Context Sensitive Health Informatics: Many Places, Many Users, Many Contexts, Many Uses
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The Role of Medical Transcriptionists in Producing High-Quality Documentation

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Abstract. This study aimed to investigate the quality-assurance work conducted by medical transcriptionists in the production of medical records, and the implications of these findings when designing a structured electronic patient record (EPR) system in which physicians are supposed to write documentation themselves. Both qualitative and quantitative methods were applied. Qualitative data were collected through informal discussions and focus-group interviews. Quantitative data were collected through the medical transcriptionists' daily recordings of their quality-assurance work. The results show the many essential quality-assurance tasks conducted by medical transcriptionists and the extent of this work. Each medical transcriptionist performs an average of more than six corrections per day, and approximately one of three dictations are corrected. We suggest that these correction and quality-assurance tasks need to be compensated for when designing and developing new structured EPRs. Some quality-assurance tasks may also advantageously be performed by secretaries in the future.

Keywords. Electronic patient record system, medical records, quality assurance, medical transcription, structured EPR

Introduction

Medical transcriptionists (MTs) have an important role in documenting patient visits in free-text electronic patient record (EPR) systems. The documentation work typically involves the doctor ordering the right template in the EPR, providing dictation, and sending the dictation to a MT for transcription. The MT transcribes the information and may send a note to the doctor if something is incorrect or unclear. The doctor then replies to the note. After the doctor receives, reads, and approves the transcribed document, the MT send it to the referring health provider, other involved health personnel and maybe also the patient.

Unfortunately, and independent of the MTs' work, free-text EPR systems create double or triple registrations, redundant documentation, and little opportunity for the extraction and reuse of the data or its transmission for quality registry or research. The logical solution to these problems is to structure and standardize the EPR systems.

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Structured EPR systems are expected to ensure improved quality [1], more completeness [2, 3], higher levels of correctness [2, 4], greater clarity [5], and fewer mistakes [6].

An implication of introducing highly structured EPRs is that the physicians have to record the data in the EPR; i.e., they have to write the patient documentation themselves. This implies a change in the existing medical record production practice, in which dictation is the predominant method [7].

However, doctors' change of work practice from dictating to recording may overlook the MTs' important role in producing high-quality documentation. When dictation is used, the MT performs a knowledge-intensive job of interpreting dictation correctly and transcribing it so that patient information is complete [7, 8]. The literature points out that medical transcriptionists even perform tasks that fall within the clinical range [9]. In addition, "a critical role of the MT is to detect dictator errors" [7] (p. 88). The errors, which are likely a result of bad dictation quality or technical problems, should be minimized when doctors conduct patient documentation themselves in the structured EPR. However, some of the MTs' quality-assurance work might also be relevant and useful when the structured EPR is established. In this respect, the change of work practice from free-text to structured, and from dictating to writing, requires a focus on the human, organizational, institutional, political, and technological complexity involved — issues that often are seriously underestimated [10].

It is therefore interesting to explore this further. We raise the following research questions: What kind of quality-assurance work do medical transcriptions perform in producing medical records, and what are the implications of the establishment of a new structured EPR in which the physicians write the documentation themselves?

Based on quantitative and qualitative methods, we have studied the work practices of medical transcriptionists at the University Hospital of North Norway (UNN) prior to a large-scale project in the Health Authority Northern Norway, where the aim is to implement a highly structured EPR.

1. Methods

Both qualitative and quantitative methods were applied. Qualitative methods were applied to: 1) understand how the doctors and the MTs actually used the EPR documentation system, rather than how the system was designed and intended to be used, because "plans and situated action" may differ [11]; 2) investigate the most common quality-assurance work conducted by the MTs that was not an intended part of their work tasks; and 3) explain the findings in the quantitative study. Quantitative methods were applied to investigate the extent of the quality-assurance work performed by the MTs.

For the qualitative research tasks, an interpretative study approach was used to produce deep insight into the information systems by focusing on human actions and interpretations concerning development and use of the computer-based information system [12, 13]. Data were collected through informal discussions and four focus-group interviews, lasting approximately one hour each, in order to promote a broader and more thorough discussion [14]. The focus-group interviews were conducted in 2014: March and April (including 23 different MTs), June (14 MTs), and November (33 MTs). For the last two interviews, MTs from Tromsø participated face-to-face, and the MTs from Narvik and Harstad participated via videoconference. The interviews

were not recorded, but detailed notes were written, and the main points from the previous meeting were presented at the next one.

A quantitative survey was designed to record the extent of the quality-assurance work identified in the qualitative study. The surveys were piloted on six people for one week in June/July, and corrected based on the pilot and on subsequent informal meetings and a focus-group meeting addressing the results from the pilot. The pilot identified that the MTs spent an average of 4.5 minutes completing the survey.

In November 2014, all MTs (approximately 60) were asked to fill out one anonymised survey form per day over two consecutive weeks, to cover normal variances in the workload. The results were recorded in Microsoft Excel. The survey was also intended to report how many minutes the MTs spent on each correction and quality-assurance task. However, these results had to be excluded, because the information about time spent was partly missing in the survey forms; in addition, some MTs revealed that they had different interpretations of what they should report. Some had reported the time they spent sending feedback (a yellow note) to the doctor or department, but did not include the time they spent searching for the reply and correcting mistakes after it was received. The MTs' language was Norwegian. Data on the number of dictations transcribed/week were extracted from the EPR's report system.

2. Results

The results from the qualitative part of the study identify that MTs perform many different correction and quality-assurance tasks originally not intended as part of their work tasks. Tables 1 and 2 present the most common correction and quality-assurance tasks, as identified in the qualitative study, and the frequency, as identified in the quantitative study.

The MTs transcribed an average of 3,658 dictations per week in 2014, and 3,602 and 3,635, respectively, for the two weeks in the study, which represents a normal workload. Transcription of dictations not requiring any correction or quality-assurance work were not recorded to minimise the MTs' interruptions and extra workload, but each MT was asked to fill out one survey form per day. Summing up all the survey forms, the survey results represent 193.5 days' work, exactly 50% of a total of 387 days' work carried out during this two-week period. Assuming that the 50% who have reported is as effective as the group who have not reported, the 193.5 days' work will represent approximately 3,618 transcriptions for this two-week period.

Table 1 shows that the MTs contacted the doctor or department 377 times to correct the patient records, and Table 2 shows that they corrected mistakes 832 times without any correspondence. This adds up to 1,209 corrections through 193.5 days' work, and more than six corrections per day for each MT. Approximately one out of three dictations were corrected. Work tasks 1, 2, and 3, presented in Table 1, normally required MTs to contact the dictating doctor; while work tasks 4, 5, and 6 required contact with administrative staff at the department. However, staff could also be contacted regarding work task 1. The survey results presented in Table 1 document that "indistinct dictation" was the most common mistake, in which the dictating doctor was contacted 135 times. Uncertainty regarding encoding (diagnostic codes/procedure codes) resulted in the doctor or department being contacted 93 times. Correct diagnoses and procedure codes are important for receiving correct reimbursement from the public healthcare insurance-system. The department was contacted 90 times about the patient

not being set up to the agreed control. Both indistinct dictation and lack of control appointments might have detrimental consequences for the quality of patient care. Incorrect registration of a referring doctor/health provider occurred 13 times. Incorrect registration could result in referrals sent to general practitioners (GPs) or other healthcare providers who have nothing to do with the patient, thus violating the patient's confidentiality. In one focus-group meeting discussing incorrect registration, five respondents estimated that they spend from 50 minutes to 2 hours during one week (five working days) correcting these mistakes, because it can be very time-consuming to identify the correct recipients.

Table 1. Correction and quality-assurance work requiring the medical transcriptionist to contact the dictating doctor or the department.

Id:	Reason for contact with doctor or department	Number of instances
1	Uncertainty regarding encoding (diagnostic codes/procedure codes)	93
2	Indistinct dictation	135
3	Despite obvious dictation, something seems to be wrong in the dictation	16
4	Patient not set up at the agreed control	90
5	Incorrect registration of referring doctor	13
6	Visit registration of outpatient contact missing	30

Table 2. Correction and quality-assurance work that did not require the medical transcriptionist to contact the dictating doctor or the department.

Id:	Corrections without contact with the doctor/department	Number of instances
7	Sloppy dictation (not included in Table 1)	211
8	Missing registration of general practitioner	171
9	Incorrect document template used by the doctor	101
10	Doctor dictating/reading text already entered in the EPR	77
11	Doctor dictates several identical sentences	33
12	Other quality/clean-up work not included above	239

Table 2 represents dictation that MTs correct without contacting the doctor or the department. Sloppy dictation required correction 211 times, in addition to the times reported in Table 1. Missing registrations of GPs were corrected 171 times, and the MTs had to correct the document template selected by the doctor 101 times. The MTs transcribed text that already existed in the journal 77 times, and they transcribed several identical sentences 33 times because doctors repeated themselves. The MTs conducted other correction/quality-assurance work not specified in the survey 239 times.

The qualitative methods and the comments from the survey revealed some of the correction work involved due to sloppy dictation. If the dictation jumped back and forth several times, the MTs had to rewind it several times and listen again through the entire text. MTs might also pull together disjointed text so the content would become more understandable to the reader. If the dictation was not clear or the doctor mumbled, an MT might engage a colleague to listen to it. The MTs corrected the language of foreign doctors, which sometimes included what they referred to as "qualified guessing based on the context." Sometimes their transcriptions had many empty spaces because words in the dictation were missing or impossible to understand. Surprisingly, the MTs might receive that document back as accepted by the doctor, with all empty spaces remaining. These doctors had accepted the transcription most likely without reading it. In some of these cases, if the missing words were of high importance, the MTs stopped

the transcribed document from being sent to the GP and patient and had to go a second round with the doctor involved.

According to the MTs' management group, the judgment and quality-assurance tasks presented here were not originally intended parts of their work; it is more of a *de facto* practice that has been established over the years. The focus groups revealed that the MTs consider the quality-assurance work they conduct as unintended and unnecessary interruption that is very frustrating and time-consuming. Some of the MTs described the doctors as being "sloppy" with the patient documentation work. They wonder if it is because the doctors are pressed for time, or because they know that the MTs will check the quality of the documented data and correct their mistakes. The MTs expressed that some doctors seem to believe that "it is the MT who is responsible for the correctness in the patient journal, not the doctor," which is the opposite of the fact.

However, when the new structured EPR is implemented, the need for MTs will decrease, and the need for EPR support will most likely increase. Therefore, UNN has started re-educating MTs to provide EPR support, advising doctors on how to write the structured EPR documentation and produce high-quality documentation.

3. Discussion and Conclusion

This study documented that MTs perform many essential correction and quality-assurance tasks when documenting patient visits in a free-text EPR system. Each MT conducted more than six corrections per day, and approximately one out of three dictations were corrected. This supports findings from other authors documenting that doctors make many and significant errors in dictations [15], and that MTs must rely on many different types of skills to provide high-quality transcription of medical records [7-9, 15]. The quality-assurance work presented in our study is not originally an intended part of the MTs' work, but demonstrates a work practice that has been established over the years.

All MTs were asked to fill out a survey form each day, but only 50% did, which is a limitation of the study. Even though the two selected weeks represent normal activity, it might be that the other 50% found recording their work too time-consuming and stressful. However, data representing 193.5 days' work over two weeks to cover normal variances in the workload should support the representativeness.

It is very important that the new structured EPR system design take into account the established practices, and draw on the expertise and the quality-assurance work the MTs perform. However, in the new system, tasks 2, 3, 7, 10, and 11 will not be entirely relevant when dictation not will be used, and because the part of these problems that is relevant for documentation in general can be minimized as a result of the structure. In addition, tasks 4, 5, 6, and 8 can be reduced to a minimum due to process support. However, logical faults, as in task 3, might still occur to some extent, even if the process and decision support is developed. Task 1 could also draw on process support to some extent, but it will be challenging to develop an automatic encoding system, so incorrect encoding by the doctors will still be possible. Task 9, incorrect document template, could also be reduced by process support, but can probably not be avoided entirely. In addition, there are other quality-assurance tasks that we have not identified, as reported in task 12.

Even if MTs are re-educated to provide EPR support, it may be appropriate for them to continue to perform some of the identified quality-assurance tasks to avoid faults that could have serious consequences. One such task is to check all outgoing

documents from the hospital and, if necessary, correct the registration of referring doctors and other health providers so the hospital can guarantee that the documents are sent to the correct recipients. It might also be appropriate for the MTs/EPR support to check the registrations of the medical encodings (diagnoses/processes), because this is of very high importance in order for the hospital to receive refunds for the patient visits or stays. MTs in this way maintain their long tradition of quality-assurance in the medical record production, a strategy that is recommended by other authors as well [15]. To conclude, this study shows the many essential quality-assurance tasks conducted by medical transcriptionists. All these tasks need to be considered and compensated for when designing and developing the new structured EPR. Some quality-assurance tasks, as pointed out above, may advantageously be performed by secretaries also in the future.

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