

Configuring Secretarial Workflows in the Epic EHR Suite

Gunnar ELLINGSEN^{a,1}, Morten HERTZUM^b, Kirsti Sarheim ANTHUN^c
and Line MELBY^c

^aUiT – The Arctic University of Norway, Tromsø, Norway

^bRoskilde University, Roskilde, Denmark

^cSINTEF Digital, Trondheim, Norway

ORCID ID: Gunnar Ellingsen <https://orcid.org/0000-0002-6122-4003>,

Morten Hertzum <https://orcid.org/0000-0003-0019-8531>,

Kirsti Sarheim Anthun <https://orcid.org/0000-0002-5884-5351>,

Line Melby <https://orcid.org/0000-0002-4507-0198>

Abstract. The primary goal of large-scale electronic health record (EHR) suites is to meet the needs of a broad range of users in healthcare institutions. EHR suites are extensively configurable, which makes it possible to tailor them to diverse professional practices and users. However, while users such as physicians and nurses may have clearly defined responsibilities, clerical personnel (i.e. secretaries) conduct “in-between” or invisible work that is not as easily defined. Therefore, it may be more difficult to tailor EHR suites to their needs. Moreover, because secretaries are quite low in the hospital hierarchy, it is difficult for them to obtain satisfactory solutions. In this paper, we explore the challenges of configuring the EHR suite for secretary workflows in the Health Platform program in central Norway.

Keywords. EHR suite, Epic, secretaries, articulation work, invisible work

1. Introduction

The primary goal of large-scale electronic health record (EHR) suites is to meet the needs of a broad range of users in healthcare institutions. EHR suites are extensively configurable, which makes it possible to tailor them to diverse professional practices and users [1]. This tailoring process requires thorough preparation, with expert configurators and users collaborating closely to design the needed functionality before a system goes live. However, while users such as physicians and nurses may have clearly defined responsibilities, clerical personnel’s (i.e., secretaries’) work is less easily defined. Secretaries typically conduct “in-between” or invisible work [2]: they support physicians’ day-to-day activities and must adapt to shifting needs. Therefore, it may be more difficult to tailor EHR suites to their needs. In this context, we asked the following research question: What are the challenges of configuring EHR suites for secretarial work? From a theoretical perspective, we used the notion of *articulation work* to describe the “activities required to manage the distributed nature of cooperative work” [3].

¹ Corresponding Author: Gunnar Ellingsen, gunnar.ellingsen@uit.no

Articulation work is “work that gets things back ‘on track’ in the face of the unexpected and modifies action to accommodate unanticipated contingencies” [4]. A basic characteristic of articulation work is that it is often invisible to rationalized models of work and is linked to one’s position in the professional hierarchy [4,5]. Typically, physicians reside at the top, while secretaries find themselves further down the hierarchy. Nonetheless, like the other Scandinavian countries, Norwegian secretaries are highly competent and well-trained for their job. Empirically, we focused on the Health Platform program in Central Norway, which implemented the U.S. Epic EHR suite in 2022. While all professional groups (including secretaries) have been involved in the process of configuring Epic, secretaries have been less satisfied with the results.

2. Method

We adopted an interpretive research approach, which considers a phenomenon from different perspectives [6,7]. Our data covered the period 2018–2022 and were based on various information sources: interviews, public and internal reports, and national policy documents. We conducted 23 interviews with various personnel (top management, physicians, nurses, and secretaries) involved in the Health Platform program. The interviews were open-ended but mostly focused on the expectations of Epic and the experiences of the preparations before the system went live. All interviews were transcribed for analysis.

3. Results

3.1. *The Health Platform Program in Central Norway*

The Health Platform is a regional program jointly owned by the Central Norway Regional Health Authority and Trondheim Municipality. In 2019, the program signed a NOK 2.7 billion (EUR 270 million) contract with Epic Systems Corporation to implement the Epic EHR suite in Central Norway, including all hospitals, general practitioner clinics, nursing homes, and home care services. Trondheim Municipality introduced it on 1 May 2022, while the Central Norway Regional Health Authority (including the large St Olav’s Hospital) implemented it on 12 November 2022. As a suite, Epic is relatively self-contained and is supposed to provide most of the functionality needed by health personnel, either in ready-to-use form or through configuration to meet the various health professionals’ needs.

The Health Platform management and the regional health authority jointly decided that physicians at the hospitals should have less authority to delegate tasks to other professionals, such as secretaries. According to our informants, this decision is in line with Epic’s philosophy: the system is designed to assign responsibilities to physicians. Furthermore, key Epic personnel recommended that if hospitals were to reach HIMSS Stage 7, (almost) nothing should be delegated. Regarding this recommendation, one project manager at St Olav’s Hospital said, “Physicians have delegated to nurses and secretaries medical tasks that, strictly speaking, they are not allowed to delegate. So the system forces physicians to do what they should really do themselves.” For example, registering and checking diagnosis and procedural codes have hitherto been delegated to secretaries. The expected long-term outcomes of less delegation are the rationalization

of the administrative workflow and a reduced need for secretaries. The Health Platform program undoubtedly expected that this decision would cause some resistance on the part of physicians. Conversely, the concerns raised by secretaries came as a surprise.

3.2. Configuring Secretarial Workflows

Since the inception of the Health Platform program, clerical subject matter experts (i.e., secretaries) have had weekly meetings to configure the clerical workflow. However, they have found that collaboration between them and the application analysts has been poor and that they have not been sufficiently involved in configuring Epic for their work tasks. Among other aspects, they have stressed the importance of certain functions and requested adaptations. However, their needs have, to a great extent, been unmet. In the early stages, their requests were dismissed as “too early”; in the later stages, it has no longer been possible to make the necessary adjustments, and their requests have been dismissed as “too late”. In a letter to the Health Platform management, the leading subject matter expert in clerical functions wrote, “It is quite fascinating to learn that nurses and physicians have worked closely with application analysts and had small details and smart texts configured for their specific work tasks. For the secretarial workflow, on the other hand, even basic functions have not been put in place.” Secretaries have emphasized that their function is crucial for Norwegian hospitals because it manages a highly critical patient flow, such as ensuring that patients present to hospitals for their appointments and that everything is correctly registered. The four key requirements for secretarial workflow functionality described below have been of particular concern.

3.2.1. Internal Urgency

Since the inception of the Health Platform program, secretaries have requested a date field for internal urgency. This date is very important because it is the last possible date for when the patients shall have a new appointment at the hospital. If the hospital fails to do so, it is a legal breach of the patient's rights as defined by the authorities. In spring 2021, the secretaries rejected two solution proposals because they did not include such a field. Towards the end of 2021, still with no date field for internal urgency, they were told, “Here is the solution you will get.” In secretaries’ view, there is a complete lack of understanding of the importance of this date field, and overall, there is a large gap between what is needed and what is delivered.

3.2.2. Management of Waiting Lists

At clinics, secretaries are concerned about how they can handle the long waiting lists. For them, it is essential to be able to attach codes to the different patient groups so that they can easily search for patients scheduled for different examinations. In the previous system, the fields “group code”, “free code”, and “purpose” were used, but were migrated to a non-searchable comment field in Epic. Furthermore, Epic’s work lists are configured in such a way that they can only be sorted one column at a time, up or down. This is a critical shortcoming because there are numerous waiting lists at each clinic. As an alternative, secretaries have got a new field on the waiting list called “waiting list subgroup”, where it is possible to enter a numerical code. Each unit must then define what the different codes mean. Secretaries consider this to be a very simple solution, but the configurators said to them, “This was what we are able to do; this is what you will get.” This does not provide adequate filtering. To schedule patients for examinations by

available physicians, they need to use filters on several columns at the same time, which is not possible with the current configuration of Epic.

3.2.3. Termination of Hospital Stays and Dispatch of Discharge Letters

In Epic, only one secretarial workflow has been created. When a patient's hospital stay is completed, the physician sends a "task message" to the secretary when the discharge letter is to be dispatched. The secretary must add recipients and click the "send" button. However, this does not reflect secretaries' practices. Secretaries conduct considerable follow-up work related to discharge letters. They check that all text is in place, that the admission and discharge dates are correct, that the discharge letters are linked to certain periods, and that all diagnosis, procedure, and operation codes are registered correctly. They may also suggest additional codes if codes are missing. Moreover, they ensure that the discharge letters are signed and countersigned in a timely manner so that they are sent within 24 hours, in accordance with national requirements. They also ensure that all recipients are correctly added so that the discharge letters are sent electronically to the greatest extent possible. Discharge letters that are not sent electronically must be printed and placed in envelopes, which must then be placed on the correct mail shelf for manual dispatch. In connection to this manual workflow, a "weakness" has been uncovered in that it is the physician who must now perform this task.

3.2.4. Termination of Outpatient Consultations and Day Stays

After a consultation with a physician, patients must pay a deductible before leaving the hospital. This is secretaries' responsibility along with additional tasks related to the termination of outpatient consultations. They ensure that all diagnosis and procedure codes are registered. They also add the deductible rates, ensure that the correct reimbursement codes are registered where applicable, and check that the system creates exemption cards automatically. There are also several other reimbursement codes that secretaries may register manually ("pregnant", "prisoner", etc.). It is important that this is clearly visible on the data entry screen. With the current configuration of Epic, the only option is to collect payments after patients have been checked out.

3.3. Management's Point of View in Hindsight

The Health Platform program and hospital management have become increasingly aware of secretaries' concerns. They acknowledge that the involved secretaries have struggled to make their voices heard. One problem is that the decision-making structure set up by the Health Platform program has centred on joint meetings in which the participants must speak up on matters of concern. The secretaries have not been able to adequately express their concerns in meetings with physicians and nurses. However, they started to complain when many of them attended courses together and realized that they had similar concerns. Their perspectives subsequently gained momentum. Another issue is that, given the supportive character of secretarial work, management claims that it is difficult for them to return to the clinic and say, "We are going to do things in a completely new way" to improve their workflow. By comparison, it is easy for, say, an expert in cardiology to go back to the clinic and say, "Now we will do it this way." In hindsight, managers acknowledge that physicians' and nurses' needs have been prioritized at the expense of secretaries' needs.

4. Discussion and Conclusions

Essentially, secretarial workflows in hospitals are characterized by considerable articulation work, much of which is invisible to rationalized models of work [4]. There is reason to believe that the invisibility of this work [2] has shaped the configuration of the secretarial workflow and has made it difficult for secretaries to communicate the essence of their work (which has often been delegated to them by physicians) and clearly express their demands for the new EHR system. These difficulties have probably been reinforced by the organization of the decision-making structure in the preparations for Epic to go live. Given their low position in the hospital hierarchy [4,5], it has been difficult for secretaries to make their voices heard in meetings with physicians and nurses – at least until they came together as a group and were able to express themselves with some force. Another issue is the managerial decision to no longer allow physicians to delegate to secretaries tasks previously performed by the latter. In practice, this has made it difficult for secretaries to argue, “This is how we do things, and this is what we need,” because some of this work is formally the responsibility of physicians and cannot be delegated using the Epic system. Consequently, secretaries have little say in the configuration of Epic because part of their work is being removed from them. Ultimately, this also means that a significant proportion of secretarial staff may face redundancy – a prospect that does not motivate employees to adapt to organizational changes.

Above all, our study highlights technical constraints, such as a lack of efficient waiting list search functionality. While secretaries may have had difficulty expressing their demands, it may also be the case that the configurators have reached the limit of what can be achieved in Epic – at least this is how statements such as “this is what we are able to do” can be interpreted. This problem, in fact, extends beyond secretaries. Given that physicians are now forced to engage more with waiting lists, they will face the same search functionality limitations. Ultimately, the question that arises is how these - and many other - design issues can be resolved if the limits of Epic’s functionality have indeed been reached. If it is not possible to configure the requested functionality, perhaps Epic should embark on the task of developing it.

References

- [1] Ellingsen G, Hertzum M, Melby L. The tension between national and local concerns in preparing for large-scale generic systems in healthcare. *Comput Support Coop Work*. 2022;31(2):411-41. doi: 10.1007/s10606-022-09424-9.
- [2] Bossen C, Jensen LG, Udsen FW. Boundary-object trimming: on the invisibility of medical secretaries’ care of records in healthcare infrastructures. *Comput Support Coop Work*. 2014;23(1):75-110. doi: 10.1007/s10606-013-9195-5.
- [3] Schmidt K, Bannon L. Taking CSCW seriously. *Comput Support Coop Work*. 1992;1:7-40. doi: 10.1007/BF00752449.
- [4] Star SL, Strauss A. Layers of silence, arenas of voice: the ecology of visible and invisible work. *Comput Support Coop Work*. 1999;8:9-30. doi: 10.1023/A:1008651105359.
- [5] Suchman LA. Making work visible. *Commun ACM*. 1995;38(9):56-68. doi: 10.1145/223248.223263.
- [6] Klein HK, Myers MD. A set of principles for conducting and evaluating interpretive field studies in information systems. *MISQ*. 1999;23(1):67-93. doi: 10.2307/249410.
- [7] Walsham, G. Interpretive case studies in IS research: nature and method. *Eur J Inf Syst*. 1995;4:74–81. doi: 10.1057/ejis.1995.9.