ID 047: Negotiating Professional Knowledge and Responsibility in Telecare – Inter-Professional Cooperation across Sectors

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Abstract
As part of ongoing efforts of rationalization and retrenchment in the healthcare sector, tasks are increasingly moved from costly specialized hospital departments to the primary healthcare sector, where less specialized personnel take on these tasks. Telecare plays an important role in facilitating local access to specialized competences at central hospitals through ICT-systems. Telecare thus establishes new virtual spaces for inter-professional cooperation between hospital- and municipal healthcare workers. This paper presents a study of how telecare contributes to transforming professional identities and inter-professional relations. In an ethnographic study of local telecare nurses' interactions with a specialized hospital department concerning the treatment of ulcers, we show how the 'tele-ulcer'-technology gives rise to a negotiation of legitimate professional knowledge, as well as to a redistribution of professional responsibilities. The tele-ulcer-technology allows local nurses to access specialized knowledge of ulcer-treatment, which contributes positively to their professional development. However, the system also leads to a subordination of their contextualized knowledge to an abstract, standardized knowledge. While the tele-ulcer technology allows local nurses to expand their professional responsibility in a meaningful manner, acting as coordinating case-managers for their patients in a fragmented healthcare system, this expanded responsibility may also become a burden in urgent cases where the resources of the tele-ulcer system are not accessible.

Introduction

Telecare is a growing practice in many western countries and is promoted as a new mantra for reforming healthcare services. Currently these services are under pressure due to increasing demands for services from a growing population of elderly people and people suffering from chronic diseases. Following a long period dominated by New Public Management-inspired reforms aiming at rationalization and marketization, telecare technologies are envisioned as leading to new and smarter forms of welfare state retrenchment, higher quality, empowerment of patients, and more qualified professional work (IDA & KL, 2008). In Denmark telecare has been a prioritized focus area within welfare state policy and across government levels since 2008, which may explain why Denmark is one of the countries, where telecare-technologies are in widespread use in daily practice (Regeringen KL og Danske Regioner, 2016). Telecare in this context entails diagnosis, treatment and monitoring among doctors, nurses and patients that is mediated through ICT and without face-to-face interaction.

This paper studies the implications of using telecare to allow healthcare tasks to move from costly, specialized hospital departments to the primary healthcare sector (municipalities), where less specialized personnel take on these tasks, while having access to specialized competences at hospitals through the telecare-technology. In these cases, telecare is used as a means of establishing virtual spaces for cross-sectoral inter-professional cooperation. The paper explores how this redistribution of work and responsibilities, made possible by the

introduction of telecare, may challenge inter-professional relations and professional identities. Our point of departure is that telecare should be studied contextually, in order to address the paradoxes and tensions that appear when the societal framing of telecare, meets the cultural and organizational contexts where specific tele-care technologies are integrated into the daily practices of healthcare professionals.

Previous research on the implications of telecare for professional work focuses primarily on telecare solutions used to provide care to patients at a distance (e.g.Oudshoorn, 2012). They stress how virtualization may alter the character of the social contact and the observations professionals are able to make (Mol, Moser, & Pols, 2010; Van Hout, Pols, & Willems, 2015), and how the validity of the patients' own measurements and observations become a new uncertainty-factor (Oudshoorn, 2008). However, in this study our focus is on another aspect of telecare-technologies; namely when these are employed as means of disseminating and sharing knowledge across sectors. In consequence, transformation of knowledge regimes and inter-professional relations become central.

This paper draws on an ongoing ethnographic field study of the 'tele-ulcer'-technology, through which nurses in the primary healthcare sector discuss their treatment of patients with (chronic) ulcers with wound specialists – tele-nurses – at a specialized hospital department through an ICT system. The study highlights how the tele-ulcer system becomes a site where conflicting forms of professional knowledge meet, and how it facilitates hierarchization of these knowledges. Furthermore, we show how professional responsibility is practiced in novel ways. The use of the tele-ulcer-technology provides local nurses with new possibilities to exercise professional responsibility, but also entails certain limitations of this.

Analytical approach

In analyzing negotiations of professional knowledge and responsibility related to the use of the tele-ulcer-technology, we draw on conceptualizations of professional knowledge in nursing work as not only abstract, specialized knowledge obtained through formal training, but also as encompassing forms of practical, embodied and context-dependent knowledge developed in interactions with particular patients (Eraut, 2000; Skår, 2010). In addition, we are inspired by insights from the sociology of standardization, which draw attention to how knowledge-sharing through ICT often implies standardization and decontextualization, and thus privileges certain forms of professional knowledge over others (Kamp & Dybbroe, 2016; Timmermans & Epstein, 2010). We see the introduction of the tele-ulcer-technology as occasioning negotiation, tensions and contradictions between different forms of professional knowledge possessed by various professional groups and sub-groups in the field of ulcer-treatment. Groups that are hierarchically positioned in relation to each other and strive to obtain a certain degree of professional autonomy in their interactions with each other (see e.g. Abbott, 1988). Furthermore, our approach is inspired by contributions from Science & Technology Studies (STS), emphasizing that technologies are interpreted and shaped, when applied in specific contexts, and may be used in innovative and unexpected ways (Halford, Obstfelder, & Lotherington, 2010; Orlikowski, 2007). We see the nurses as actively engaging in a subjective process of framing and using the tele-ulcer-technology. Another important insight from this tradition is that healthcare provision takes place in complex sociotechnical networks. This concept draws our attention to how healthcare provision is distributed across various sites, which are connected through specific care infrastructures, and involve a delegation of care tasks and responsibilities between a multiplicity of professionals and patients themselves (Langstrup, 2013). Examining how the introduction of telecare may lead to redistribution of tasks and responsibilities, we understand responsibility not only as the formal and legal responsibilities for care in a care network. Following Kilminster & Zukas (2013)

we understand responsibility as negotiated in professional practice – as distributed, fluid, relational and dynamic. Our approach thus combines insights from the sociology of professions and professional knowledge, with understandings of technology-use drawn from STS.

Methodology

The study presented in this paper forms part of a larger research project on telecare and 'welfare-technologies', and their implications for working life in the Danish healthcare sector. Tele-ulcer-technology has been in use in all Danish municipalities (the local level) and at regional hospitals (the central level) since 2012.

Local tele-nurses (registered nurses working as generalists in municipal healthcare services), are trained within a one week course at the specialized hospital unit. After this training they can communicate with hospital specialists (registered nurses and doctors specialized in wound care) concerning treatment of ulcers. They upload an assessment and photographs of ulcers in treatment every fortnight through the tele-ulcer ICT system. This ICT system is built around standardized categories and checklists for ulcer assessment, but also contains text-fields that nurses use e.g. to ask for advice on treatment. The specialized tele-nurses at the hospital are obliged to answer questions within 2-3 days. Apart from answering questions, they may also intervene if they disagree with given assessments, or if they need further information. The local tele-nurses decide which patients to include in the tele-ulcer system, following certain municipal guidelines; patients suffering from diabetic ulcers are always included, but patients with other types of complex ulcers, which require specialist attention, are also included.

We chose to study this technology as it was in widespread use and had been so for some time. We thus gain access to knowledge of telecare practices, which have moved beyond the pilot-project stage, and have actually become part of daily practices in the sector. Furthermore, the case of tele-ulcer contributes knowledge of an under-researched side of telecare: the question of how telecare transforms inter-professional relations and cross-sectoral cooperation in the healthcare sector.

In keeping with our understanding of healthcare work as taking place in complex sociotechnical networks and as distributed across a number of sites and actors, we conducted our study as a multi-sited ethnography (Marcus, 1995). We thus conducted interviews with nurses, managers and patients, and carried out participant observation of telecare practices at various sites in the tele-ulcer network. We conducted our fieldwork in a hospital department specializing in wounds, and in two local areas of a large municipality, which were in contact with that particular hospital department through the tele-ulcer-technology.

Participant observations were carried out in the following sites across different days:

- In the hospital-department's tele-care unit (2 days);
- In municipal healthcare clinics with access to the tele-ulcer system (2 days);
- On 'ride-alongs' (4 days) with home-nurses using the tele-ulcer system.
- In the hospital's outpatient clinic (2 days), where tele-ulcer patients are sometimes seen by specialized doctors and nurses in addition to local nursing services;
- At a course at the hospital training local nurses in wound-care and the use of the tele-ulcer-technology (3 days).
- At a network meeting between the managing staff from the hospital-department, and municipal managers, consultants and nurses.

In addition to these observations we conducted 14 group- and individual interviews with: municipal nurses (4), municipal managers (2), municipal consultants (2), patients with ulcers (4), a hospital tele-nurse, managers from the hospital department.

All observations were documented by taking notes when appropriate, and elaborated from memory shortly after (DeWalt & DeWalt, 2010). Interviews were recorded and transcribed. The data was thematically coded by the two researchers in preparation for the analyses presented here. All persons interviewed and observed have been anonymized (alternative names and non-disclosure of easily identifiable characteristics).
The analyses presented in this paper focus on the experiences of the local tele-nurses. Thus the material from interviews and field studies at the local clinics and 'ride-alongs' with the local nurses are used most intensively. The whole empirical study plays a role in our analyses, albeit in a more indirect manner and acts as a context for our interpretations.

Knowledge and responsibility at play

In this section, we analyze how the tele-ulcer-technology affects the local nurses; their professional identity and the conditions of possibility for exerting professional responsibility.

Negotiating legitimate professional knowledge

The introduction of tele-ulcer-technology entails training the local nurses in the specialized medical field of ulcer healing and treatment and the medical terminology connected to this. Specialized terminology forms the basis for the design of the tele-ulcer IT system that conveys standardized, abstract information on ulcers and their development, and is presented as the common language that makes cross sectoral collaboration succeed. Establishing this common language is an explicit goal of the short training course, which local nurses attend in order to become registered tele-nurses with access to the ICT-system.

The local nurses generally conceive this new position with access to supervision and specialized knowledge as a development towards more qualified and autonomous work, and receive this development with great enthusiasm. As local nurses they work mostly on their own (in small local clinics or patients' homes), and have often found themselves in difficult situations when having to make decisions on the treatment of complex ulcers.

Maud, a nurse at a local healthcare clinic, explains how this new access to specialists enables her to get professional feedback both in specific cases and more generally, and she remarks: *"This has been a very big professional step forwards".* She also observes how her own professionalism is transformed by being involved with the tele-ulcer collaboration: *"Little by little your way of thinking changes, you start thinking like them [the specialist nurses], right"*.

However, this development may also imply that the context-sensitive knowledge that is the cornerstone of local nurses' work with their patients is subordinated and silenced. In our study we observed struggles over knowledge and identity in the field, struggles that strain inter-professional relations between the local nurses, and nurses at the specialized hospital department.

One of the home nurses, Susan, says in a conversation after one of the researchers accompanied her on patient-visits in the district:*" It is as if they have the truth, and they raise their finger and point out when they find that we and others in the municipality do not do the right thing. But of course, it is easy for them to come up with an easy and correct solution; they adhere to the pure, the abstract principles. But for us, facing realities, it is not at all certain that this [the ideal solution] is going to work"*
One of the issues at stake is how to bandage ulcers. The home nurses emphasize how important it is to have

knowledge of the everyday life of the patients, their habits, their activities, and how they move about.
Stina, another local nurse, remarks eagerly. *"They [the tele-nurses at the hospital department] think there is a best way of bandaging. But there is not. You have to consider that the patients have a life, so you have to make compromises. I have often seen how a bandage, though perfect, loosens and slides down when the patient moves about"*.

Later the same day, one of the researchers observes Stina, who is in the local clinic bandaging the finger of a patient with a diabetic ulcer. She explains how she tries to adjust the way she bandages the patient in special ways, to take into account that he works as a cleaning assistant; wet work that impedes the healing of the ulcer. He ought to take sick-leave while he heals, but cannot do so for economic reasons.

Rita, a home nurse, gives another example. She points out how many patients do not like to wear orthopedic sandals in winter – the correct choice of footwear from a professional angle. They find that sandals look odd and make you stick out from other people in cold weather. Therefore, Rita normally engages in finding other solutions for them, like buying normal shoes and trying to fit them for the diabetic foot.

So, as she and other colleagues underline; home and local nursing is about making compromises between the right treatment according to the abstract knowledge and the solutions that work in practice considering the behavior, lifestyle and quality of life of the patient. Thus, intimate knowledge of the patient is crucial.

Furthermore, knowledge of the patient is not only important in the treatment of an ulcer; it also plays an important role in the assessment of ulcers. Two of the local nurses explained that assessing ulcers is normally about observing, touching, and testing (e.g. for infection). Activities connected to the specific ulcer, which can easily be reported in a standardized manner in the tele-ulcer system and thereafter assessed at a distance by the specialized tele-nurses at the hospital. However, they emphasized, it is also important to take notice of small signs concerning the patients' general well-being; things that appear in conversations with the patient, when you know him or her very well – for example bad sleep or pains. These small signs may make you suspect that something is wrong, and that the condition is more complex than assumed while making a standard assessment. Again, contextual professional knowledge is crucial.

From the above analysis, it might appear that the specialized tele-nurses at the hospital are not knowledgeable about the everyday reality of local nursing, and lack an understanding of the importance of taking the specific conditions and behaviour of individual patients into account. This was not the case by far. Our observations and interviews with them revealed a surprisingly extensive knowledge of the individual patients included in the tele-ulcer system – especially of long-term patients with chronic or semi-chronic ulcers. This knowledge was utilised in their assessments and feedback to the local nurses. The experience of the local nurses of a hierarchization of abstract de-contextualised knowledge of ulcers in general over their contextualized knowledge of individual patients, can thus not simply be attributed to an unwillingness among the specialized nurses to recognize the latter type of knowledge as important. Rather, we find that the mediation of knowledge that takes place through the tele-ulcer technology's design with standardised forms and checklists foregrounds and privileges abstract decontextualized knowledge. Contextual knowledge may be communicated in free text fields and comments, but the specialized nurses are not presented with this knowledge automatically when they enter the system – they have to go looking for it actively and try to piece the information together for a fuller picture – 'kind of like detectives' as one of them put it. However, considering their high work pressure, answering

around 50 cases a day, time for such detective-work is limited. Furthermore, the observed hierarchization of knowledge is embedded in the organizational setup of the cooperation, where local nurses seek advice from specialized hospital nurses. Thus, the design of the tele-ulcer system in itself does not establish this hierarchy of professional knowledge, but it strengthens already existing professional hierarchies in the field of ulcer-care. In summary, this analysis illustrates how introduction of cross-sectoral cooperation through the tele-ulcer-technology, that privileges communication through abstract, decontextualized concepts, evokes struggles over what is conceived as legitimate knowledge. While local nurses clearly acknowledge and highly value their improved access to abstract medical knowledge on ulcers, they struggle for recognition of their practice and the contextually bound knowledge that is crucial for this. This struggle is also about professional identity as it is obvious that they also negotiate the way they are positioned as inferior to the specialized nurses at the central hospital unit.

New distributions of professional responsibility

Technology may, as illustrated in the last section, challenge the legitimacy of different kinds of professional knowledge, but technology may also be used in ways that bring professionalism and responsibility in play in unexpected manners. In this section, we explore how the local nurses use their access to the tele-ulcer technology as a new means of managing their patients' journey through a fragmented healthcare system, in order to promote their recovery. Time and timeliness is extremely important to this process, so the pace of the journey is an important point of intervention. This is not part of the nurses' formal job-description, and may be seen as a way of extending their professional responsibility and autonomy in practice (cf. Kilminster & Zukas, 2013).

The task of healing ulcers is distributed between different sites (public hospitals, doctors' consultancies, municipal nursing clinics, private sector foot therapist clinics, private homes) and actors (various professionals, patients and relatives), and connected by infrastructures like ICT, control visits, medicine cards etc. in a complex 'geography of care' (Langstrup, 2013). Coordinating for their patients in this geography of care has long been something that the local nurses practice. As Rita explains: *"For some of them [the patients with multiple diseases] it is really difficult to make it all come together. They are e.g. going through six different procedures at three different hospitals and must try to make it work. They have to order transport to all these visits, and they cannot remember, and the wife cannot remember either. So, you just have to support them in whatever they need help for, in order to make their daily life work."*

Nurses also use the socio-technical network related to the tele-ulcer system to coordinate for patients with complex problems. They may for example use the connections they have gained through the use of the system to help patients find out when they have an appointment for surgery in other parts of the hospital system, or help them make such an appointment.

Furthermore, all the local nurses praise the tele-ulcer system for enabling them to by-pass the patients' general practitioners, who are normally gatekeepers for admissions to hospital. By including patients in tele-ulcer system, the nurses may ensure patients access to a specialized hospital unit, and the formal responsibility for the treatment of the ulcer will be placed with a doctor at the hospital rather than with the general practitioner. Visiting the hospital's specialized outpatient clinic is the starting point for the tele-ulcer process, and this is followed by regular (though seldom) visits. General practitioners, the nurses underline, are not specialized in ulcers, and do not know how to proceed. Often, they ask the home nurses what to do in these cases and then time passes, and treatment is delayed.

Some of the local nurses also use tele-ulcer to secure the patients access to resources that are crucial for the healing of their ulcers – for example special (costly) medical bandages and treatment from foot therapists (who trim dead tissue in wounds to enhance healing). By sending them to the hospital's outpatient clinic, this may be achieved quickly and with less coordination efforts. This is a way of bypassing municipal authorities that cannot grant costly bandages, or bypassing private foot therapists. As Maud explains, this simplifies the process*: "they [the outpatient clinic] have it all in one place, 'the whole package' is provided in there."*

Nevertheless, being part of the socio-technical network of tele-ulcer also implies restriction of certain possibilities. The support from tele-nurses at the specialized hospital unit is not available in situations of acute need, for example in cases where the condition of the patient suddenly deteriorates. Questions are answered within 2-3 working days. So in acute cases the patient's general practitioner must be contacted.

This puts the local nurses in a difficult situation, where their professional ethics come under pressure. The general practitioners are very difficult to reach by telephone, and the nurses, as explained above, have their doubts whether the doctors will act adequately and efficiently to solve the problem. As Rita explains, these situations can become frustrating, and she finds that responsibility is shifted onto the local nurses' shoulders: *"The problem, I think, is when something urgent happens, and we find that they [the specialized nurses] need to get involved (…) then it seems like they can stretch it a bit longer. Because they know that we are there and that we keep an eye on things, and it can be sort of difficult to (…) take action when there is an acute deterioration [of a patient's condition]."*

In situations like these, the local nurses will normally try to bypass the general practitioners and the procedure of primarily written communication of the tele-ulcer system, by trying to telephone the tele-nurses in the specialized unit. However, the hours where the specialized nurses can be reached by telephone are limited, and this strategy is thus not always successful, leaving the nurses with the responsibility to act, and having to rely on general practitioners who are less qualified in ulcers and also difficult to reach.

In sum, the socio-technical network of tele-ulcer in many situations allows the local nurses to expand their responsibility for the patients' treatment in ways that are considered meaningful. It supports them in taking on the role of 'case managers', and gives them a new point of access to the hospital system on behalf of the patients. However, this expansion of responsibility may also be experienced as frustrating when the nurses are not able to mobilize the resources of the tele-ulcer network, and have to rely on general practitioners.

Conclusion

We have shown how professional knowledge and responsibility is negotiated in the tele-ulcer network from the point of view of local nurses. They are generally enthusiastic about their newly gained access to the socio-technical network of tele-ulcer. They see this as an opportunity for professional development, and find that the access renders them more qualified and autonomous in their treatment of ulcers. Tele-ulcer presents them with a new access point to the hospital system, allowing them to act more efficiently as 'case-managers' for their patients, expanding their professional identity and responsibility in meaningful ways. Furthermore, it allows them to by-pass other local professional groups (e.g. general practitioners, local foot therapists), and avoid what they perceive as uncoordinated and less qualified treatment.

However, the tele-ulcer network is also an arena for struggle over professional knowledge, identity and

responsibility. We have shown how the tele-ulcer technology strengthens a hierarchization of abstract, decontextualized knowledge over local and context-sensitive knowledge, and how the cross-sectoral cooperation established with the system positions local nurses and their knowledge as inferior to hospital experts. Furthermore, the experienced meaningful expansion of professional responsibility and autonomy also has its limits. In cases of urgent deterioration of a patient's condition, responsibility may instead be experienced negatively, as shifted onto the local nurses' shoulders and access to qualified assistance in these cases can be difficult to obtain.

The analyses presented above contribute to a better understanding of an under-researched side of telecare-technologies: how these contribute to the transformation of professional knowledge and responsibility, of inter-professional relations, and how new modes of coordination in a fragmented healthcare system are established. In our further work within this research project, we aim to include the perspectives of other professional groups in the tele-ulcer network to deepen our analysis of these questions.

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