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Rebecka Janols

Uppsala University, Uppsala, Sweden, rebecka.janols@it.uu.se

Bengt Göransson

Uppsala University, Uppsala, Sweden, bengt.goransson@it.uu.se

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SECONDARY USERS' INTERPRETATIONS OF KEY CONCERNS FOR ACHIEVING AN EFFECTIVE AND EFFICIENT REGION-WIDE ELECTRONIC PATIENT RECORD USAGE

Janols, Rebecka, Uppsala University, Lägerhyddsvägen 2, 752 37 Uppsala, Sweden,
Rebecka.Janols@it.uu.se

Göransson, Bengt, Uppsala University, Lägerhyddsvägen 2, 752 37 Uppsala, Sweden,
Bengt.Goransson@it.uu.se

Abstract

The paper presents secondary users' interpretation of key concerns (KCs) for achieving an efficient and effective electronic patient record (EPR) usage. The study is based on twelve interviews with Clinical Directors and IT Directors that are responsible for delivering high quality care, procuring and implementing IT. The participants represented five Swedish county councils who all use a region-wide EPR for primary care and hospital services. The analysis indicated that there was an unresolved conflict regarding what influence the IT should have on the health professionals' practice. Either the systems' usability or the health professionals' unwillingness to change was blamed for the problems. We argue that most of this conflict is the idea that one EPR is going to support all user groups and that using a region-wide EPR is not necessarily the problem. In the studied organisations, however, it became a problem because to achieve "one system that fits all" the fact that different user groups had different needs, roles and responsibilities was neglected. Neglecting the users' needs will not solve the problems but will instead increase the conflict. Using the KC will shed light on differences between primary and secondary users interpretations of the aim of the region-wide EPR.

Keywords: health IT; management; sociotechnical systems; studies of organisations; deployment; implementation, electronic patient record systems; user adoption; organisational theory; change

Introduction

It is well known, in both theory and in practice, that developing, deploying and adopting health IT systems can cause controversy within the organisation (Kuhn and Giuse 2001; Leonard 2004; Sicotte and Par'e 2010; Lluch 2011). Despite the identified problems health IT is a growing market. Health care services all around the world is getting more and more dependent on effective and efficient IT support systems. Governments, roles within the health care organisations, patients and vendors have high expectations that health IT will produce significant organisational benefits, even though there is a lack of evidence to indicate this is the case (Balka, Kahnemoui et al., 2007). Using sociotechnical theories for increased understanding and as an explanation for why health IT deployments are controversial has become more and more common over the last fifteen years. Using a sociotechnical approach means that how the organisation is structured, the relationship between people within the organisation, technology and work routines are all considered to have an effect on the deployment, users' attitude and IT adoption. The most pioneering and commonly quoted researchers are Lorenzi and Riley (2000), Aarts (1998) and Berg (1998; 1999; 2001). Berg (1999) considers health care practice as a network of people, tools, work routines and documentation. Berg argues that using an empirical bottom-up approach is required to understand the network before strategies about how to make a "successful" deployment process and IT usage can be planned.

Balka et al. (2007), studied how *work process*; the plan on how the user will use the system, and *work practice*; how the users actually uses the system, differ. The focus of Asch et al. (2004) and Harrison et al. (2007), is on unintended consequences, something that always happens when using a new technology, affects the usage and adoption. These mentioned studies all show that introducing a new IT system into an organisation will affect the clinical routines and the relationship between health professionals (Balka, Kahnemoui et al., 2007) and that unintended/unplanned consequences will always occur (it is impossible to plan everything ahead) (Ash, Berg et al., 2004; Harrison, Koppel et al., 2007). Even though this is well represented in research it is not yet common knowledge in the clinical organisations. In this paper we have explored secondary users interpretations of six key concerns (KCs) for achieving effective and efficient region-wide Electronic Patient Record (EPR) system usage (Janols 2011). The KCs are based on results from both primary users and secondary users experiences of procuring, deploying, using region-wide EPR systems (Janols, Göransson et al., 2010; Janols 2011; Janols and Göransson 2011; Janols, Göransson et al., 2011; Janols 2012). The paper contributes to the sociotechnical literature on how technology, organisation and users are mutually constituted.

To deal with the complexity Critical Success Factors (CSF) for succeeding with a health IT deployment, have been identified (Leonard 2004). According to Poon and Wagner (2001) CSFs are "the conditions that need to be met to assure success of the system" (p. 395). CSFs are often presented as shortcuts to a successful deployment and usage. Research on CSFs has been criticised as being deterministic and excluding situational and contextual factors (Axelsson, Melin et al., 2011; Aggestam and Laere 2012). CSFs can be formulated as activities, guidelines or as processes. Aggestam and Laere (2012) have implemented CSFs in practice. They found that implementing the CSFs is complicated and they argue that many researchers focus on identifying CSFs but ignore how to apply and customise the CSFs to situational circumstances. The region-wide EPR have multiple aims, it should comply with a legal requirements, support patient care, administration, quality management, clinical research and training and education (Gell and Gitter 2008). These requirements have different characters and when separating them we can see that different user groups (i.e., patients, care providers, administrative staff, managers, research and medical and nursing students) are involved. This means that a region-wide EPR aims to support many various roles and tasks. In the development of the region-wide EPR the vendor compromises between different users' requirements, which means that all requirements are not supported. We consider that increasing the understanding for different stakeholders' interpretations of the purpose of the region-wide EPR is a key to achieving an effective

and efficient EPR usage. The analysis presented in this paper indicate that using the KCs will clarify stakeholders' different theoretical frames (Orlikowski and Gash 1994) regarding what the region-wide EPR systems are and what they should support.

1.1 Background

The mentioned KCs are derived from a 2.5 year grounded theory research study performed at one large Swedish county council (Janols 2011). In 2004 the participating county council deployed a region-wide electronic patient record (EPR) system. In region-wide EPR system the EPR is shared between all primary and hospital services in the same county council. The primary goal of the research project was to study the organisations' IT situation with regards to the health professionals' work environment and make suggestions that could lead to changes in how to work more effectively with the region-wide EPR system. Within the project a grounded theory method (Glaser and Strauss 1967; Glaser 1978; Urquhart 2013) was used to identify "potential problem areas" that were important for the organisation to consider in order to improve IT usage. During the grounded theory process observations, questionnaires, participation in meetings and EPR learning sessions and more than 100 semi-structured interviews with health professionals and managers were performed (Janols, Göransson et al., 2010; Janols 2011; Janols and Göransson 2011; Janols, Göransson et al., 2011; Janols 2012). The identified grounded theory categories were: *education, mandate, usability, participation, improvements, support and evaluation* (Janols 2011). All involved stakeholder groups (i.e., health professionals, Clinical Directors, IT Director and IT maintenance organisation), considered the categories essential. The analyses, however, indicated that one of the reasons for the problems were that it was unclear whose responsibility they were. This was based in that the stakeholder groups had different "technological frames" (Orlikowski and Gash 1994) regarding the nature of the region-wide EPR system. Stakeholder groups who represented the clinical organisation considered the region-wide EPR to be an "IT system", not an integral part of the health care process. Therefore they believed it to be the IT organisation's responsibility to support and maintain the region-wide EPR system. Stakeholder groups who represented the IT organisation argued that the EPR system was the clinical organisations' main working tool. Therefore, it was the clinical organisation's responsibility to identify new clinical routines for working with the IT system (Janols, Göransson et al., 2011). The conflict about responsibilities resulted in an unsustainable situation for the health professionals who stressed the need to have an effective and efficient tool to perform high quality care. The conclusions on what must be addressed in order to achieve a effective and efficient IT usage, were condensed into six major key concerns (Janols 2011):

1. The health care organisation needs to establish a problem-solving strategy that questions the reasons behind the problems
2. The different stakeholder groups need to have the same goal for the EPR system
3. The different stakeholder groups need to interact with each other to create a better understanding for each other's perspective
4. The clinical organisation needs help to improve their clinical practice in relation to the EPR system
5. The health care organisation needs to understand that health professionals' attitude towards the EPR system is dependent on the usability of the system, the deployment process, their experience of participation, education, support and possibilities to improve the system
6. The health care organisation needs to understand that EPR deployment and usage affects health professionals in different ways

The six KCs are deliberately formulated in an easy and straightforward way in order to be able to discuss and elaborate on them with stakeholders in various health care organisations and at different organisational levels. The development of KCs contributes to existing literature by providing

empirically grounded guidelines on what health care organisations need to consider achieving effective and efficient region-wide EPR usage. Because it is exploring the secondary users' interpretations on their responsibilities this paper is particularly interesting.

1.2 The Swedish Healthcare System and eHealth Strategy

In Sweden, health and medical care is the shared responsibility of the state (i.e. Ministry of Health and Social Affairs), 18 county councils, 3 regions and 290 municipalities. The Ministry of Health and Social Affairs develops policy for the health and disability sector and provides leadership and the county councils and regions are responsible for organising their services so that all citizens have access to adequate care. Today Sweden is considered to be one of the leading eHealth countries in the world (Schoen, Osborn et al., 2009). In 2006 the first national IT strategy for health care was adopted (2006). The strategy has been seen as a guide for the county councils in their eHealth development. In 2010 the strategy was improved and is now called "National eHealth - Strategies for Accessible and Secure Information in health care" (2010). The strategy has three goals:

1. The individual in his or her role as citizen, patient, end-user and close relative/friend should have easy access to quality-assured information.
2. Health and social care staff should have access to well-functioning, concurrent electronic decision support that, both guarantees a high level of quality and security, and facilitates their day-today work.
3. Decision-makers in all care services should have the appropriate tools to continuously monitor the quality and security of activities, and obtain an up-to-date and comprehensive basis for taking decisions on organisational governance, planning and resource allocation.

In Sweden, 18 out of 21 county councils/regions (we will in the rest of the paper use county council instead of county councils/region) are using region-wide EPR systems. Region-wide EPR means that it is shared between the primary and hospital services within the same county council. The market is dominated by four module-based EPR systems delivered by four different vendors. By providing both clinical care support and patient administration functionalities for health professionals and for decision-makers they address both the second and third goal in the national eHealth strategy. That means that both primary users, health professionals that use the system in their clinical practice, and secondary users, hospital managers, governments that want data out of the system for research and billing, use the same EPR system to collect and access patient data.

2 Methods

In previous research studies (described in chapter 1.1) a grounded theory method (Glaser and Strauss 1967; Glaser 1978; Urquhart 2013) was applied to identify six KCs (Janols 2011). The study described in this paper is based on twelve semi-structured interviews and a small questionnaire. The aim of the paper was to investigate how secondary users who represented five county councils interpret and apply the six KCs. The county councils were selected according to four criteria:

1. They have procured and used a region-wide EPR system for at least 4 years
2. At least one county council for each of the four IT system (S1-S4 in Table 1)
3. They are distributed in geographically different parts of Sweden
4. They have different experiences in using the IT system (e.g. usage time between 4 and success rate)

In the end five county councils were selected. Secondary users, who represent both the IT organisation and the clinical organisation, were divided into three stakeholder groups. The *IT Directors* who made strategic decisions, *IT Maintenance Directors* who had the operative responsibility and were

responsible for maintenance and EPR support organisation and the *Clinical Directors* who were responsible for the health professionals' work environment and quality of care. All participants had a leading role during the deployment process and were responsible for creating sustainable health care. A request to participate was personally sent to the directors that matched three stakeholder groups. The county councils were organised in different ways, therefore it was difficult to find one representative from each group. All Directors that were contacted responded and were willing to participate in the research study.

IT Directors (n=3). One of the *IT Directors* had a clinical background and two were from other types of organisations. They had a strategic responsibility for the IT systems and the broadest view of the nature of the EPR. They felt the pressure from health care management, governmental strategies, their county council's economy, laws and regulations to succeed and keep within the budget. Even though they seldom met the primary users (they often met Clinical Directors but seldom health professionals), they believed that they were aware of how the IT systems affected the users in their clinical practice.

IT Maintenance Directors (n=4). All four *IT Maintenance Directors* had a clinical education and had work experience in clinical practice. None of them were educated in IT, but all had a genuine interest and experience of deploying health IT systems. Their role was to manage the EPR maintenance organisation and they had extensive knowledge of the EPR system's benefits and problems. The maintenance organisation's main tasks were to manage and customise the EPR system, be responsible for the deployment process, support the users and cooperate with the vendor. They usually met and interact with the health professionals during the deployment phase.

Clinical Directors (n=5). All five *Clinical Directors* were health professionals with many years' experience in clinical practice. A Clinical Director has the responsibility for both care quality and the health professionals. All Clinical Directors had been Directors for clinical divisions and active as project leaders during the deployment process. Some of them still worked in clinical practice, while others had mainly management responsibilities.

Table 1 illustrate how many Directors that participated from each county council. Table 1 also illustrate which system the different organisations used. The number of participants representing each county council limits the study. The analysis, however, indicated that the differences between the participants who represented the clinical organisation and participants who represented the IT organisation were more significant than which county council they represented and what IT system they used.

County council	#Participants	IT system
A	2	S2
B	3	S1
C	1	S3
D	4	S3
E	2	S4

Table 1 Participants belong to five county councils and use four different region-wide IT systems. The organisation that participated in previous research study used S1.

2.1 Interviews and Analysis

The twelve participants were asked to participate in an interview that could be up to an hour-long. The authors conducted one of the interviews together and the lead author conducted the rest. The interviews were audio-recorded, performed in Swedish and at a place convenient for the participants (often their office). In the introduction our previous research project was mentioned, but not further discussed. If the participants asked about our earlier conclusions, we suggested that we could discuss it in more detail after the interview. After the introduction the participants were asked to answer a

questionnaire that had six statements. The statements were the KCs with two options to answer: “I agree”, or “I do not agree”. To avoid bias, the fact that the statements were based on our research conclusions was not revealed. The aim of the questionnaire was to prime the participants before the interview started. After they had answered the questionnaire the KCs and their answers were used as a guide throughout the interviews. The results from the questionnaire were not of particular interest, instead their interpretation and experiences of solving issues related to the KCs was the motivation. After each interview the two authors discussed the progress. During the analysis both authors individually listened to the audio-recordings and made personal notes that were related to the KCs. After the individual notes were made, both authors discussed their interpretations of the participants’ differences and similarities.

3 Results

Ten out of the twelve participants had a clinical background and had worked in clinical practice for many years. Even though the participants had clinical backgrounds, their present role meant other responsibilities, which affected their perspectives on what the region-wide EPR was supposed to support. In the analysis we could see that the participants role affected their interpretation and methods on how to achieve an effective and efficient region-wide EPR usage.

The initial questionnaire used, to prime the participants, showed that all IT Maintenance Directors and two Clinical Directors, agreed with all six KCs, while, all IT Directors and three of the Clinical Directors did not agree, or were unsure about KC2-4. The differences were regarding *if* all stakeholders needs to have the same goal for what the EPR system should support (KC 2); *if* the stakeholder needed to interact more to understand each other’s perspectives (KC 3); and *if* the clinical organisation needed help to improve their clinical practice in relation to the EPR system (KC 4)

Below the participants’ interpretation of the six KCs will be discussed further. The aim is to iterate the KCs and identify similarities and differences regarding how the participants’ interpret and apply the KCs in practice.

3.1 KC 1: Problem-solving Strategies in Theory and in Practice

All twelve participants argued that they always tried to solve the problems that occurred by finding their causes. However, when they had identified the reasons to the problems, it sometimes became obvious that it was impossible to solve them as proposed. All participants agreed that a major problem was that it is so time consuming to improve and change the region-wide EPR system. One of the Clinical Directors, who was a project leader during the EPR deployment explained it like this “even if you know what the reasons are, that we want to do it in a certain way because it is the best for us and for the patients, it is impossible because the EPR is programmed in a certain way. We need to change our way of working because it’s easier than changing the computer system”. Changing work processes were considered to be a problem because most health professionals had an unstructured practice with high autonomy, and while using the region-wide EPR system they felt trapped by the system’s way of performing the tasks.

In a joint interview, two of the IT Maintenance Directors described their experience of solving these kinds of problems like this “If you want to have a quick solution, we create a work-around, new routines, ‘now you need to do it like this’. If you want to get the bottom of the problem, it takes longer...and it costs a lot of money to find the correct solution. Today the county councils don’t have enough money, so you need to do a sneak-solution.” The two IT Maintenance Directors argued that creating workarounds did not solve the problems. Instead workarounds postponed the problems. All participants agreed that the limited possibilities to change and improve the IT system were a main barrier for user adoption. All five county councils were members of the vendors’ customer-groups. The customer-groups were created by the vendor and was a forum where all customers collectively tried to agree on what improvements that were required. This way of communicating with the vendor

meant that improvements needed to be prioritised and it often took several years before the changes could be seen for the primary users. This time-consuming way of improving the system led to that some of the IT Directors argued that many of the problems could be solved if the health professionals changed and improved their working routines according to the system.

When contrasting the participants' different opinions it became clear that the clinical organisation and IT organisation had different technology frames regarding the nature of the region-wide EPR (Orlikowski and Gash 1994). The participants who represented the IT organisation interpreted the EPR system as the clinical organisations tool. Therefore they considered it to be the health professionals' responsibilities to redevelop their clinical work. The clinical organisation, on the other hand, interpreted the EPR system as an IT tool, which forced them to work in a cumbersome and not effective and efficient way. Their solutions for solving the problem were to change the structure of the EPR system in relation to their existing work routines.

3.2 KC2: Primary Goals and Sub-goals

All participants claimed that the region-wide EPR needed to support both primary goals and sub-goals. One of the IT Maintenance Directors described the EPR systems primary goal like this: "...that you can find all information that is needed in order to be able to give the patient good and safe care at the right time". An IT Director explained why the primary goal needs to be broken down into sub-goals: "you can't be on the top-level, it is too 'fluffy', you need to break it down into different parts that you focus on – things you should reach to be able to follow the patient through their care". This sounds quite straightforward. However, while exploring the sub-goals a contradiction becomes evident. To illustrate the contradictive sub-goals a quote from an IT Maintenance Director will be used:

"Of course you need to have the same [primary] goal for what [the IT system] should support, but all have different [sub-] goals within different health professionals...administration and management want to be able to follow up...the health professionals want to have support in their daily work...the research- and development unit wants everything to be more correctly recorded so they can get the number of smokers in a certain age group, but the care professionals, they are not interested to record all that after every patient visits. There is a certain conflict in the goals" – *IT Maintenance Director*

Most participants agreed on that the primary goal for what the region-wide EPR should support needed to be the same. However, the different stakeholder groups performed different tasks; therefore they had to have individual sub-goals. The previous quote illustrates that sub-goals are conflicting, and when using region-wide EPR systems conflicting sub-goals becomes a problem because the vendor compromises among requirements, which means that some requirements are not supported.

3.3 KC3: Interact More or Less

Most participants agreed that the health professionals (the primary users) needed to interact and cooperate more to understand each other's perspective. What were particularly interesting is that none of the participants (all secondary users) included themselves or emphasised that secondary users also needed to be a part of this interaction. One of the IT Directors argued that just deploy and use EPR system had increased the interaction between health professionals, but they needed to continue to cooperate with each other. One IT Director and one Clinical Director disagreed with KC3 and argued that different user groups did not need to interact or cooperate more. Instead it was crucial to respect and understand each other's needs and increase awareness about the different sub-goals.

3.4 KC4: Help or Support

Regarding KC4 we found a gap between the participants that represented the IT organisation (i.e. IT Directors and IT Maintenance Directors) and the Clinical Directors. All participants agreed that the region-wide EPR system was under-used. The differences were related to "who is going to decide the new clinical practice?" the vendor/IT system *or* the clinical organisation. All IT Directors argued that

the clinical organisation needed help to improve clinical practice in relation to the region-wide EPR system. One of the IT Directors said: “It’s extremely important, otherwise they will under-use the EPR system, they don’t realise what you can do...the greatest help should be about discovering new things, to learn.” The IT Directors continued by arguing that it was the IT maintenance organisation responsibility to help/support the clinical organisation to find workarounds and shortcuts that would help them. During the interviews the IT Maintenance Directors expressed that they were trapped in the middle because they understood that the IT system could be more supportive if the health professionals were willing to change *and* if the IT system was more adaptive. They considered themselves to have the knowledge but not the mandate and resources to help/support the clinical organisation.

The Clinical Directors did not appreciate that the “IT-people” was going to “help” them. One clinical Director said: “if you had formulated it as ‘help and support in developing their routines and usage’, then I would have agreed, because we [i.e., the clinical organisation] need support [not help]”. The same Clinical Directors also questioned the fact that the clinical organisation was supposed to adapt to the IT system, and argued that it should be the other way around.

“This is formulated in the wrong way; it is not supposed to be reality changing according to the EPR system. But it is true that health professionals have great needs to develop the clinical routines. However, the improvements [in clinical practice] should be supported by functions in the EPR system, and the improvement of the EPR system should support the re-developed clinical routines and a more process-oriented way of working” – *Clinical Director*

A couple of the Clinical Directors even questioned if it was a valid statement to assume that the system will improve clinical practice. “It’s not true that our way of working will be improved, it could be worsened by the deployment of an IT system, because we would need to change our way of working to adapt to the system”.

3.5 KC5: Conflicts Regarding the Importance of Usability

All participants agreed that the reasons (i.e., the usability of the system, the deployment process and their experiences of participation, education, support and possibilities to improve the system) were important to the health professionals’ attitude. One of the IT Directors expressed that the users’ attitude was also dependent on what kind of expectations the primary users had and if the system fulfilled them. This means that it is of great importance that the primary users had fair expectations of the IT systems possibilities and that they experienced the benefits.

Regarding the importance of usability we could see differences among two of the participant groups - the IT Directors and the Clinical Directors. The IT Directors argued “the other [six] aspects are as strong as usability. You should not minimise usability, but it is an objective opinion. The technical usability has a small part of importance. It should not be so clumsy so it is a danger to patient safety, but [usability] doesn’t matter that much” While, the Clinical Directors argued the opposite; that shortcomings in the system’s usability could not be repaired or compensated with more teaching sessions and/or more support.

3.6 KC6: The IT System Affect the Users Work Environment

Most participants agreed that deploying an EPR system affects the clinical working tasks. One Clinical Director said: “You are forced to work in another way when you get an IT system because you need to adapt to the IT system” He expressed that sometimes the way of working is improved by using the IT system and sometimes it is worsened.

All IT Directors said that the IT system must affect the work tasks. “I think that it has affected less than what would have been optimal. I think you should let the system affect more...it will provide new possibilities that might be better. So instead of thinking, ‘the system is supposed to adapt to the working routines’, it would be better to have a communication between those two forces”

4 Discussion

In this study we explore how IT Directors, EPR Maintenance Directors and Clinical Directors IT interpreted the six KCs. To clarify, the three stakeholder groups' interpretations, differences and similarities are summarised in Table 2.

Key Concern (KC)	IT Directors	IT Maintenance Directors	Clinical Directors
KC1: The health care organisation needs to establish a problem-solving strategy that questions the reasons behind the problems.	Agree <i>However, many problems would be solved if the primary users improved clinical routines.</i>	Agree	Agree <i>However, many problems would be solved if the primary users improved clinical routines.</i>
KC2: The different stakeholder groups need to have the same goal for the EPR system.	The primary goal needs to be the same however stakeholders have different needs and different sub-goals.	Agree with the IT Directors	Agree with the IT Directors
KC3: The different stakeholder groups need to interact with each other to create a better understanding for each other's perspective.	Agree <i>However, they do not include themselves in the interaction.</i>	Agree with the IT Directors	Agree with the IT Directors
KC4: The clinical organisation needs help to improve their clinical practice in relation to the EPR system.	Agree <i>Now the systems are under-used.</i>	Agree with the IT Directors	Disagree <i>We do not need help – we need support.</i>
KC5: The health care organisation needs to understand that health professionals' attitude towards the EPR system is dependent on the usability of the system, the deployment process, their experience of participation, education, support and possibilities to improve the system.	Agree <i>However, usability is over-estimated.</i>	Agree	Agree <i>However, usability problems cannot be compensated.</i>
KC6: The health care organisation needs to understand that EPR deployment and usage affects health professionals in different ways.	Agrees. <i>However, the system has affected less than optimal.</i>	Agrees.	Agrees. <i>The system forces you to work in a new way.</i>

Table 2 Illustrates how the three stakeholder groups are interpreting the six key concerns.

Even though individuals in the different participant groups disagreed with each other, the differences were larger between than within the groups. In our analysis we could see that the disagreements were grounded in their perception regarding who is going to decide the new clinical practice, the vendor/IT system *or* the clinical organisation. The Clinical Directors argued that the users' requirements needed to be prioritised meanwhile the stakeholders who represented the IT organisations argued that the health professionals' needs were important to consider, but they also needed to change their routines. The disagreements indicated that even though most of the participants had a clinical background and many years of clinical experiences, their present role meant that they had new responsibilities, which affected their perspectives on what the IT system was supposed to support and how to gain an

“effective and efficient” EPR usage. The differences became evident in the discussion regarding how to solve the problems, awareness of differences in goals and how much the system should be allowed to change existing routines and the importance of usability.

4.1 Consequences of the Disagreements

All participants agreed that even though they do not consider the IT system to meet the health professionals’ (primary users) requirements, they are convinced that using a region-wide EPR system, a system that is shared in both primary and hospital care, is the future solution. They just need to find a way to make the system support the needs of both primary and secondary users. The different stakeholders have different methods for reaching the “perfect solution”. All the Clinical Directors argued that the way it worked now, that the primary users needed to change their clinical practice to fit the IT system, was the wrong way to go. They argued that the correct way must be that the health care organisation decides on best practice for doing clinical practice, and procure or develop a region-wide EPR system that supports that way of working. This follows Berg (1998; 1999; 2001) and research within human-computer interaction, participatory design and user-centred design, that go even further and argue that the users *must* participate in the system development in order to create a clinical practice where the IT system is considered to be a supportive tool, not time consuming and stressful. The IT Directors and the IT Maintenance Directors, on the other hand, argued that deploying a new IT system requires change, something that the health professionals need to deal with. They consider the clinical organisation’s complaints as a sign that they are unwilling and afraid of change and that they are complaining just because they have the possibility to. This gap, where different stakeholders blame each other for the missing benefits, is a major problem for gaining effective and efficient EPR usage. All participants are aware of that introducing a new tool – an EPR system – will have effects on clinical practice. However, blaming the technical parts or the social parts illustrate that they have not yet reached a sociotechnical awareness. Applying sociotechnical theories means that the idea of IT systems being deterministic is incorrect because the IT system, the users and the organisation change when IT is introduced (Berg 1999; Lorenzi and Riley 2000; Aarts, Callen et al., 2010). That means that either blaming the IT system or the users is a false dichotomy, both needs to change in order to reach the benefits.

We argue that it is not necessarily a problem per se for both primary and secondary users’ requirements to be supported by the same EPR system. Instead we claim that all responsible Directors and managers need to be aware that there are different types of users (i.e. primary and secondary users) that have different roles, needs and responsibilities. If the EPR system is not supporting the health professionals and forces them to collect data that will support the secondary users’ needs on the behalf of their own needs, they will only get frustrated (Janols 2012). To cope with that work situation they will find workarounds, leading to local and individual variations. This is a situation that will lead to that the data that the secondary users require will be incomplete and lack in quality. As a consequence, all users will have incomplete data.

Our analyses show that the KCs are a useful tool to shed light on differences and similarities regarding the secondary users’ interpretations of the nature of the EPR and what methods that are used to address the problems. However, the KCs can also be used to explore both primary and secondary users interpretations. Doing this will provide the health care organisation with essential background knowledge about the different stakeholders interpretations on what the region-wide EPR system is and what it is supposed to support. This is a complex problem and without knowledge of the source to the problem based in empirical data, they will be difficult to solve.

5 Conclusion

This paper presents secondary users interpretations of six key concerns (KCs) for achieving an efficient and effective EPR usage. The evaluation is based on twelve semi-structured interviews with Clinical Directors, IT Directors and EPR Maintenance Directors and a short questionnaire. The

participants represent five Swedish county councils who all are using different comprehensive region-wide EPR systems. Our analysis indicates that there is an unresolved conflict within the participating organisations on whose requirements and needs that are going to be considered and prioritised.

All twelve participants agreed that the six KCs are important aspects that need to be considered in order to gain effective and efficient EPR usage. However, the gap between the IT organisation and the clinical organisation, which has been seen in previous research, is also seen among the participants. The gap becomes visible when the participants discuss “*who will decide how the clinical practice will be performed – the IT system or the clinical organisation?*”. Regardless of which region-wide EPR system the county council uses, they either blame the IT system or the clinical organisation for the experienced problems. Seeking the cause of the problems in either the systems usability *or* the health professionals’ fear of organisational changes, indicates that there is a missing sociotechnical understanding among the participating Directors.

We argue that the problems that the primary users experience in the IT system are based on the fact that the region-wide EPR systems are developed to support both the health professionals’ and the decision-makers’ needs. Our study shows that these needs often are conflicting. When supporting conflicting needs in the same IT system the needs are often compromised. In the evaluation we can see that if the EPR system is not supporting the primary users requirements major problems will occur. Using the six KCs sheds light on the differences between different stakeholders’ interpretations of the nature of the region-wide EPR. Our results suggest that this is a complex problem and without empirical studies of the sources of the problem it will be difficult to achieve an effective and efficient region-wide EPR usage.

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