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Achieving IT-supported Standardized Nursing Documentation through Participatory Design

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Abstract. In the Capital Region of Denmark a full-scale pilot project on IT-supported nursing documentation is – after running for two months at one full university hospital – showing promising results. In this paper we discuss participatory design as a method to design clinical documentation templates that support guideline-based highly structured standard documentation in a large organization with many stakeholders. Applying a participatory design (PD) approach at many organizational levels has involved the stakeholders actively in the design process. Developing a set of design principles has concurrently made it possible to frame the discussions among the different stakeholders. Both PD and design principles have been instrumental in designing and implementing a set of standard templates that support the daily work and coordination between the nurses.

Keywords. Participatory design, clinical guidelines, standardized documentation, nursing.

Introduction

The objectives of clinical documentation are versatile; to support clinicians memory, to coordinate clinical work and to meet legal demands [1]. During the last century the fulfillment of these aims has been refined in the paper-based patient records. Digitalization puts new potentials and constraints into clinical documentation [2], although it is expected to improve quality of care [3].

In the Capital Region of Denmark[2] several attempts have been made to integrate the regional guidelines for clinical documentation into highly structured standard templates in the legacy IT-portfolio. A recent attempt was to design electronic documentation templates and overview reports for the nurses' initial patient assessment. After a pilot implementation in twelve wards at six hospitals throughout the Capital Region the templates were rejected due to disagreement on the documentation procedure between the various stakeholders across the organization. Further discussions on acceptable time consumption due to technical difficulties as well as

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[2] The Capital Region has 1.6 million inhabitants, 12 hospitals with 5.150 beds and app. 40.000 employees. The hospitals are all accredited by Joint Commission International.

rigorous design of the templates were key issues in the rejection. After dealing with the technical issues it was decided to address the organizational disagreements by re-designing the templates using a participatory design (PD) approach through which the various stakeholders in the design process were to be involved thoroughly.

The overriding aim of the re-design was to create a new set of structured templates that concurrently supported the daily clinical work practices of the nurses and adjusted the documentation in accordance to the regional guidelines and accreditation requirements. In order to achieve this it was necessary to gain consensus on the template design among the clinical nurses, quality units and nursing managers across the 12 hospitals in the region. Furthermore, the templates should be applicable by nurses in all types of bed wards (surgical and medical – elective and acute). One size had to fit all, so to speak.

Specifically, the re-design had to respond to all the major critique points that were disclosed in the first pilot implementation (listed in italics below), entailing that the templates should:

- Hold all relevant data and concurrently provide a good clinical overview. *In the rejected set of templates the overview was blurred by a large amount of data*.
- Handle large amounts of pre-defined text in the data entry templates and concurrently displays readable reports. *Previously the focus had been at the data entry templates and not at the resulting overview reports*.
- Handle highly structured data entry in an efficient manner. *The previous highly structured data entry templates had induced extensive time consumption.*
- Support the daily nursing work practices. *During the first pilot implementation focus had been mainly on fulfilling documentation standards and accreditation requirements*.

Besides these specific demands for change within the templates, a main lesson from the first pilot implementation was that there are many stakeholders in nursing documentation. Not only do registered nurses in the wards have an interest in the design of documentation templates so do quality coordinators, regional planners and hospital managers. The PD-approach was chosen for the re-design process as a way to involve all these stakeholders and thus overcome the organizational barriers that was experienced during the first pilot implementation of structured documentation templates.

Various perspectives have been taken on PD [4], although three issues have dominated the discourse of PD: 1) the philosophy and politics behind the design concept, 2) the tools and techniques supplied by the approach and 3) the ability of the approach to provide a realm for understanding the socio-technical context and business strategic aims where the design solution is to be applied [5]. A core principle in PD is that stakeholders are actively participating in design activities, where they have the power to influence the design solutions [5, 6].

1. Methods

In order to ensure organizational power behind the new clinical documentation templates, a regional patient record committee was established. The role of the committee was in general to provide strategies for all clinical documentation – electronic as well as paper-based. The committee was given the mandate to make the final endorsement of the nursing documentation templates. The confidence that a centralized organ of documentation experts took part in the process eliminated some of the conflict potential among the stakeholders. In order to enhance the PD process members of the patient record committee were invited to, and took part, in some of the central steps in the design process.

In accordance with PD recommendations the users were involved in all the steps of the re-design [7]. Several PD methods were applied: workshops, document analysis, site visits, interviews, full-scale simulation in high fidelity environments, mock ups and prototyping. The core activities in the re-design process were workshops as illustrated in fig 1. Nurses with specialized knowledge on documentation and accreditation requirements from all the regional hospitals participated in the workshops. In contrary to the first template design project there were both opponents and advocates of highly structured nursing documentation present at the workshops.

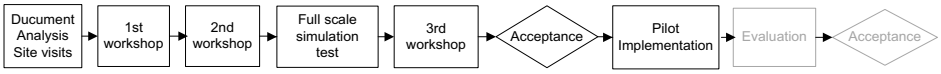

Figure 1. Re-design process

In order to frame the discussions and ensure focus on the clinical content a set of principles for re-design were developed before the workshops. Applying a consistent set of design principles up front established a shared understanding among the workshop participants about the limitations and the possibilities of the IT-application. This induced that the discussions in the design process became focused on practical solutions.

Extract of the principles:

- Only prompt for descriptions of findings in the template if these findings are clinically relevant to display later. *For example: It is always relevant to know whether or not the patient is in pain and if the previous nurse has investigated this. On the other hand always noting that the patient does not have a hearing aid – as would be the case for most patients – blurs the overview.*
- Only present one conclusive answer to a screening instead of one to each of several screening questions. *For example: If the conclusion of the nourishment screening is displayed it is reasonable to assume that all the questions in the screening has been considered.*
- Only display relevant parts of the templates. *For example: Hidden sections like questions on sexual orientation or religious believe were only displayed if information had been provided in the template indicating that this would be relevant to discuss with the patient.*
- Consistent use of structure. *For example: Each thematic section of the templates was always structured in the same way.*

Before the first workshop, all relevant documents were analyzed and meetings were held with some of the key stakeholders in order to develop a shared understanding of the internal disagreements and potential ways of addressing them.

At the first workshop a prototype designed on the basis of the evaluation of the first version were presented to the participants. The nursing processes were then discussed and compared to the features of the prototype. In between the workshops follow-up meetings, where more detailed matters were settled, were held with a few representative nurses. These meetings served as a diversion that made it possible to take the discussions at the workshops to a higher level supporting a fast PD process. A new version of the templates based on the comments was presented and discussed at a second workshop. The prototype was subsequently further adjusted based on the comments in the workshop.

The next step was to let a group of volunteer end-users evaluate the templates. This was done at a full-scale simulation test [8], where nurses were able to test the templates in realistic environments and scenarios giving important input to how to solve some of the practical challenges facing the daily work with the documentation templates. The PD approach was also applied for the development of the simulation scenarios.

Upon approval of the system by the regional patient record committee a full pilot implementation has been carried out at a university hospital. Based on the evaluation of this implementation it is the plan to implement the system at the remaining 11 hospitals in the region.

2. Results

Ownership was gained by including all stakeholders in the process, leading to a wide anchoring of the system in the organization. Especially the overcoming of the gap between the quality consultant offices' merely theoretical approach and the ward nurses' very practical approach was beneficial. The meetings helped to align stakeholders' expectations to the templates.

Support of efficient work processes was ensured. After having used the templates for two months at the pilot hospital, the responses are very positive and the nurses are reporting (which is also confirmed by observations) that the time spent on documenting the initial nursing assessment of patients using the IT-application is equivalent to the time used on paper, now with the additional benefits of omnipresence and standardized structure. The documentation templates match the users need for documentation, efficiency and guidance, and the implementation in a full hospital secures cohesive work processes across the organization.

The documentation templates have made it easier to obtain overview of the patients' record before starting a shift. The structure of the templates supports the nurses so well that they express that there has come a stronger focus on nursing in the documentation. Problems related to nursing are more often followed up than when using the less structured paper-based record.

The introduction of design principles entailed that the discussions of clinical content was segregated from the options the IT-application was offering. The design principles were based on experience from previous implementations and academic recommendations [8]. The design principles entailed that the discussions and negotiations at the workshops were focused on the clinical content of the documentation templates. Furthermore, the design principles ensured uniformity of the

templates which is of great significance to adoption by end users when implementing information systems at a large scale.

3. Discussion

Our experience using PD in the design of standard nursing documentation templates has convinced us that although it is a time-consuming approach the results it facilitates to produce compensates the effort.

In our case the PD approach was applied to many activities in the design process but two principles were especially significant: 1) The broad inclusion of stakeholders from all levels of the organization and the consistent involvement of them in the design process. 2) The framing of the discussions among these stakeholders through the design principles as well as the mandate from the regional patient record committee.

The major difference on the re-design and the primary design project was the consequent PD approach, involving a wide number of stakeholders, not only proponents of highly structured nursing documentation. The design principles segregated the discussions concerning the IT-application and the clinical content, and made it possible to achieve a mutual clinical agreement on the actual content of the templates. Furthermore, the meetings prior to and in between the workshops allowed all stakeholders an opportunity to voice their point of view and to affect the final result.

A disadvantage of PD is however that it is time-consuming. The duration of the re-design period was 4 months. The duration could have been reduced by balancing the resources and increasing the amount of configuration resources, but the number of activities prevents the duration of the design process to be substantially reduced. The next step will be to implement the documentation templates at all the hospitals in the Capital Region. This will imply further refinement of the method in order to be able to expand the highly structured standard documentation templates in the legacy IT-portfolio to cover all clinical working areas including highly specialized ones.

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