3.0 (2.3)	3.6 (2.9)	
Mean (SD)						
Full- /part-time	76/8	55/20	** Φ	84/8	45/18	*** Φ
Work time N (%)	(90.5/9.5)	(73.3/26.7)		(91.3/8.7)	(71.4/28.6)	
Position N (%)						
Staff nurse	70 (83.3)	50 (67.6)	* Φ	84 (86.6)	50 (79.4)	
Nurse manager	14 (16.7)	24 (32.4)		11 (11.6)	13 (20.6)	

*p<0.05, **p<0.01, ***p<0.001.
Φ chi square exact test had been performed.
Ψ Independent-samples t-test has been performed.

These adjustments were recommended by the expert panel.

The nurses scored each item on a Likert-type scale. Except for the questions about how satisfied the nurses were, the nurses rated each item on a 1 to 4 scale, where 1=never, 2=sometimes, 3=often, and 4=always. On the satisfaction scale the nurses could choose between 1=not satisfied at all, 2=not very satisfied, 3=somewhat satisfied and 4=very satisfied.

Statistical analysis

The statistical package SPSS version 11.0 was used. The chi square exact test on categorical data and independent-samples t-tests on the continuous variables were used to analyse differences between the hospital and home care nurses on the demographic characteristics. Differences between the proportions of the health providers in the respective participant groups in the discharge planning process were evaluated using normal approximation.

A factor analysis using the extraction method principal component analysis with Oblimin rotation was applied to facilitate exploration and condense the number of items. The pattern matrix was used double-checked with the structure matrix [50]. To compare differences between the hospital and home care nurses and differences within each nursing group on their assessment of the extracted factors, an independent t-test was considered to be the most appropriate choice based on the recommendations of Skovlund et al. (2001) [51]. Internal consistency is reported as Cronbach's alpha. A p-value of <0.05 was regarded as significant.

Results

A total of 189 (65.9%) hospital nurses (90 before and 99 after EPR) and 148 (67.2%) home care nurses (84 before and 64 after EPR, respectively) returned the questionnaire, which gives a total response rate of 66.4%. Eight questionnaires, six at the first time-point of the data collection and two at the second time of data collection, were excluded for further analysis due to deficiencies, i.e. they were incompletely filled out. Of those nurses who returned the questionnaire, 38.2% said they had not answered the questionnaire at the pre-implementation stage of data collection and 14.5% said they could not remember whether they had answered at the pre-implementation data collection. Table 1 provides a description of the characteristics of hospital nurses and home care nurses who responded at the two time points of data collection.

Table 3. Nurses' assessment of which health care providers participate in planning for the patient's discharge

Participants	Participants in hospital		Participants in home health care			
	N	Frequencies (%)	N	Frequencies (%)	95% CI	p-value
Nurses	181	179 (98.9)	138	104 (75.3)	0.16–0.31	<0.001***
Nurses assistants	169	91 (53.8)	117	27 (23.1)	0.20–0.41	<0.001***
Doctors	180	167 (92.8)	105	9 (8.6)	0.70–0.97	<0.001***
Physiotherapists	175	59 (33.8)	131	55 (42.0)	–0.19–0.03	0.142
Occupational therapists	177	51 (28.8)	128	58 (45.4)	–0.06 – –0.28	<0.01**
Social workers	179	33 (18.4)	105	54 (51.4)	–0.22 – –0.44	<0.001***

The p-value has been calculated using normal approximation.
**p<0.01, ***p<0.001
The "frequencies" column reflects ratings of "often" or "always" by the nurses with regard to the participation of the various health providers in discharge planning.

Differences between the hospital nurse group and the home-care nurse group were found regarding demographic profile as well as the positions held. The nurses in home care were older and more experienced than the nurses in the hospital. More hospital nurses held full-time positions (Table 2).

The discharge planning

Nurses and doctors were the members of hospital staff who participated most frequently in preparing for the patients' discharge from hospital. But when the home-care service was preparing for the discharge, the patient's primary care doctor participated in the discharge planning process less frequently than the nurses and social workers (see Table 3). Before the EPR implementation 88.2% (n=85) of the hospital nurses' reported they were somewhat or very satisfied with the overall discharge planning process. This score increased to 96% after the EPR implementation (p<0.031). No changes were found among the home care nurses. Both nursing groups (62.3% of the hospital nurses and 58.9% of the home care nurses) agreed that they were "somewhat" satisfied with their mutual collaboration.

The documents the nurses exchange

Both before and after the hospital implemented EPR, the two nursing groups (hospital versus home care

Table 4. Nurses' assessment of the documents they exchange before and after implementation of the electronic patient record

	Before EPR implementation					After EPR implementation				
	Hospital nurses		Home care nurses			Hospital nurses		Home care nurses		
	%	N	%	N	p-Value	%	N	%	N	p-Value
Nursing discharge note	97.9	85	87.2	68	<0.01**	96.9	94	87.3	55	0.026*
Nursing care plan	26.0	20	26.3	20	0.962	16.9	13	11.1	6	0.356
Doctor's progress note	34.6	27	41.8	33	0.356	46.4	39	35.6	21	0.196
Medication orders	48.1	39	39.5	30	0.274	58.8	50	33.3	20	<0.01**
Doctor's discharge note	69.1	56	38.9	28	<0.01**	62.7	52	45.9	28	0.046*

The Percent refers to those who have answered often/always, named frequently.
The p-value has been calculated using the chi square test to analyse the differences between hospital and home care nurses.
*p<0.05 , **p<0.01, ***p<0.001.

Table 5. Four-factor solution after principal factor analysis with Oblimin rotation

	Item	Factor 1	Factor 2	Factor 3	Factor 4
12	any complications that could occur	0.667*	0.046	–0.153	0.174
13	treatment recommendations	0.850*	0.059	0.148	0.101
15	teaching/instruction recommendations	0.832*	0.058	–0.129	–0.043
16	other information/recommendations	0.816*	–0.075	–0.128	–0.013
14	nursing care recommendations	0.716*	0.066	–0.090	–0.098
3	medical problem/diagnoses	–0.038	0.690*	–0.142	0.233
2	reason for admission	–0.069	0.776*	–0.169	0.098
1	demographic data	0.158	0.735*	0.183	0.211
8	psychological information	0.029	–0.045	–0.788*	0.091
9	social history	0.111	–0.101	–0.775*	0.100
10	patient teaching/instruction	0.169	–0.023	–0.758*	–0.016
11	other information patient received	0.223	0.027	–0.719*	–0.085
7	activities of daily living	–0.060	0.269	–0.638*	–0.107
6	medication orders	0.085	0.010	0.181	0.805*
5	medical orders (procedures, X-ray etc.).	–0.009	–0.021	0.154	0.714*
4	medical treatment received	0.046	0.475	–0.150	0.490*

Factor 1=continuing care, Factor 2=admission, Factor 3=nursing care, Factor 4=treatment.

nurses) gave different responses regarding how often they exchanged which documents to ensure patient information at discharge. As shown in Table 4 the *hospital nurses* reported that they most frequently exchanged the nursing and doctor's discharge note both before and after the EPR implementation.

The *home care nurses* reported that the nursing discharge note and doctor's progress note were most frequently exchanged at the pre-implementation phase. After the hospital implemented EPR both nursing groups reported that the nursing and doctor's discharge note was most frequently exchanged. Significant differences were found between the two nursing groups with regard to how often they exchanged the nursing and doctor's discharge note at the pre-implementation time. The significant differences, however, decreased (from p<0.01 to p 0.02) after the EPR implementation. On the other hand, the differences between the two nursing groups with regard to how often they exchanged the medication order became significant (p<0.01) in the post-implementation data collection.

Table 6. Hospital and home care nurses scores on the four information factors before and after the implementation of EPR

Patient information exchanged regarding:	Before EPR implementation			After EPR implementation		
	Hospital	Home care		Hospital	Home care	
	Mean (SD)	Mean (SD)	p-Value	Mean (SD)	Mean (SD)	p-Value
Admission	0.242 (.90)	–0.385 (1.09)	<0.001***	0.329 (.76)	–0.305 (1.07)	<0.001**
Treatment	–0.122 (1.05)	0.148 (.94)	0.122	0.109 (1.09)	–0.174 (.84)	0.101
Nursing care	–0.507 (.81)	0.716 (.71)	<0.001***	–0.651 (.93)	0.695 (.71)	<0.001***
Continuing care	0.417 (1.19)	–0.440 (.55)	<0.001***	0.327 (1.04)	–0.459 (.63)	<0.001***

The p-value has been calculated using the Independent t-test.
*p<0.05 , **p<0.01, ***p<0.001.

At the pre-implementation data collection stage, no differences in responses about documentation re-ceived from the hospital were found *within* the home care nursing group (administrative office nurses and direct care nurses). After the hospital's EPR implementation the direct care nurses reported they more often received the doctor's discharge note than the administrative nurses (p=0.04). Hospital nurses who had not answered the questionnaire at the first time of data collection (79.6% of 49) more frequently reported that they exchanged the medication order compared with those who had answered (30.3% of 33), (p<0.001) at both times of data collection. No such differences were found among the home care nurses.

Changes between the first and second data collection were found with regard to the exchange of the nursing care plan. The home care nurses reported they less frequently received the nursing care plan after the EPR implementation than before the EPR implementation (p-value=0.033). For the hospital nurses no such finding was found. Both nurse groups considered that the nursing discharge note was a useful tool for the exchange of patient information between the two organizations both before and after the implementation of EPR.

The content in the nursing discharge note

Four factors revealed from the factor analysis were used; whose structure explained 65.5% of the variance. The overall internal consistency for the four factors (hereafter named dimensions) was Cronbach's alpha 0.88. Table 5 provides an overview of the loading of each factor.

Dimension 1 reflected information about the patient's need for continuing care (Cronbach's alpha 0.87). Dimension 2 contained information about the patient's admission that hospital nurses communicate to the home care nurses in the nursing discharge note (Cronbach's alpha 0.66). Dimension 3 comprised information about the nursing care (Cronbach's alpha 0.86). Finally, Dimension 4 reflected information about the medical treatment the patient had received during the hospital stay (Cronbach's alpha 0.61).

The four dimensions reflected a timeline according to the patients' trajectory from admission to discharge. In accordance with this timeline, Dimension 3 (admission) encompassed retrospective information, i.e. information about the reason for hospitalization and the patient's status on admission. Dimension 1 (treatment) and 4 (nursing care) contained both retrospective and contemporary information about what happened during the hospital stay with regard to the medical treatment and nursing care as well as the patient's status at discharge. The first dimension

(continuing care) was prospective, with information and recommendations for continuing care for the patient in the future.

We found significant differences *between* the two groups of nurses in their assessment of how often they exchanged information about admission information, nursing care and continuing care at both times of data collection (Table 6). After the EPR implementation, the *hospital nurses* reported that they more often exchanged information about the entire dimension than the nurses in home care reported, though no significant changes occurred.

Within each nursing group, at the first data collection, significant differences between the administrative nurses and direct care nurses in *home care* were found with regard to admission information (Table 7). This difference disappeared at the post-implementation data collection.

No differences were found between those *home care nurses* who had answered the questionnaire at the first time of data collection and those who had not answered at that stage. However, such differences were found among the *hospital nurses.* The nurses who had not answered the questionnaire at the first data collection reported that they more frequently exchanged information about the patients' treatment at the post-implementation data collection (Table 8).

To what extent the two nursing groups are satisfied with the information they exchange depends on who is the sender and who is the receiver. No significant changes before and after the EPR implementation were found with regard to the satisfaction about the information they exchanged.

Discussion

There are several limitations in this study which need to be discussed. Firstly, the participants were selected by convenience sampling. On the other hand there was no other hospital which had implemented an electronic nursing discharge when the study started. Therefore this hospital and affiliated home care agencies had to be chosen to ensure that the nurses were able to answer the questionnaire.

Approximately 64% of the nurses returned completed questionnaires. The number of hospital nurses who returned the questionnaire increased at the second time of data collection, while the response rate among the home care nurses decreased. This decrease was due to the loss of a contact person in one of the municipalities during the data collection, so that no

Table 7. Administrative and direct care nurses in home care scores on the four information factors before and after the implementation of EPR

Patient information exchanged regarding:	Before EPR implementation			After EPR implementation		
	Administrative nurses	Direct care nurses		Administrative nurses	Direct care nurses	
	Mean (SD)	Mean (SD)	p-Value	Mean (SD)	Mean (SD)	p-Value
Admission	0.190 (.68)	−0.593 (1.14)	<0.01**	3.57 (.48)	−0.435 (1.09)	0.491
Treatment	0.148 (.92)	0.092 (1.01)	0.859	−0.474 (.81)	−0.013 (.84)	0.084
Nursing care	0.668 (.73)	0.729 (.75)	0.864	0.720 (.76)	0.697 (.66)	0.920
Continuing care	0.43 (.57)	−0.442 (.56)	0.945	−0.630 (.54)	−0.420 (.65)	0.084

The p-value has been calculated using the Independent t-test.
*p<0.05 , **p<0.01, ***p<0.001.

one was available to follow up and remind the nurses about the questionnaire. We have no information about the non-respondents, but there is reason to believe that failure to respond was due to the data collection procedure rather than characteristics of those nurses who did not respond. A telephone follow-up procedure to the contact persons was used [42]. The enthusiasm of the contact persons responsible for the distribution and reminders varied, which resulted in differences in response rates within both the hospital and home care units. In addition it was found that a number of studies were being conducted at the hospital concurrent with this study. This might also have influenced the response rate. Questionnaires have the advantages of making it possible to collect large amounts of data. The disadvantage is often a low response rate [42]. No demographic differences, however, were found within either the hospital group or the home care group at the respective time points of data collection. Before the study started a turnover problem was identified. Tracking individual nurses would

therefore have reduced the total sample at the second time point due to high turnover of staff. Discussions with contact persons and other studies following a natural intervention process confirmed the problem [52]. Of those nurses who returned the questionnaire 38.2% said they had not answered the questionnaire at the pre-test and 14.5% said they could not remember whether they had answered. Differences were found for those nurses in hospital who had not answered the questionnaire before in the reported frequency for exchanging medication orders and information about the patient's treatment.

Another limitation is the study design following the hospital's natural step-wise EPR implementation. This approach means that other circumstances in the organization than the change from paper to EPR may have implications for how the nurses answered the questions in the questionnaire. Therefore it is not possible to treat the nurses' answers to the questionnaire as a specific response to the EPR implementation. Svenningsen (2004) points out that in EPR as well as

Table 8. Scores on the four information dimensions for nurses answered/not answered at both data collections

Patient information exchanged regarding:	Hospital nurses			Home care nurse		
	NAB	AB		NAB	AB	
	Mean (SD)	Mean (SD)	p-Value	Mean (SD)	Mean (SD)	p-Value
Admission	0.273 (.72)	0.504 (.54)	0.126	−0.103 (1.10)	−0.495 (1.05)	0.200
Treatment	0.364 (1.04)	−0.212 (1.14)	0.035*	−0.064 (.85)	−0.251 (.79)	0.423
Nursing care	−0.756 (.86)	−0.536 (.78)	0.273	0.578 (.70)	0.839 (.70)	0.192
Continuing care	0.403 (1.13)	0.283 (.95)	0.629	−0.410 (.69)	−0.472 (.57)	0.733

The p-value has been calculated using the independent t-test.
AB=answered both at pre- and post test.
NAB=nurses who did not answer or did not remember whether they had answered the pre-test.
*p<0.05.

aspects within an organization have usually been treated as independent variables in research. Results from studying these variables have been explained as strong or weak technology or as strong or weak characteristics of the organizations. An alternative approach is to look at technology, human beings and organizations in relation to each other, not existing as isolated variables [53]. Despite the limitations mentioned above, this study has some findings which should be highlighted, assuming that EPR cannot be regarded as an isolated variable. Therefore the findings will be discussed from two perspectives: firstly, an organizational perspective addressing the participants in the discharge planning and which documents the nurses exchange; secondly, a professional perspective taking into account the specific patient information that the nurses exchange.

The organizational perspective

A multi-disciplinary approach is regarded as a prerequisite for patients with complex health care needs. This study has demonstrated such an approach in both the hospital and the municipalities in this study. However, the study also showed that the different health care providers had different roles in the discharge planning process depending on the organization they were attached to. The municipalities have specialized teams composed of nurses, physiotherapists, occupational therapists and social workers who assess each patient's need for home care when they receive a referral from the hospital. Yet these were not the staff that provided direct care to the referred patient. The most common organizational model in the region studied is that the members of the team consult the patient's doctor if they need information about medical issues. A previous study showed, however, that the communication between the patient's doctor and the home care agencies could be insufficient [10]. Patients who need continuing care often have complex problems indicating the need for multidisciplinary assessment and care. How health care providers other than nurses communicate and exchange information is not addressed in this study.

Even though there were no significant differences before and after the EPR implementation, the home care nurses experienced that they received both the nursing discharge note and the doctor's discharge note more frequently than before. Both of these documents have been implemented and are accessible to nurses and doctors in the hospital's EPR system. So it would appear that having different providers' documents in the same EPR has made the nurses more conscious about the documents which are necessary and possible to exchange at the patient's discharge.

The nurses who care directly for the patient report that they more often receive the doctor's discharge note (p=0.045) after the EPR implementation. The doctor's discharge note contains information about the patient's medication. The differences between the two nursing groups in the extent to which medication orders were exchanged decreased after the hospital implemented EPR. The increased exchange of the doctor's discharge note might be the reason why the home care nurses less often received the medication orders document after the hospital EPR implementation. A well-known problem with the paper-based patient record was that documents were sometimes dispersed between different places in the hospital.

After the EPR implementation, both groups of nurses reported that they exchanged a nursing care plan less often than before. The EPR system provides templates in the nursing discharge note where the nurses are expected to record details of the patient's admission, functional status at discharge and recommendations for further care. This might be regarded as sufficient information for exchange, in their assessment eliminating the need for a formal care plan. Another previous study found that the admission notes were more comprehensively filled out when nurses had access to and used templates in EPR [54].

Another aspect that might influence these findings is how the nurses in the hospital sent the discharge note. Most of the municipalities had implemented EPR before the hospital did and before this study. The hospital and home care agencies, however, had different computer systems. The computer applications within the municipalities also differed. The different EPR systems were not able to communicate with each other to enable electronic exchange of the discharge notes or referrals. This situation lasted after the hospital had implemented the electronic nursing discharge note. So at both times of data collection the nurses exchanged the discharge note by postal mail or sent it home with the patients at their discharge. Even though the advent and implementation of EPR have shown the potential for reducing errors and enhancing patients' safety, problems associated with the communication problems are still reported [55]. It is stated that the development of information technology has not reached a level which supports the nursing working process and information management needs [56]. The present study shows that even though both the hospital and the municipalities had implemented EPR, this did not have any implications for how the information was exchanged.

The professional perspective

The hospital and home care nurses differed in their assessment of the content of the information they

exchanged both before and after the EPR implementation. No changes were found between the two times of data collection. The period during which the second data collection was undertaken might have affected the findings in this study. The second round of data collection took place three months after the hospital wards had implemented the electronic nursing discharge note. The home care nurses may thus have had insufficient experience in receiving this new format. There has been some discussion as to what time interval is most appropriate after an EPR implementation before collecting data in order to explore changes. An interval between one and six months after EPR implementation and thereafter 6–12 months is reported [57].

The nursing groups reported that the nursing discharge note was an appropriate tool for information exchange. However, the fact that the home care nurses reported that they did not receive either the nursing discharge note or the doctor's discharge note regularly combined with the disagreement about the content should be considered with regard to the patients' safety. Jewell (1993) found that inadequate communication between the hospital and community staff resulted in inconvenient medication management for the patient. It was also found that information about the patients' activity of daily living was passed on to the community in only one of three cases [34]. Bates et al. (2003) point out that the information technologies have the ability to ensure patient safety and reduce errors. They state that financial and cultural barriers and absence of used standards are problems which have led to lack of implementation of information technology which could contribute to patient safety [55]. An effort has been made to develop a Continuity of Care Record (CCR) intending to improve continuity of patient care. A set of basic patient information consisting of the most relevant information is being developed. A discharge note with a care plan is one of the documents proposed in the CCR [58]. The present study shows the need to clarify what information nurses in different organizations need. It has also been demonstrated that, independent of paper-based or electronic patient records, it cannot be taken for granted that the hospital nurses' priority for what information they exchange corresponds to the information which contributes to bridge the gap between hospital and home care nurses. Gardner (2000) found that nurses in hospital and home health care organizations assessed the patient differently, because they had different objectives and views about the patient's situation. Hospital nurses focused on the patient as acutely ill, while the home health care nurses focused on the patient as chronically ill [59]. Norwegian legislation lays down different provisions for hospitals (Act relating to the specialist health services [60]) and the home health agencies

(Act relating to the municipal health services [61]). Such aspects should be considered in relation to the advent and implementation of information technology in health care.

This paper does not establish whether the content of the nurses' discharge note really changed. Kjerulff [62] reminds us that it is as useful to measure "how people perceive that things have changed as to measure how things actually have changed as a function of a new computer system" (p. 38). For example both structural issues and values can influence how members in different organizations adopt and assess innovations [63]. In this paper only the nurses' perceptions are addressed.

The organizational changes which occurred before and during the study in the municipalities and the fact that different individuals answered the questionnaire in the first and the second round of data collection should both be taken into account when interpreting the findings. Either of these factors may have influenced the information flow both across the hospital and municipalities and within each district.

The nurses' satisfaction with the information exchange

The organizational structure, especially in the home care agencies, might have implications for the nurses' satisfaction with the information they receive. One aspect that might have influenced how the nurses rated the questions in this study was the organizational structure within the municipalities, divided between administrative nurses and direct patient care nurses. One respondent commented on the questionnaire that: "it is mostly the administrative office that has the contact with the hospital and receives information about the patient." The organizational changes in most of the districts were undertaken close to and around the time of the first data collection, which resulted in the differentia-tion between administrative nurses mak-ing the nursing care decisions, and the nurses providing direct patient care based on the administrative nurses' decisions. Previously, the same nurses were responsible both for care decisions and for direct patient care. Vabø (2001) states that the new organizational structure in the municipalities has influenced the relationship between the administrative function and the staff nurses and that the home care service has become more divided and fragmented due to these changes [64].

Conclusions

The purpose of this paper was to explore and compare hospital and home care nurses' assessment of

their information management at patients' discharge from hospital to home care before and after the hospital implemented an electronic nursing discharge note. Despite the limitations described above, this study demonstrates the need to take into account the complex organizational context in which nurses work according to their information management across different organizational boundaries. The organizational structure in the municipalities has implications for how administrative nurses as opposed to nurses caring directly for the patient report on the information management. An asymmetry in the participants involved in patient discharge illustrates the possible intra- and inter-organizational information gaps. The organizational structure may have influenced the information flow both across the hospital and the municipalities and within each district, as well as the way in which the nurses assess the information exchange. An administrative nurse might need different information from the direct care nurse. This is an issue which should be explored further.

The nurses in hospital and in home care settings had different assessments of the extent to which they used the same documents for exchanging patient information as well as the content of the information they exchanged. This finding is significant because pinpointing the problems in nurses' information management is a prerequisite for patient safety and for appropriate development of information systems which could be used across organizational boundaries and between nurses with different approaches in their work.

This study also illustrates some of the problems that arise when investigating an EPR implementation in a natural setting. Taking into account the limitations described in the discussion, one should be careful about making strong generalizations from the findings of this study. Further investigation should explore the organizational aspects that must be taken into account if the full benefits of the EPR for promoting continuity and integration of care between hospital and home care are to be realized in practice. The findings demonstrate the need to customize both the content and the structures for the nurses' information management, and to take into consideration the organizational context and practice models within which the nurses work in both settings.

Acknowledgements

Reviewers

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References

1. Helse- og omsorgsdepartementet. Fra stykkevis til helt. En sammenhengende helsetjeneste. Ministry of Health and Care Services, Official Norwegian Report No. 3]. Oslo: Helse- og omsorgsdepartementet; 2005. p. 153.
2. Iakovidis I. From electronic medical record to personal health record. Studies in Health Technology and Informatics 997;43(Pt B):915–22.
3. Patterson PK, Blehm R, Foster J, Fuglee K, Moore J. Nurse information needs for efficient care continuity across patient units. Journal of Nursing Administration 1995;25(10):28–36.
4. Warner HR, Guo D, Mason C, Livingston J, Bray BE. Enroute toward a computer based patient record: the ACIS project. Proceedings – the Annual Symposium on Computer Applications in Medical Care 1995. p. 152–6.
5. Ministry of Health and Social Affairs. Lov om helsepersonell. No. 4 [The Health Personnel Act]; 1999.
6. Lærum H, Ellingsen G, Faxvaag A. Doctors' use of electronic medical records systems in hospitals: cross sectional survey. British Medical Journal 2001;323(7325):1344–8.
7. KITH. Statusbeskrivelse, elektronisk samhandling. [Norwegian centre for informatics in health and social care. Status description, electronic interaction.] Trondheim: KITH; 2003. p. 62.
8. KITH. Medisinsk-faglig innhold i epikriser "Den gode epirise". [Norwegian centre for informatics in health and social care. Specialized medical content in case summaries "The good case summary"]. Trondheim: KITH. 2002. p. 30.
9. Cook RI, Render M, Woods DD. Gaps in the continuity of care and progress on patient safety. British Medical Journal 2000;320(7237):791–4.
10. Rognstad S, Straand J. Vet fastlegen hvilke medisiner hjemmesykepleien gir pasientene. [Do general practitioners know what medicines community nurses give their shared patients?] Tidskrift for Den Norske Lægeforening 2004;6(124):810–12.

11. Larson J, Bjorvell C, Billing E, Wredling R. Testing of an audit instrument for the nursing discharge note in the patient record. Scandinavian Journal of Caring Sciences 2004;18(3):318–24.
12. Anderson MA, Helms LB. Communication between continuing care organizations. Research in Nursing and Health 1995;18(1):49–57.
13. McKenna H, Keeney S, Glenn A, Gordon P. Discharge planning: an exploratory study. Journal of Clinical Nursing 2000;9(4):594–601.
14 Ehnfors M, Thorell-Ekstrand I, Ehrenberg A. Towards basic nursing information in patient records. Vård i Norden. Nursing Science and Research in the Nordic Countries 1991;11(3/4):12–31.
15. Karkkainen O, Eriksson K. Structuring the documentation of nursing care on the basis of a theoretical process model. Scandinavian Journal of Caring Sciences 2004;18(2):229–36.
16. Stokke TA, Kalfoss MH. Structure and content in Norwegian nursing care documentation. Scandinavian Journal of Caring Sciences 1999;13(1):15–25.
17. Hellesø R, Ruland CM. Developing a module for nursing documentation integrated in the electronic patient record. Journal of Clinical Nursing 2001;10(6):799–805.
18. Preston C, Cheater F, Baker R, Hearnshaw H. Left in limbo: patients' views on care across the primary/secondary inter-face. Quality in Health Care 1999;8(1):16–21.
19. Smeenk FW, de Witte LP, Nooyen IWC, Crebolder HFJ. Effects of transmural care on coordination and continuity of care. Patient Education and Counseling 2000;41(1):73–81.
20. Kersten D, Hackenitz E. How to bridge the gap between hospital and home? Journal of Advanced Nursing 1991;16(1):4–14.
21. Anderson MA, Helms L. Home health care referrals following hospital discharge: communication in health services delivery. Hospital and Health Services Administration 1993;38(4):537–55.
22. Beddar SM, Aikin JL. Continuity of care: a challenge for ambulatory oncology nursing. Seminars in Oncology Nursing 1994;10(4):254–63.
23. Krogstad U, Hofoss D, Hjortdahl P. Continuity of hospital care: beyond the question of personal contact. British Medical Journal 2002;324:36–8.
24. Shortell SM, Kaluzny AD. Health care management. New York: John Wiley and Sons; 1983.
25. Hellesø R, Lorensen M. Towards a conceptualization of inter-organizational continuity of care in the age of information technology. International Journal of Nursing Studies [serial online] 2004. In Press, corrected proof. Available from: URL: http://www.sciencedirect.com/
26. Clare J, Hofmeyer A. Discharge planning and continuity of care for aged people: indicators of satisfaction and implications for practice. Australian Journal of Advanced Nursing 1998;16(1):7–13.
27. Sullivan EJ, Decker PJ. Effective leadership and management in nursing. New Jersey: Pearson Prentice Hall; 2005.
28. Hellesø R, Lorensen M, Sorensen L. Challenging the information gap – the patients transfer from hospital to home health care. International Journal of Medical Informatics 2004;73(7):569–80.
29. Philipsen H, Stevensen FCJ. Modernization, rationality and continuity of care: theoretical concepts and empirical findings. Sociological Focus 1997;30(2):189–204.
30. Procter S, Wilcockson J, Pearson P, Allgar V. Going home from hospital: the carer/patient dyad. Journal of Advanced Nursing 2001;35(2):206–17.
31. Werrett JA, Helm RH, Carnwell R. The primary and secondary care interface: the educational needs of nursing staff for the provision of seamless care. Journal of Advanced Nursing 2001;34(5):629–38.
32. Procter PM. Apocalypse—Shortly! In: Saba V, Carr, R, Seremus, W, Rocha, P. editors. One step beyond: the evolution of technology and nursing. Auckland: Adis International; 2000. p. 39–44.
33. Bull MJ, Roberts J. Components of a proper hospital discharge for elders. Journal of Advanced Nursing 2001;35(4):571–81.
34. Jewell SE. Discovery of the discharge process: a study of patient discharge from a care unit for elderly people. Journal of Advanced Nursing 1993;18(8):1288–96.
35. Bull MJ. Patients' and professionals' perceptions of quality in discharge planning. Journal of Nursing Care Quality 1994;8(2):47–61.
36. Brocklehurst N, Butterworth T. Establishing good practices in continuing care: a descriptive study of community nursing services for people with HIV infection. Journal of Advanced Nursing 1996;24(3):488–97.
37. Anderson MA, Helms LB. Talking about patients: communication and continuity of care. Journal of Cardiovascular Nursing 2000;14(3):15–28.
38. Ehnfors M, Ehrenberg A, Thorell-Ekstrand I. VIPS-boken. En forskningsbaserad modell för dokumentation och omvårdnad i patientjournalen. [The VIPS book. A research-based model for documentation and care in the patient record.] Stockholm: Vårdförbundet; 1998.
39. Ribka JP. Building systems to measure continuity of care. Nursing Case Management 1998;3(4):151–4.
40. Hammer SV, Moen A, Børmark SR, Husby EH. A hospital-wide approach to intergration of nursing documentation in the electronic patient record (EPR). In: Marin HdF, Marques EP, Hovenga E, Goosen W. editors. e-Health for all: designing nursing agenda for the future. Rio de Janeiro: E-papers Servicos Editorials Ltd.; 2003. p. 435–9.

41. Naylor MD, Bowles KH, Brooten D. Patient problems and advanced practice nurse interventions during transitional care. Public Health Nursing 2000;17(2):94–102.
42. Polit DF, Beck CT. Nursing research: principles and methods. Philadelphia: Lippincott Williams and Wilkins; 2004.
43. Bull MJ, Luo D, Maruyama GM. Measuring continuity of elders' posthospital care. Journal of Nursing Measurement 2000;8(1):41–60.
44. Hedges G, Grimmer K, Moss J, Falco J. Performance indicators for discharge planning: a focused review of the literature. Australian Journal of Advanced Nursing 1999;16(4):20–8.
45. Grimmer K, Moss J. The development, validity and application of a new instrument to assess the quality of discharge planning activities from the community perspective. International Journal for Quality in Health Care 2001;13(2):109–16.
46. Turpin PMG. Information needs across health care settings: the pursuit of continuity of patient care. The University of Texas at Austin Ph.D. 2000. p. 209.
47. Moen A, Hellesø R, Quivey M, Berge A. Dokumentasjon og informasjonshåndtering. Faglige og juridiske utfordringer og krav til journalføring for sykepleiere. [Documentation and information handling. Professional and legal challenges and requirements for patient record keeping for nurses.] Oslo: Akribe; 2002.
48. Sosial- og Helsedepartementet. Forskrift for pasientjournal. [Ministry of Health and Social Affairs, Administrative regulation for patient records.] Oslo. 2000.
49. Haraldsen G. Spørreskjema etter kokebokmetoden. Oslo: Ad Notam Gyldendal; 1999.
50. Field A. Discovering Statistics using SPSS for Windows. London: SAGE Publications; 2000.
51. Skovlund E, Fenstad GU. Should we always choose a nonparametric test when comparing two apparently nonnormal distributions? Journal of Clinical Epidemiology 2001;(54):86–92.
52. Ammenwerth E, Kutscha U, Kutscha A, Mahler C, Eichstädter R, Haux R. Nursing process documentation systems in clinical routine – prerequisites and experiences. International Journal of Medical Informatics 2001;(64):187–200.
53. Svenningsen S. Den elektroniske patientjournal og medicinsk arbejde – reorganisering af roller, ansvar og risici på sygehuse. [The electronic patient record and medical work – reorganization of roles, responsibilities and risks in hospitals] København: Handelshøjskolens Forlag; 2004.
54. Wibe T, Edwin E, Moen A. Audit and quality improvement of nursing documentation as the documentation is integrated in the electronic patient record. In: Marin HdF, Marques EP, Hovenga E, Goosen W. editors. e-Health for all: designing nursing agenda for the future. Rio de Janeiro: E-papers Servicos Editorials Ltd.; 2003. p. 456–60.
55. Bates DW, Gawande AA. Improving safety with information technology. New England Journal of Medicine 2003;348(25):2526–34.
56. Androwich IM, Bickford CJ, Button PS, Hunter KM, Murphy J, Sensmeier J. Clinical Information Systems. A framework for Reaching the Vision. Washington D.C.: American Medical Informatics Association, American Nurses Association 2003. p. 80.
57. Ammenwerth E, Mansmann U, Iller C, Eichstadter R. Factors affecting and affected by user acceptance of computer-based nursing documentation: results of a two-year study. Journal of the American Medical Informatics Association 2003;10(1):69–84.
58. Medical Record Institute. Continuity of Care Record (CCR): The Concept Paper of the CCR – Version 3. [Online]. 2005 [cited 2005 Jun 29]; Available from: URL: http://www.medrecinst.com/pages/about.asp?id=54
59. Gardner G. Hospital and home. Collegian 2000;7(1):9–15.
60. Ministry of Health and Social Affairs. Lov om spesialisthelsetjenester. No. 61 [The Health Personnel Act]. 1999.
61. Ministry of Health and Social Affairs. Lov om kommunale helsetjenester No. 66 [Act relating to the municipal health services]. 1982.
62. Kjerulff KH. Research methods to measure impacts of medical computer systems. In: Anderson JG, Aydin CE, Stephen JJ. editors. Evaluating Health Care Information Systems. Methods and applications. London: SAGE Publications; 1994. p. 30–44.
63. Rogers E. Diffusion of Innovations. New York: Free Press; 1995.
64. Vabø M. Forbrukermakt – en kilde til bedre omsorgstjenester? In: Torsen K, Dahle R, Vabø M, editors. Makt og avmakt i helse- og omsorgstjenestene. Oslo: NOVA; 2001. p. 77.