Three Key Concerns for a Successful EPR Deployment and Usage

Rebecka JANOLS[a,1], Bengt GÔRRANSON[a], and Bengt SANDBLAD[a]

[a] *Department of Information Technology, Uppsala University, Sweden*

Abstract. The health care environment is unique because of the large and complex organisation with a traditional hierarchic structure that is governed by laws and regulations. This paper examines how a large Swedish health care organisation work with usability issues regarding Electronic Patient Record (EPR) deployment and usage. EPR systems have great impact on work environment and clinical work routines will not be performed in the same way as before. This paper analyse how the EPR management and core business understand their EPR responsibilities and work with usability aspects at different levels in the organisations. The paper reveals that there is a conflict about responsibility between EPR management and core business management. The reasons for the confusion are contradictive understanding of what an EPR system is, an IT system or a tool for the core business to perform better health care work. This leads to that care staff's experience regarding the EPR system's usability, is not being listened to within the organisation. Three key concerns for a successful EPR deployment and usage are identified and further analysed; *education, evaluation* and *support & improvement ideas*.

Keywords. usability, organisational change, health care, electronic patient record system

1. Introduction

Today many health care organisations are deploying computer-based systems such as the Electronic Patient Record (EPR). The rationale behind EPR is to save money and achieve an effective support for the care staff. According to Ann-Britt Krog [1] there are three common assumptions about the EPR systems; 1) better overview, 2) less hazard and 3) less time consumption. Krog's thesis is based on a qualitative study at a Danish hospital and comes to the conclusion that the system gives the care staff a better insight in other care professions' work, by increased accessibility and communication. Krog's study and the result in our study shows that the three mentioned assumptions about the EPR systems benefits have not been met in practice. The care staff had strong opinions about the lack of usability, poor efficiency and that the systems were not able to fully support their specific organisational needs. Almost all care staff appreciated the accessibility and the reliability with an EPR and understood that it is impossible to go back to paper-based patient records [2, 3], but they thought that they spend more time than before with the computers and had less time for patients [4]. These kinds of usability problems are common in both Swedish and international health care organisations. In this paper we examine how a Swedish health care organisation with

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[1] Corresponding Author.

10,000 employees work with usability issues in the often neglected perspective the deployment phase[5]. The studied health care organisation, with a university hospital, a smaller hospital and several primary care centres has since 2004 deployed the same module-based EPR system. In the paper we use a broader definition of usability [6] and focus on the organisational perspective, not the more traditional usability problems concerned with the software, user interface and system usage. Nancy Lorenzi [6] argues that the challenge with introducing IT in complex organisations, such as health care organisations, is mainly behavioural rather than technical. This paper focuses on two stakeholder groups, EPR management and core business. The EPR management were responsible for manage, deploy and support the EPR system and the core business is divided into two sub groups, managers and care staff. Three key concerns that are crucial for successful deployment and user acceptance have been identified and further analysed; *education, evaluation* and *support & improvement ideas*.

2. Methods

The data gathering has been conducted together with EPR managers responsible for deployment and support, core business management and care staff during a 2.5 years research project. During this period three modules, patient administration (PAS), referrals and drugs has been deployed. The data gathering during the project focused on both the deployment processes and on the everyday working situation. Several research methods were used including field studies, validated questionnaires [8], interviews and observations. During the deployments we interviewed educators and participants and participated in organised activities such as education sessions and meetings. We also conducted semi-structured interviews with physicians, nurses, enrolled nurses and staff at the EPR management organisation. The questions focused on their responsibility, experience and attitude towards deployment processes and EPR systems. All interviews were recorded and partly transcribed.

3. Result and Discussion

3.1. Who is Responsible for the EPR System's Usability?

The health care organisations were separated into two parts, the core business, with clinical managers and care staff, as well as an EPR management organisation. The EPR management's responsibilities were to support the care staff, be responsible for the EPR deployment and have a close relationship to the company that developed and supplied the EPR system. The EPR management was aware of that an EPR deployment affects the organisations core business and working routines, but they considered it to be the clinical managers' responsibility to handle these aspects. The clinical managers consider the EPR system to be a technical tool and not an integral part of the health care process and therefore the EPR management's responsibility to deploy and support. This uncertainty, about responsibilities has also been seen in other organisations. Cajander et al [7] have analysed how managers at a Swedish public authority work with usability issues. They conclude, *"the manager in the organisation did not have a common view about who is responsible for usability issue and how this responsibility works in their organisation"* [7]. This uncertainty and confusion over responsibilities

had a major effect for the care staff. A common opinion among the care staff was that the EPR system needed major improvements in order to fully support them. The care staff had told both EPR management and the clinical managers for several years, but nothing had happened. They experienced that the EPR management and clinical managers mainly considered usability problems to be caused by the care staff and not the system. Both management organisations argued that some of the major problems would be solved if the care staff participated in deployment activities, used the system in the right way [4] and that time would heal some of the usability problems. The care staff's reacted to that by not participating in deployment activities and not deliver improvement suggestions, but the usability issues did not disappear. Kjeldskow et al. [9] have examined if the usability problems that the nurses' experience changed when they transform from novice to expert users. They have identified three different usability problems experienced by nurses 1) complexity of information, 2) poor relation to work activities and 3) lack of support for mobility. They conclude that time does not heal the usability problems, the usability problems must be addressed in some other way. Kjeldskow's study indicates that the usability problems in our study most likely would not disappear with time. EPR management and clinical managers need to address the problems in different areas. Below we will discuss three key concerns that are crucial for decreasing usability problems and increasing user acceptance when deploying an EPR system: *education, evaluation* and *support & improvement ideas*. The responsibilities for these concerns are highly important to solve in order to succeed with the deployment.

3.2. EPR Education

The EPR management, that were responsible for the EPR deployment, consider it to be important that deployment activities should be close to the core business. Therefore they educated "normal" care staff within the organisation. Their task was to plan education sessions that fit their unit's needs and instruct and support colleagues at the own unit. The EPR management organisation prepared the educators with an extensive introduction to the system so that the educators could customise it to their core business' needs. Some of the educators had earlier experience of EPR deployments and others had no earlier experience. The educators said that they were unsecure with this responsibility and found it hard to customise the education and therefore they gave the colleagues the same extensive education that they got themselves. The educators experienced that during education sessions everything worked well but after the education, in the clinical work a lot of problems regarding working routines and new unknown terminology occurred. One care staff said: *"it's not computer nor health care words, I don't recognise the meaning of the words"* To handle the care staff's uncertainty they made custom manuals that described the workflow in the system. In the questionnaires we asked the care staff if they asked or used colleagues, support services or manuals when they needed assistance. The result indicated that the care staff did not use the manuals as much as the EPR management thought and that they rather (80%) asked a colleague and/or called the support service. A key concern is to have educators that have the knowledge and support necessary to customise the education sessions so that it supports the core business needs. A care staff expressed that EPR systems should be tailored to the users' needs, not the other way around. Therefore the education should focus on performing clinical work routines and how the systems can be supportive.

3.3. Evaluation

The different health care units within the organisation deployed the EPR modules either one by one or the whole system at once. These deployments were rarely formally evaluated even though they often started with a smaller pilot deployment at one or several units to see how the system worked in the new context. Evaluating deployments from a user perspective would highlight problems and provide recommendations for improving the different steps in the deployment process. In the studied organisation, EPR and the clinical managers said that lack of time and resources were the reasons for not evaluating the deployments and EPR usage. During our study two types of evaluations with different focus were made. One focused on the care staff's work environment. That evaluation excluded questions about the IT and EPR systems, which indicated that the core business did not consider IT and EPR system as a parameter that, influence the care staff's work environment. This is surprising because our interviews and observations showed that the EPR system and other IT systems had a huge impact on the care staff work environment. EPR management made the second evaluation, an extensive questionnaire about the care staff's experience of the different modules and what kind of problems they experienced. The evaluation indicated that the care staff thought that the system was non-intuitive, and had low usability. This is important knowledge for the EPR management but it did not give them any deeper understanding about the reason for the problems or how to solve them. A key concern is not just to perform evaluations, it is also to ask the right questions so that the result can be useful and a solid ground for improvements in both the EPR management and clinical managers' deployment routines. A clarification of what the problems really are about can help the health care organisation establish whose responsibility it really is.

3.4. Support and Ideas for Improvement

During the deployment it is crucial that the care staff gets the support they need to feel safe and secure about the new system. The studied organisation had an EPR support organisation that operates at three different levels; local, department and central. All EPR support persons had a clinical background, mainly nurses or medical secretaries, with special interest in IT. The local support person was responsible for supporting colleagues and forward ideas for improvements. The local support called the department service or the central support if further support were needed. The interviewed care staff had many ideas about how to change the EPR so that it would support the clinical routines better. The interviews and questionnaires revealed that the care staff rarely informed the local support person about their problems and ideas for improvement. In the questionnaires 50 % did not know who to contact if they had ideas and wishes about how to improve the system. 60% answered that they very rarely contacted the local support and 12.5% answered that they do not know whom to contact when they have problems. The interviews and observations confirmed that the care staff was not aware of the existence of the local support and their responsibility. There was also confusion among the local support about their responsibilities. In the interviews the care staff said that they asked a trusted colleagues if they needed help or support. In some cases it was the same person as the formal local support but often it was "their own" informal local support person. We believe it is a good idea with a support at all units, but our questionnaires and interviews show that the care staff did not know what to do or who to contact when they had problems. Some had made

complaints and offered improvement ideas but nothing had changed for years so they did not think that it mattered if they reported problems or not. A key concern is to have a transparent support and improvement chain.

4. Conclusion

In this study we have examined how a large Swedish county with several health care units works with usability problems in the EPR deployment process. The study shows that there is confusion about the responsibility for usability issues within the organisation. The confusion is because some of the stakeholders consider the EPR system to be an IT system, not an integral part of the health care process. Others consider it to be a core business system and therefore the core business responsibility. The confusion and uncertainty about responsibility leads to an unsustainable work situation for the care staff that needs an effective EPR system to perform a high quality work. In order to get a successful deployment and a durable working environment for the care staff it is important that the responsibilities for education, evaluation and support & improvement ideas, are clear. Both EPR management and the core business need to know and understand their mandate and responsibility to achieve an improved work environment. The organisation needs to continuously search and perform improvements in both work routines and the EPR system that aim to support the care staff in their health care activities. The support system also needs to be more transparent in order to give the care staff feedback on the status of their complaints.

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