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Confronting Challenges of Contingency: Using a Web-Based Patient Record for Ulcer Care

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Abstract

In the Norwegian authorities' "Coordination Reform", insufficient coordination is considered the main reason that people with chronic diseases lose out in health care. Thus, the purpose of the web-based ulcer record at the University Hospital of North Norway is to optimise treatment and care for ulcer patients by facilitating interaction. This paper reports from a formative study of experiences, and addresses challenges in ulcer care and possible solutions. Qualitative interviews are conducted with all professionals and patients using the service from its start in 2011 and I present challenges for integrating knowledge, a crucial step for optimising services. The analytical perspectives are the sociology of knowledge, which emphasises the socially contingent character of knowledge, and science and technology studies, which emphasises the potential for mediation of social life through electronic media. Challenges related to differences in knowledge, procedures, values and goals, and transparency, are discussed in order to contribute to an understanding of how the use of the ulcer record may improve services.

1. Introduction

According to the Norwegian Coordination Reform (Norwegian Ministry, 2008/09)*,* insufficient coordination is a challenge in health services. Specialisation is a deliberate policy goal, but in the Reform, a demand for new ways to coordinate and harmonise specialised units and levels of care is articulated in order to obtain improvement. Web-based solutions are among the proposals.

Coordination seems to be crucial in ulcer treatment. Ulcers are complex conditions, generally caused by underlying diagnoses, and specialised units in health care are responsible for different interventions. Challenges

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occur when patients need harmonised services and also, in part, take care of themselves. Such contingencies need to be linked.

In 2011, the Department of Dermatology (DoD) at the University Hospital of North Norway (UNN) established a web-based ulcer record that had been developed in Denmark (www.pleie.net), intending to facilitate interaction between dermatology specialists, general practitioners, home care nurses and patients. The information and communication (ICT) system consists of databases, an application to communicate images and text between participants and, lastly, a tool for analysing ulcers. The service includes advice between a specialist team and the home care nurses or patients (Ekeland et al., 2011). The purpose was to optimise treatment and care.

In a formative study, Ulcer Interaction, at the University Hospital of Tromsø (www.telemed.no), in which researchers work with users to improve a current situation, the research team explores how use of the ulcer record contributes to improving quality. As part of the study, challenges related to professional knowledge are brought into focus in this paper, as are suggestions for the service's improvement. Sorting out why there is a need for coordination and integration is a necessary step in order to obtain improvements. The next step is to analyse how integration of knowledge was enacted in user patterns of the web-based ulcer record and how coordination and optimisation of care and treatment were affected.

2. Material and methods

Patients, home care nurses and general practitioners were enrolled both in the service and in the research project when they made visits to the DoD, UNN. From the start, a total of six patients and nine professionals were included. Four of the patients took care of their own ulcers, and two of the patients were cared for by home care nurses. The research group have conducted qualitative interviews with all the professionals involved and with the four patients who took care of their own ulcers. A different branch of the project addresses patient experiences. Here, the professionals are addressed. They are the following:

- Three nurses at a regional specialised ward under supervision from the UNN, supporting and advising home-care nurses. They were interviewed as a group for two hours during a site visit.
- Four home care nurses from two different home care districts. Two were interviewed at their office and two by telephone conference call. The interviews took place after the nurses had used the patient record for one patient at each home-care district over a period ranging from three to six months. These patients were not able to care for their own ulcers for various reasons.
- Two specialists from the ulcer team at the UNN. The team was interviewed on two occasions: once at the beginning of the research project in February 2011 and again in December 2011.

Material from the study has been presented in workshops and meetings with different participants. There have been frequent discussions with the ulcer team and other stakeholders. The professionals were asked about challenges regarding established treatment and care, their expectations for the record and their experiences concerning technological affordances, changes in cooperation, division of tasks, roles and procedures, how they experienced differences in knowledge and how their knowledge was affected. The interviews were taped, and relevant parts were transcribed.

3. Knowledge, social contingency, integration and ICTs—analytical concepts

3.1. Knowledge and social contingency

Theoretical perspectives underlying the study in general are a) sociology and philosophy of knowledge, emphasising the social and situational contingency of knowledge, and b) science and technology studies, emphasising the potential of mediating one's social life through electronic information and communication technologies.

Knowledge in health care includes at least three intertwined elements: evidence- and experience-based scientific knowledge, socially constructed knowledge related to the situation and to the context where tasks are

performed and, finally, pragmatic knowledge in the form of personal skills. Knowledge is considered to be both implicit and explicit and to incorporate world views and values, and it originates in the mind of the knower. Consequently, knowledge is considered to be embedded in practice communities, as pointed out by Wenger (Wenger, 1998). In this case, the different specialised units involved are denoted as practice communities. Adding to this, improving knowledge and practices is considered to be an on-going and intertwined effort. As such, change may occur by addressing new challenges and grasping opportunities for new tools in daily practices (Mol, 2003). Different kinds of knowledge and procedures are enacted and re-enacted in and through practices.

3.2. Coordination and integration

Coordination can be defined as "the organization of the different elements of a complex body or activity so as to enable them to work together effectively: *an important managerial task is control and coordination of activities*" *(*Oxford Dictionaries, 2010*)*. Knowledge integration consists of linking distributed knowledge in a way that permits access to, and utilisation of, individuals' specialised knowledge when undertaking a collective effort (Dougherty, 1992; Okhuysen & Eisenhardt, 2002).

Social integration is a process whereby different social units are connected and united. In the theory of consensus, integration is developed when members of a society have similar values. Social integration requires proficiency in an accepted common language, acceptance of certain laws and adoption of a common set of values.

Proficiency in an accepted common language in ulcer care involves scientific and pragmatic knowledge and social constructions in practice communities. Laws are understood here as diagnoses and procedures in treatment and care. Values are understood as directions, or courses of action, goals and values.

In sum, the analysis of challenges for integration and improvement will be structured according to knowledge of language, diagnoses and procedures, courses of action, goals and values.

3.3. Mediation of social life through electronic media

The potential for mediation of social life through the use of electronic information and communication technologies has been substantiated in studies of new media (Rasmussen, 1996). In the emerging world of online social-networking applications, social integration is a term that describes when members are transparent in all of their various work, personal, faith and local-community interactions. Given such a definition, transparency is considered to be an integration mechanism in this study, so transparency will be an additional element for structuring the discussion about challenges.

4. Results and discussion—challenges

For the discussion of challenges, I put the theoretical concepts to work. The following conclusion has been derived from taking the three elements of knowledge into consideration: different parts of services propose different solutions based upon what they know and master in their daily professional practices. First, an account of the practice communities involved and their respective tasks and responsibilities is given. Second, I present and discuss challenges stemming from contingencies in knowledge of language, followed by contingencies in diagnoses and procedures and, lastly, contingencies in courses of action, goals and values. Transparency is also considered. I point to the potential for integration after each section.

4.1 Practice communities and responsibilities

Specialised health services perform advanced medical and surgical interventions, such as skin transplantation and amputation. They are up to date regarding the latest innovations in treatment and are responsible for supervision. General practitioners are responsible for initial diagnoses, for medical treatment when patients do

not need to see a specialist and for referrals. They are also responsible for the medical treatment of patients carried out by home health-care services. Home-care nurses are responsible for medical treatment and care as prescribed by doctors and according to nursing standards and clinical assessments. In some cases, patients take care of their own ulcers with controls either at their GP's office or at the DoD, UNN. In this study, home-care nurses reported that GPs in general left daily ulcer care up to them, unless the patient specifically wanted to see the doctor (Compiled from interviews with the specialist ulcer team).

4.2 Contingency of knowledge of language

The home health-care nurses documented ulcers once or twice a week and sent images and text to the specialists once a week. They explained changes—how it looked, how the edges were—and sent requests. They received a response immediately, either by phone or written in the record. They were not familiar with the reporting procedure in the beginning and claimed that they had difficulty finding the correct words: "They [the specialists] use a different language than we do, they are more specialised" (Nurse 3, home care district). A development towards a concerted language will be made possible through interaction via the web-based ulcer record.

4.3 Contingency of knowledge of diagnoses and procedures

Ulcers may be difficult to diagnose. They occur from underlying diagnoses such as diabetes, cancer and other serious illnesses. One of the patients, a 60-year-old woman, had an ulcer twice, altogether for more than four years. The first one occurred in 2004, and it healed. Then, a new ulcer occurred in 2009—it healed during the summer of 2011. However, knowledge regarding the diagnoses was difficult to obtain: "It was never known what kind of ulcer it was. They defined it as an ulcer with a possible circulatory problem with venous backflow" (Nurse 2, home care district).

The fact that different practice communities control or administer different procedures was explicitly mentioned as a challenge concerning the ability to collaborate: "They [GPs] have most knowledge about heart failure, diabetes, stroke and general conditions" (Nurse 2, home care district). In addition, differences between specialists regarding which services they provided were identified as a challenge: "NN hospital has limited competence about chronic ulcers and they always recommend one or another surgical intervention; transplantation or amputation" (Nurse 1, home care district). This challenge may be solved through transparency between different practice communities and their procedures, made possible by involving all professionals in the use of the ulcer record.

4.4. Contingencies of courses of action, goals and values

The importance of being able to perform coordinated actions in order to understand what works and what does not work in ulcer care was pointed out as crucial. In one home-care district, up to ten different nurses had been involved in the treatment of a patient over time. It turned out that they had performed their tasks slightly differently, according to their own personal skills and goals. This fact points to the existence of different combinations of knowledge, skills and values. As well, socially constructed knowledge was enacted for different procedures by different people in the same district:

> Approximately ten people were attending to the patient at home, and they did not adhere to similar procedures. This makes it difficult to keep track of what kind of intervention that has been performed for the patient over time, so to actually know what worked and did not work, was difficult. (Nurse 3, home care district)

Lack of agreement concerning goals was said to bring about confusion: "We were perplexed because the patient had been at NN hospital. They recommended amputation or skin transplantation. The patient did not want that" (Nurse 1, home care district). Confusion tended to bring about uncertainty and lack of direction: "Different advices made us feel uncertain" (Nurse 2, home care district). By offering users the ability to store and

communicate interventions and their effects, the web-based ulcer record will provide opportunities for common goals to be developed.

4.5 Challenges concerning transparency

In order to make informed decisions about best treatment and care, knowledge of the procedures that other involved professionals have carried out was considered crucial. In cases where different practice communities are involved in treating the same patient, each must know what the other sites are doing. A lack of transparency was described: "One patient had had an ulcer for one year and we did not even know" (Nurse 1, home care district).

Adding complexity to the reality of people having different knowledge, goals and values is the fact that ulcer treatment is in constant development, following medical, pharmaceutical, technical and nursing-professional advancements. Making the best decisions—that is, choosing the best available intervention—must be considered an on-going effort. Thus, collegial interaction and transparency are important and will be made easier with use of the web-based record.

5. Summary and conclusion

Based on interviews with all professional users, I have presented challenges social theories of knowledge and theory of the new media. Challenges were discussed related to issues with knowledge of language, of diagnoses and procedures, goals and values and of transparency in ulcer care. I have presented potential improvements to services, all of which can be implemented through the use of a web-based ulcer record. These include a more comprehensible language, an overview of diagnoses, transparency regarding procedures and the ability to keep track of interventions and their effects in order to facilitate stringent treatment.

I have also suggested finding better ways for being updated about the latest developments in ulcer care by taking the opportunity for professional interaction afforded by the web-based ulcer record. There are different ulcers and a variety of interventions. Thus, concerted efforts and historical tracking that are made possible by use, may reduce the confusion that arises from not knowing what other professionals are doing to "your patient" and not knowing how your intervention works. Unnecessary suffering could be prevented.

6. The way ahead

This analysis of challenges is one of the results of the on-going research project. Forthcoming analyses will consider how quality and improvements were done and enacted in different professional practices and how patients caring for their own ulcers experienced the service.

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