Caring is Sharing – Exploiting the Value in Data for Health and Innovation
M. Hägglund et al. (Eds.)

doi:10.3233/SHTI230170

Perceptions of Learning Activities in Electronic Health Record Transition

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Abstract. Learning activities are at the front-line of first impressions. In this paper, the education and training program for a large electronic health record transition project is presented. Management, and staff were interviewed before, during, and after implementation on their perception, reception, and benefit of various learning activities. Daily clinical work and obligations complicate adherence to learning programs, and the clinical professions differ in their approach to mandatory activities. Local learning activities empower staff, and planners should consider embedding room for adjustment of learning program during implementation.

Keywords. Electronic Health Records, EHR transition, Education, Training

1. Introduction

A hospital's Electronic Health Record (EHR) system plays an essential role in ensuring timely, proper, and safe care of patients. As such the EHR becomes intertwined with clinical work and ensuring that all staff has a shared understanding of functionality and usage is necessary for any well-functioning hospital. The digitalization of clinical information and knowledge in Scandinavian countries has been ongoing for decades, and thus most EHR implementations can be considered as system transition projects [1]. However, assuming that transition projects are simpler than an implementation project, or are less risky, or complicated, is naïve [2]. EHR system transitions face several challenges and obstacles as the replacement system simultaneously needs to fit into existing perceptions and procedures, while still seeking to expand and extend scope and functionality. Hospitals are expected to maintain continuous service delivery, and daily interdependencies between departments complicates parallel operation of the old and new EHR systems. To smooth this transition as much as possible, education and training of personnel is of crucial importance [3]. These preparations are costly and needs to be well organized and timed, as training and educational activities often stage expectations and attitudes through first-impression exposure to new circumstances of doing work [4]. Planning and executing training of thousands of employees is no small task, and each effort needs to be weighed carefully as the impact of either doing too little, or too much, training in the new systems quickly accumulates. Differentiating between education and

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training, where the former is the process of learning and acquiring information, and the latter is the process of teaching specific skills may serve as a helpful distinction when assessing the outcome of skill acquisition initiatives. Samadbeik et al. [5] identifies five types of training methods: one-on-one training, peer-coach training, classroom training, computer-based training, and blended training. As well as multiple strategies and techniques for training: cased-based, process-based, role-based, feedback and support, functionality, flipped-classroom, and team-based learning. Of these options, classroom-based training is the most widely used format, and case-based training the most common technique.

In this paper, an initial analysis of how staff in the Region of Southern Denmark (RSD) perceived the training and educational program planned for their transition to a new EHR system is presented. The feedback is assessed using the terminology of [5], with the intention of inspiring future planning of learning programs. The paper also frames the current approach in the light of a larger, cross-regional research project where further investigations into broader and long-term effects of training and educational activities for EHR transition are pending.

2. Background

Both RSD and the North Denmark Region (NDR) implemented the same EHR system in 2022, replacing two different existing systems which had been in use for more than a decade. RSD serves a population of 1.4M citizens with a secondary healthcare sector organized into four hospital units, as well as one psychiatric hospital distributed amongst the other units. Figure 1 shows the organization and responsibilities of the learning program. All staff with EHR access were expected to complete a mandatory e-learning educational program prior to the transition date. This training consisted of interactive learning modules and intended to ensure a uniform introduction to the basic functions of the new EHR system. In addition to the e-learning activities; secretaries, and staff involved with use of speech recognition (SR), as well as specially appointed employees known as resource-staff, were assigned to class-based teaching. These employees were tasked with acting as ambassadors and were committed to assisting their colleagues during the transition.

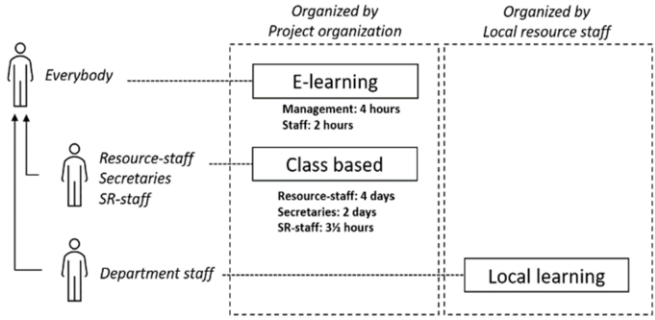

Figure 1. Overview of the various learning activities

Spanning four days, class-based teaching was significantly more extensive and sought to instill knowledge of the new EHR system and provide foundational insight into

the new EHR. The class-based activities were organized as short-talks and assignments to train the participants in core system functionality such as booking patients, managing referrals, handling medications, and dealing with communication. Both e-learning and class-based activities were organized centrally by RSD. Finally, each department had the option of organizing local learning. Planned and conducted by the departments own resource-staff who utilized their new system expertise in devising case-based teaching. Depth and span of local learning activities thus varied by department.

3. Methods

The implementation projects in both regions were studied by an independent research group aiming to investigate the influence of leadership on a large scale EHR transition project – see [6] for a description of the overall project aim. The project consisted of three main activities; 1) regional surveys based on change management and technology acceptance models, 2) registry studies on productivity and financial impact, and 3) a qualitative case study seeking to capture expectations and experiences with the EHR systems amongst clinicians before, during, and after implementation. The case study includes time-motion observations of clinical work amongst physicians, nurses, and secretaries, as well as interviews with staff from a medical, a surgical, and a psychiatric department. 18 clinicians, 7 department managers, and 4 top managers were included in semi-structured interviews in sessions varying from 15-60 minutes. The interviews with clinicians and department managers were analyzed to uncover perception and impression of the training and educational program. The interviews were compared with preliminary results from a survey to contrast the comments from the informants. The survey was distributed by the research group, and the data included in this paper had a response rate of 27% (n=2910) before implementation, and 21.8% (n=2290) after. Only responses regarding the expectations and perceived value of learning activities are included.

4. Findings

Interviews were coded according to themes on perceived quality and effectiveness of the various learning activities, the extent to which it prepared the participants for the new system, and how they coped with issues emerging during the implementation process. One of the key obstacles in enrolling thousands of busy employees in any mandatory activity is the likelihood that more pressing clinical work takes precedence. This issue was especially emphasized by the department managers:
"Just today one of my surgeons informed me that they had to postpone their e-learning due to the scheduling of an acute surgery. That is just the reality of our doctors – even though we plan educational activities – there is always something else they would rather be doing. Which often results in the e-learning being skipped altogether." (Department manager A), and: *"The e-learning is so extensive – 4 hours is a long time. I myself divided it into five chunks, simply because it drained me. In total I probably spent six hours on it.*" (Department manager B). Several of the secretaries expressed a need to know how the new system affected the other professions, to be ready to assist if problems emerged:

"I've completed all my e-learning modules, and actually also modules for the physicians. Even though I do not deal with medication lists etc., it is still nice for me to know what the physicians need to do to handle them" (Secretary).

Although several concerns that the mandatory activities were too generic were observed, most informants also expressed the benefits of participating in e-learning activities:*" Of course you need hands-on experience. That is how I best learn, and it helps me to be less frightened next Monday when the new system is ready. Instead, I'll be like "oh yes, I recognize this"* (Nurse). Still, hands-on training was highlighted as important to feel assured that work could be conducted as required: *"After completing e-learning, you have a pretty good grasp of the system. We do not know how to work with it, but we know some of the fundamentals. It prepares us for the new system by knowing how it looks and feels. Even so, we still don't know how to use the system to do our work tasks, that is something we lack."* (Secretary).

Due to the sequential roll-out of the new EHR, hospital units following the initial implementation site were able to adjust the learning program. While the mandatory e-learning program remained unchanged, it quickly became apparent that local learning initiatives should be emphasized by defining department specific use-cases for the local staff to try out: *"During the classroom lectures we were told it was a good idea to plan local learning at our own departments. We have done it our own way; others have probably done it completely different. The physicians constructed their own local learning activities, and the secretaries and nurse resource-staff have built shared content.".* (Resource-staff at 2. Implementation site).

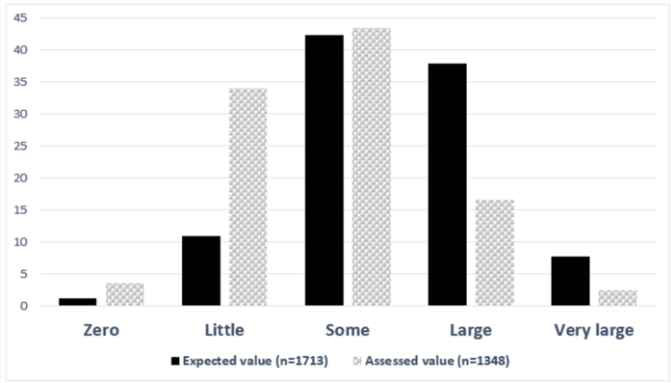

Figure 2. The staff's evaluation of expected and perceived benefits from participating in training programs in percentage of n.

Comparing the interview data with survey findings, both supportive and contrasting indications is found. Prior to participating in the learning activities, the staff was asked about their expectations for their benefit from teaching in EHR in RSD using a five-point scale from zero to very large. Right after the implementation they were asked to rate their benefit from the EHR teaching activities on the same scale. Figure 2 show the results, and it is seen that the training activities did not live up to the expectations as roughly 35% of respondents had high expectations of outcome from participation. In hindsight, the respondents adjusted their self-reported need for training and education and only 19% assessed a high outcome of their training and education. 87% of all respondents participated in the learning activities, reflecting the fact that completion was mandatory and monitored.

5. Discussion

Learning activities is often the point of first contact, and thus also establishes first impressions. As such, planners should pay attention to expectation management and assess the necessity for running follow-up activities. This is best made possible by ensuring ample slack for tweaking activities as well as structure of the learning program to also support targeted education [7]. Here, this was made possible as RSD decided on a gradual roll-out focusing on the somatic hospital units grouped into three stages. Doing so enabled the following implementation units to adjust their learning activities. From our interviews, it appears that staff in general are more satisfied with hands-on training activities. The flexibility of e-learning is a double-edged sword; simultaneously offering flexibility, but at a cost being deferred by more urgent tasks. Furthermore, the mandatory e-learning activities were good at establishing basic familiarity with the system, but the format and self-paced nature, made it difficult to embed into busy schedules. As the same e-learning program was utilized across distinctly different specialties, a lot of informants – especially from smaller departments – expressed that the material was too generic and not adjusted to their circumstances. Local learning initiatives alleviated these concerns.

6. Conclusion

Differences in attitude and coping emerges across professions. E-learning, despite being mandatory, is more easily dismissed and displaced by daily operations. Still, e-learning has offers benefits in terms of establishing familiarity and may be best thought of as a catalyst for later learning activities such as case-based scenarios and peer-coach training. Although departmentalized local learning initiatives are well received, and empowers local change agents, management should consider ways to formalize a foundational set of cases and still encourage local customization, now at a lower cost.

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