

## **Establishing a Core Health Record; a case study from Norwegian Healthcare**

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### **Abstract**

Information and communication technology (ICT) has become important for many public services as they seek to become more efficient and effective. Authorities in Norway have since 1997 formulated strategic plans for ICT in healthcare, striving to obtain seamless care and funding in varying degree have been allocated in order to achieve results. In this chapter we present several initiatives concerning the establishment of a core health record in order to reveal the effects of running ICT projects at a governmental level.

The study adheres to an interpretive research approach. Empirical data was collected through project participation, document studies, interviews and observations.

We found that the consequences of the authorities' influence in the information system domain in Norwegian healthcare seem to separate the users from the system developers to an ever-increasing extent. We also found that reforms in the hospital sector have created a powerful ICT organization in the hospital sector; this organization seems to set the agenda within ICT in Norwegian healthcare, which also includes the GPs and the municipality sector.

### **Introduction**

Many stakeholders in healthcare seem to be very willing to work to control the development of information systems within healthcare [1-4], and due to the sub-

stantial funding available for doing so, the authorities keep tabs on the development process. These processes will encounter challenges that are different from those that exist in free and consumer markets, and the actors have to maneuver in a landscape of political signals, regulations, money flow, resources, power balance and alliances in order to establish new information systems. According to Greenhalgh, it is urgently necessary to carry out an interdisciplinary debate on priorities for research and policy within healthcare ICT with input from academics, service users, clinicians, policymakers, technical designers, research sponsors and the commercial IT sector [5]. This chapter contributes with empirical insight to a prolonged eight-year effort to establish an inter-organizational service, the Core Health Record, in Norwegian healthcare. We elaborate on how a municipal initiative has failed and how two public initiatives seem to compete with each other. By doing so, we address the following research question: How do the authorities exercise control and management in the information system domain and what are the consequences?

Our analysis proceeds along the following two dimensions: First, we elaborate how the authorities project management via the Directorate of Health [Directorate], have moved far from user-driven development philosophy and have lead to a huge gap between the designers and the user groups. Secondly, we explore how the hospital sector has become an influential actor that makes it capable of setting set the agenda within ICT in the complete healthcare sector.

In this chapter we will show how the authorities influence the design of a Core Health Record / Patient summary in Norway. The work has gone on for about eight years, and during the years, several powerful actors have influenced the work. However, the service is still on the drawing board.

The framing of the chapter is as follows: In the theory section we spell out characteristics with the healthcare information system. We review issues concerning planning and managing development of inter-organizational system. Our theoretical approach also includes design issues in the information infrastructure. We then outline our research method, and present the case, introduced by the overall description of the Norwegian healthcare sector and the level of ICT adoption. The case then describes three related initiatives in order to create a Core Health Record Service. In the analysis we discuss how the new top-down management strategy has affected the development of new services. A conclusion rounds off the chapter.

## **Theory**

Modern professional and scientific practices, including healthcare, practices always include artifacts, architectures, paper, machines, systems etc. This requires attention to the fundamentally composite nature of these practices. Information

systems in, for instance, a hospital, must therefore be adapted to the remaining structure. In healthcare the patient record is the key tool for many activities, both medical and mercantile. From the medical perspective, the healthcare provider needed relevant information about the patients and is also obliged to document findings, interventions and planned procedures. Similarly, the patient record also contains information that is fundamental for logistics, billing and statistics – which in turn plays a critical role in planning, financial management and control. The potential for ICT to integrate all this information into a single record has proven highly attractive to policy makers, promising to improve quality and cut costs, providing a technological fix to the structural crisis – exponentially rising demand and the need to control public expenditure – facing most public sector health systems [6]. The merged information system, called the electronic patient record, has taken a unique place in the healthcare system as a gatekeeper for most of the information flowing within or between the institutions. Private companies develop and sell these systems; design issues are therefore a vendor-to-customer issue (*ibid*). The vendors each pattern their electronic patient records differently, and replacing these systems is resource-intensive for the users because they contain an enormous amount of data and are intertwined with the working methods. In a healthcare institution, the electronic patient record represents a substantial part of the information infrastructure which Hanseth and Lyytinen define as a shared, evolving, heterogeneous installed base of IT capabilities among a set of user communities based on open and/or standardized interfaces. Such an information infrastructure, when appropriated by a community of users offers a shared resource for delivering and using information services in a (set of) community.[7]

Designing and implementing effective information systems meant for inter-organizational co-operation is a difficult task to handle [8-10]. It relies on a joint venture among the affected organizations and is dependent on several issues. Often, there is no single obvious management in inter-organizational structures in charge of making the decisions necessary to trigger and impel the process. The actor who has the most substantial interest in creating the inter-organizational system will try to enroll and control the other actors in a way that caters to these actor's explicit interests. These interests, as Latour [11] explains it, are:

What lie between actors and their goals, thus creating a tension that will make actors select only what, in their own eyes, helps them reach these goals amongst many possibilities.

Through co-operation and stating some common goals, inter-organizational actors can align their movements in the same direction and create a new system. However, each of the actors will also have a subset of goals that do not necessarily overlap with the other actor's goals. The subset of goals will control the behaviour in further co-operation. Latour [11] argues that the mere 'possession' of power by an actor does not automatically confer the ability to cause changes unless other actors can be persuaded to perform the appropriate actions for this to occur. A "weak" actor will break out of the co-operation if its interests are not taken care of, but this will weaken the remaining group. In order to keep the actors enrolled,

different negotiations take place. One powerful strategy is to convince the actors to take a detour in the design process. The detour will appear as a faster way to the goal and will in fact be a shortcut [12].

Co-operation is a key topic in the CSCW community and a number of scientists have studied systems that is used by colleagues in several locations around the world, such as the classic studies by Orlikowski [13] and Ciborra [9]. However, while these studies analyze systems that are worldwide, they represent at the same time co-operation systems that are within an organization. Co-operation systems in healthcare represent challenges that also represent challenges in another dimension because the co-operation must be performed between different organizations. Such inter-organizational information systems are even more challenging than systems within the same organization [14-16]. An actor that tries to manage the design of an inter-organizational system will face comprehensive challenges because objectives are multiple and often contested, and outcomes are not stable and may also be contested [17]. Creating inter-organizational systems increases the complexity of the picture by an extra dimension, because the co-operation is created between different institutions without a single over-arching management and who try to establish a common business culture.

The heterogeneous element of the information infrastructures means that creating a service that works between two structures will also demand relatively detailed knowledge about work practices. Agreement on the pure technological aspects of the system will not be sufficient.

## Method

An interpretative approach [18] is used to gain a better understanding of the mechanisms influencing the development of electronic co-operation tools in the healthcare sector. The empirical material is gathered through a longitudinal process that began in 2004 and is still running today in Norway. In this period, the first author collected empirical data from the following information sources:

- Project participation in the Core Health Record (municipal initiative)
- Project reports from Core Health Record (owned by the Directorate), Central Medication Service (owned by the National ICT) and Core Health Record (municipal initiative)
- 25 semi-structured interviews with vendors, policy makers and public authorities. The interviews were conducted by the first author and lasted between approximately 60 and 160 minutes
- Strategic documents and evaluation reports for ICT in Norwegian health care for the period 1997 onwards.
- Minutes from the parliament
- Management document from the Ministry of Health.

- Minutes from meeting between Ministry of Health and the Regional Health Authorities.

The information from all data, except interview data, has been entered into a timetable in order to understand the background for the different events and how these have interfered with each other. The information from the interviews are transcribed and sorted into themes. By combining all information elements, it will be possible to understand the viewpoint from the different actors and how this has affected the progress in the field.

The first author was formerly a project member in the Core Health Record project (municipal sector) and has therefore been an insider to this process [18]. This has given her valuable insight into the discipline that has been studied and has enabled easier access to key actors who would otherwise be difficult to make appointments with. Nonetheless, throughout the data collection and analyses process, she had to re-examine her own perceptions of what was going on in these projects. After initially ascribing the problems and delays primarily to the vendors, she increasingly came to see the challenges as much more complex, involving interests, relationships and interdependencies between many actors.

The second author has been involved in several research projects on ICT in healthcare over a period of 12 years and has played the role of discussion partner and co-author in this chapter.

## Case

The following case description will explain three initiatives that have taken place concerning creating a new service called the Core Health Record, a CSCW tool aimed at facilitating the patient's need for coordinated services among healthcare providers. The cooperation facility and content of the record has not yet been determined, but the involved actors have agreed that contact information and medication information is essential. However, *how* the information is put into the service and *by whom* is critical; these features are critical to the overall function. This service development illustrates the different perspectives and design solutions of the municipal sector, the hospital sector and the Directorate. The initiatives partly overlap one another chronologically and will be explained separately. First, we will explain how the healthcare sector in Norway is organized and the level of ICT adoption.

### **The state of affairs in the Norwegian healthcare sector**

The main actors in clinical healthcare in Norway consist of hospitals, general practitioners [GPs], municipal sector (home care service and nursing homes) and

hospital sector. This structure has been stable for several decades. The sector is mainly public, but with various owner structures and funding.

GPs run private offices with strict regulations concerning refund rules from the authorities. Since the end of the 1990s, the majority of GPs have used electronic patient records.

Home care services and nursing homes are run by the municipalities, which receive frame funding from the local authorities. In general, the municipalities do not hire their own physicians, but use the GPs for medical services outside the hospitals. The municipal sector had, since the 1990s, slowly started to use electronic patient record for their patients - first of all for administrative and statistical concerns.

In 2002 a hospital reform transferred the responsibility for Norwegian hospitals from the counties to four regional health authorities and ownership was thereby centralized to the Ministry of Health. Based on the hospital reform, the Ministry of Health sent a management document in 2003 to the four regional health authorities and ordered them to establish a joint strategy group for ICT between the Ministry of Health and the regional health authorities. The purpose was to achieve benefits in terms of co-operational aspects. The basic idea was to achieve a hospital sector with systems that could operate together as an integrated community because this was considered to increase efficiency. The strategy group within the hospital sector became an established unit called National ICT with regular management group meetings, a separate budget and a project office running ongoing projects.

ICT in the healthcare sector became a priority area for several countries around the year 2000. Several countries, including Norway, started planning for new services that should cope with the challenges concerning fetching patient information that was stored in other institutions. The European Union put interoperability on the agenda in their eHealth conference in 2006, and the patient summary was one of the top prioritized issues.

After 2000, electronic referrals, discharge letters, x-ray photos, and other information were sent between actors in the Norwegian healthcare sector, but the scale of this electronic communication was limited compared to the expectations. The authorities supported some development activities but did not act as a superior coordinator. The lack of comprehensive progress in the field was stressed during several debates in the parliament in 2007. In recent years, the Directorate has taken charge of more and more national ICT projects. Three big projects have already been drawn into the organization map and two others are pending.

Another action that influenced the climate within ICT development to a large extent was the co-operation reform within healthcare that was approved by the government in 2009. It stated that: *All documentation and information exchange shall be carried out electronically*, and a new service – the Core Health Record – was given particular funding.

### **Core Health Record**

In the remaining part of the case chapter we will describe three different activities related to the Core Health Record and explain how the main actors have approached the design issues. The three actors are: I) a municipality, II) the Directorate and III) the hospital sector.

### **Core Health Record I – a municipality initiative (2004 – 2009)**

The first attempt to create a Core Health Record was carried out by the Trondheim municipality. They experienced difficulties concerning user specifications and enrolling the electronic patient record vendors [EPR-vendors].

The municipality run the home care service, and they experienced that their professionals struggled to gain updated information about the medicine that their nurses administered to their clients, and the city council applied for funding to run a project creating a Core Health Record with the purpose of reducing adverse medicine events and contribute to better resource use in healthcare sector. They got 650,000 euro in founding funds from the Directorate.

The GPs are those who are responsible for our clients' medication as long as they are not hospitalized, and our Core Health Record will show the medication that the GPs have in their system, together with new prescriptions that other physicians, in the hospital or at the emergency service, have prescribed.[Project manager]

The project group considered it peremptory to integrate the Core Health Record with the electronic patient records in order to make a user-friendly service and they meant that the GPs' EPR system should be the most significant information source for the information in the Core Health Record.

From a technical point of view, the Core Health Record service should consist of two major elements; 1) a database containing the Core Health Records and 2) read/write functionalities in the electronic patient records. Trondheim City put out a limited tender and bought the database based on pre-specified requirements. Basically, the project team wanted to include as few EPR vendors as possible, but felt forced to include all the nine vendors, and to produce a national solution, because funding from Innovation Norway (a public business funding organization) was not available otherwise. However, the EPR-vendors wanted to have national specifications on such a service because otherwise would be too risky for them. After applying for more than one year, the project managed to receive funding – to cover some of the expenses in connection with integration work that the vendors had to carry out.

User workshops and technical workshops were arranged and specifications were further developed. The project was administered by well trained managers, but due to the complexity in the specification work, experts from Norwegian Centre for Informatics in Health and Social Care were hired to run the process. The specification work concerning integration with the electronic patient record was a difficult task and the EPR-vendors did not find the specifications suitable:

It is not possible to start some kind of development based on the specifications - we must rewrite the whole damn thing. It is on such a theoretical level that all of it needs to be explained in a practical frame. [EPR-vendor]

None of the EPR-vendors started to make integrations in their systems for the Core Health Record. The vendor that developed the database delivered it and installed it in the local area network at the municipality and claimed that it was according to specifications. The City council, on their side, claimed that they had not received sufficient documentation together with the database. The following comment from the EPR-vendor illustrates the gridlocked situation:

If they don't understand it, then it is because they don't understand their own project – and that is a bit curious! [EPR-vendor]

The project made no progress and was terminated in 2009 without achieving any kind of testing. A process concerning a national Core Health Record initiated by the Ministry of Health contributed to a lack of driving force.

### **Core Health Record II – a task for the Directorate (2009 – ongoing)**

The second initiative concerning the Core Health Record came from the politicians, and the Directorate was put in charge of a challenging compromise “race.” The Core Health Record was established as an earmarked activity by the Ministry of Health and the Directorate was put in charge of the preliminary work that took place in 2009 and 2010. The project group consisted of ten persons, eight from the Directorate – lawyers, technicians, social scientists, economists, etc, and two hired employees on an hourly basis – as well as one general practitioner and one nurse from the home care sector. The Directorate arranged several workshops and established expert groups – all in order to gather information about the needs and ideas about how to carry on with the work. The Directorate delivered the pre-project report in January 2011, which outlined in the first version of the service that the dispatching information from pharmacies should be used as the information source for the medication. By using a web service, the healthcare providers could access their patient's prescription information. The Directorate thought that this approach would be the most effective way to realize the service within a couple of years.

The politicians do not care about the contents in the Core Health Record, but they applied a lot of pressure in order to have a running service within a short time. We know that the first version of the Core Health Record will not be helpful for the Home Care sector and the general practitioners, but the emergency ward will be able to look up the medication that the patient has bought at the pharmacies the last three years. [Head of the Core Health Record Department, The Directorate]

The report was sent out for consultation by the Ministry of Health. Much of the input from the responders said that the Core Health Record should work seamlessly with the existing ICT-tools – which mean that it should be integrated with the electronic patient records.



The service will not be integrated with the electronic patient record in the first version. That will cause us too much of a delay. [Member of the Directorate]

An important argument for not integrating with the electronic patient records was that the first version of the core health record should not be dependent on a commitment from the EPR-vendors. It was a well known de facto that the EPR-vendors represented a bottleneck in the healthcare ICT development, and the Directorate wisely put the integration with the electronic patient records on a 10 years schedule plan. The health care sector responded with mixed enthusiasm and a variety of different views. The home care sector was not at all happy with the suggested solution.

It is not interesting for us to know what kind of medication the patient have purchased at the pharmacy, because we are in fact the ones that retrieve the medicine for our patients in the pharmacy. We need to know about prescribed medication as soon as a doctor has prescribed new medication, stopped or changed the medication dose. The solution that the Directorate has come up with is not valuable for us. It will take years and years before our needs will be taken care of in the Core Health Record Project! [Member of the Home Care Sector reference group]

The home care service that the municipalities run offers administration of the medication to their resident clients/patients who find it difficult to get the medicine at the pharmacy and/or struggle to take the medication at the right time of the day – often handicapped and old people. Thus, the home care sector needs to know the medication regime of their clients/patients as soon as a physician changes the medication regime. In the case of a new prescription, information would be available in the Core Health Record *after* the medicine was retrieved by the home care themselves at the pharmacy and termination and dose changes would not be available in the Directorate's Core Health Record. The co-operation function the home care hoped to get was not included:

We were quite surprised when we saw the pre-project report – we have stressed that the Core Health Record is not suitable for the municipal sector as it is planned in the first versions.[Member of the reference group – municipal sector]

The general practitioners did not hail the Core Health Record.

We have carried out an opinion poll that put the Core Health Record far down on the priority list. We have so many other ICT-related functionalities that are much more important. For instance, 60% of general practitioners wanted to have a controlled electronic updating of the medication list when a patient is discharged from the hospital. The quality of patient care would increase significantly with this kind of functionality! Today we do so by means of a very challenging cut and paste exercise. [General Practitioner]

This opinion poll was also presented by a high profile department physician at one of Norway's biggest hospitals in a meeting with the Minister of Health. The physician claimed in his presentation that the Core Health Record was an ICT-moon landing compared to the controlled electronic updating of the medication list. The Minister was clearly provoked, and said: "I'm glad there's a table between us!"

She also refused to believe the facts that the physician presented. However, the Norwegian Medical Association, which consists of 96,4 of all physicians in Norway, also pointed to this priority issue in their consultation letter to the Health Department:

The Norwegian Medical Association however, points out that there are a number of unresolved ICT tasks in the Norwegian health care system that must be resolved before the core health record can be developed as outlined in the final target image.

A general practitioner explained some of the issues:

To build a Care Health Record is like building the attic before the foundation wall. We have several basic things that don't function well enough, for instance, electronic referrals and discharge letters. Several thousands of these electronic letters are sent to the wrong place or "disappear" in the system and cause bad headlines in the newspaper. The authorities should have spent money on fixing these issues instead of building a giant organization in the Directorate in order to build something fancy that some politicians want. [General Practitioner]

However, the response from the hospital sector was most positive:

The dispatched medicine within the last three years can give us a good idea about a patient's medication status in case of an acute hospitalization. [Hospital Doctor]

The medication of patients within the Norwegian hospital is a process that has been documented on paper until recent years. However, some hospitals have introduced electronic services integrated with the electronic patient record – an integration that has cost a lot of effort and has been difficult to achieve. The medication is characterized by several intertwined processes, carried out by several professions: for instance, the physician prescribes the medication; nurses and nursing assistants are involved in the administration and distribution of the medicine. The process also has considerable logistical demands. From a medical point of view, several issues are important in the medication process, such as; a) allergy to specific medicine, b) the maximum level of medicine during a specific time slot cannot be surpassed, and c) interaction between medicines that can cause adverse drug events. The way that the patient responds to the medication is also a matter of concern in the electronic patient record. Due to this intertwined situation between medication information and processes inside the hospital, the hospital sector underlined that their requirements had to be considered at an early stage in the Core Health Record process.

We cannot use the Core Health Record inside the hospital, and this means that we have to build up a service parallel with the one that the Directorate builds. It will be quite similar. A waste of money if you ask me! [ICT procurement, Hospital Sector]

The mixed enthusiasm in both the municipal and hospital sector indicated difficult conditions for future work within the Core Health Record, but good funding might make it possible to overcome some of the obstacles. The project received

600 K euro in 2011 and 10,3 million euro in 2012. This is substantial on the Norwegian scale.

### **Core Health Record III – a hospital sector initiative called Central Medication Service (2009 – ongoing)**

The third initiative came from the hospital sector because they needed electronic medication information when patients were hospitalized. The Central Medication Service (the hospital name of the Core Health Record) was the result of a sub-project growing out of the ePrescription project – a project managed by the Directorate, aiming to send all prescriptions electronically from the physicians and to the pharmacies. The ePrescription project struggled to involve voluntary contributions from the hospital sector and had to push the sector via the Ministry. It was obvious that work concerning the electronic prescription had to be closely coordinated with the work concerning internal prescribing in the hospitals.

We underlined as clearly as early as 2006 that we could not introduce electronic prescriptions without examining the context and internal prescribing and medicine administration. There has been quite a hefty letter exchange between the hospital sector and the Directorate. We have spent quite some time trying to understand each other. The Directorate is chasing goals such as, for example: x number of electronic prescriptions within x number of years. The most interesting part is that the authorities are eager to get the electronic prescriptions because they need a copy of the prescriptions that they cover the cost of – an order from The Public Account Committee. The needs were not clinically embedded! [Project Manager Regional Health Authorities]

The National ICT put on hold the electronic prescriptions and instead focused their work on a Central Medication Service and in 2009 they drew up a plan to create a service that contained detailed information about the medication that prescribed to a person/patient. Funding of the project was planned to be a cost-sharing between the four health authorities and National ICT. From a hospital point of view, this service had to be adapted in order to distribute and manage medicine for the hospitalized patients, including information about number of pills, time of day, maximum number of pills per day, patient has/has not swallowed medicine, etc. The Central Medication Service should also be able to send electronic prescriptions in order to meet requests from the authorities, 24/7, contain updated data and be able to access by healthcare personnel – also including GPs, homecare service and others outside the hospital after dispatching. Even though the service was intended to contain medication information exclusively, this was the most important information element in the Core Health Record as planned by the Directorate. However, the Central Medication Service was planned to be integrated into the “inner life” of the hospital, unlike the Core Health Record.

The Central Medication Service will be 90% identical to the Core Health Record. The Directorate should reconsider this – but unfortunately – they have extreme political

pressure on their back. We are much better equipped to run a project like this because we are in direct contact with the users. I think that it is strange that the Directorate has become such a strong independent operator and that they're supposed to build their own programming. [Project Manager Regional Health Authorities]

## **Discussion**

In the following we will elaborate on how the authorities' control and management in the core health record case has affected the design of information systems in the health domain. With this top down strategy, it seems as if the hospital reform and the authorities' project management strategy have led to a huge gap between the developers and the user groups in the healthcare sector, and the hospital sector has become an influential actor capable of setting the agenda within ICT for the complete healthcare sector.

### ***Designing ICT within healthcare – not a political topic***

The healthcare sector and the authorities have a common goal that focuses on improved quality of patient care, and this prepares the background for enrolling the actors [11]. However, in this section we will show how the authorities' time schedule hampers the collaborative climate.

The Core Health Record in the municipal initiative and the Central Medication Service in the hospital sector share a common interest, namely, to create a service that is built as an additional unit to their existing information system, or the installed base according to information infrastructure theory [7]. They also share a clinical interest in determining the basic function of the Core Health Record/Central Medication Service, namely, as a service that is updated as soon as a new medication regimen is introduced by a physician, either inside or outside of the hospital.

Neither the municipality nor the hospital sector expressed that the first version of the Directorate's Core Health Record would be a natural piece in their existing information system. The general practitioners are, first of all, concerned with the priorities of the authorities, i.e., the collaborative tools concerning medicine information transfer between the hospital and themselves, because they are in charge of the medication for hospitalized clients. Dispatched prescriptions during the last three years will hardly give them any added value. This illustrates the dilemma that the Directorate also faces, namely divergent interests and political pressure to deliver results within a short period.

The process of the Core Health Record has been like the Night of the Long Knives the whole way! It has been like the Walk to Canossa for the Directorate to discuss with all types of health organizations and vendors and all other kind of actors to balance and come

up with a compromise solution. Additionally, they need to change the law in order to establish the service within legislations. [Member of the Core Health Record reference group]

The strategy of moving management to a top level was put into place because the former initiatives of trying to establish sustainable electronic services had failed. The authorities have put themselves in a leading position and hope that by doing so they will be able to manage the problems. The ePrescription system that started in 2006 became the first project directly managed by the Directorate. They were put in charge of the project because such a service, with many independent actors, would be difficult to create without a single overarching management. By stating some common goals, the inter-organization actors, together with the Directorate, were able to create a new system. Despite the role of the Directorate, the project suffered from delays and over- delivery. The Core Health Record project was the second major inter-organizational project that the Directorate overtook, but it was the first that was clearly a result of political interference. By using reference groups as consultants and managing the project via the Directorate, the project has moved far from a user-driven development philosophy and has led to a huge gap between the designers and the user groups. According to research, this will result in information system development in poorly adapted services and seems to be a serious disadvantage to the strategy.

In the Core Health Record project, the actors seem to share a common goal, namely improving the quality of healthcare. Politicians, however, are so concerned with rapid results, that they suggested a detour, whereby they omit the EPR vendors. The lukewarm reception that this detour has been met with can be regarded as an outright diversion [12]. Political control of the development of ICT in healthcare does not seem to be a sensible choice.

### ***The hospital sector or the Directorate – who is in charge?***

In this section we will show how the hospital sector has become an influential actor capable of setting the agenda within ICT in the complete healthcare sector.

The driving force within the Core Health Record in 2011 in Norway is the initiative managed by the Directorate. However, the other initiative run by the National ICT simultaneously seems to play a competitive role in the progress. Both parties seem to have a reasonable argument for their positions. The Directorate is aware of the tight coupling between the electronic patient record and the daily work occurring in healthcare. They have experienced the problems that occur when involving the electronic patient record vendors. The ePrescription project, the pilot program carried out in 2008, ended in total failure. The Directorate claimed that this failure was primarily due to the vendor's inadequacy. By avoiding these vendors in the first version of the Core Health Record service, many barriers could have been avoided. The information source that the Directorate has

suggested is a spinoff of a service that they already use, namely the electronic prescriptions. However, this service has just been tested in a pilot involving GPs and pharmacies and does not yet include the hospital sector, even though they issue 20% of the prescriptions. The decision by the Directorate is understandable when we consider a basic assumption in organizational theory that states that people are influenced by the organization to which they belong as well as by their individual socioeconomic status or career features. The Directorate is responsible for the electronic prescriptions, and thereby wants to include that functionality in the Core Health Record.

The Central Medication Service initiative by the hospital sector is managed by one of the regional health authorities that serve more than 50% of the population, and is the biggest workplace, employing 56,000 staff members. By virtue of its size, it plays a role as the most significant healthcare entity in Norway. The Central Medication Service is supported by the National ICT, the uppermost strategic group within the hospital sector. None of the other sectors in healthcare have an ICT organization comparable to the hospital sector. It started as a strategy group, but has turned its focus from strict strategy work to more project-characterized work. National ICT represents a huge group of users in the healthcare sector—a huge group starting to speak with one voice and thus play a powerful role in development with ICT. In fact, the National ICT seems to have a more powerful position than the Directorate, not only because of the amount of users they represent, but also because of their close relationship with the EPR vendors, which represent an obligatory passage point [12]. This means that the hospital sector may set the agenda within ICT in Norwegian healthcare. However, this might not be preferable, because it puts, for instance, the GPs in the background, even though the GPs serve as a hub when it comes to the electronic patient information flow in Norway. The mere possession of power by the hospital sector does not automatically confer the ability to cause changes unless the other healthcare actors can be persuaded to perform the appropriate actions for this to occur. A service like the Core Health Record is dependent of participation from all actors; otherwise, the service would not be the collaborative tool that it is supposed to be. Being able to set the agenda is an advantage for the hospital sector.

## **Conclusion**

We have presented the activities that been undergone in Norway for eight years in order to establish a Core Health Record Service. We have found that during these years, the authorities have changed their approach to innovation within ICT in healthcare by establishing a growing project organization in the Directorate. We have also identified that the politicians seem to be concerned with quantitative outcomes and that this might not correlate with the aims of the healthcare person-

nel. The authorities have changed their role from that of a supporter (by allocating funds to projects on a low level in the health organization) to a designer (by being in charge of the design process and implementing a new service).

The consequences of the authorities' influence in the information system domain in Norwegian healthcare seem to separate the users from the system developers to an ever-increasing extent. In the future process, this separation has to be reconsidered and action must be taken in order to develop a more user-friendly and efficient systems. The authorities have to find methods for closing the gap by bringing users and developers together in innovative processes. A lot of the resources that are spent on consultants that create paper could be better spent on system developers and test-users.

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