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Homecare Nurses' Decision-Making During Admission Care Planning

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Abstract. The re-hospitalization rate of homecare patients within 60 days of hospital discharge is 30%. Enhanced care planning based on better information may reduce this rate. However, very little is known about the homecare admission and care planning processes. The research team collected data during observations of three nursing visits to admit homecare patients in Camden NJ, and conducted thematic content analysis on these data. Human factors methods helped to identify nurse decision-making related to selection of the plan of care problems, non-nursing resources, and the nursing visit pattern. They identified how the electronic health record (EHR) assisted the nurse in visit pattern frequency decisions. Major themes that emerged included reduced efficiency due to use of redundant intra-team communication methods to augment EHR documentation, redundant documentation, and workarounds and reorganization of clinical workflow.

Keywords. Evaluation studies; technology evaluation; clinical information systems; patient care team; aged; homecare.

1. Introduction

Home care agencies face the challenge of assuring timely and accurate data collection during the homecare admission process. The re-hospitalization rate of homecare patients within 60 days of hospital discharge is 30%[1]; enhanced care planning and allocation of clinical care services based on better information may reduce this rate. However, very little is known about the homecare admission and care planning processes. The homecare admission nurse, who makes the admission visit, must balance information, cognitive tasks, and workflow processes as he or she makes health care decisions. Understanding and supporting information needs and enhancing clinical decision-making during the admission care-planning process may assist homecare nurses to overcome the challenges of timely and appropriate allocation of clinical resources during the admission process and to reduce adverse events and hospital readmissions from homecare. While health information technology (HIT) has the potential to support the admission process, thereby improving quality of care while

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minimizing risk and harm to patients, contextual factors (e.g., workflow integration, HIT usability) present challenges to HIT implementation and adoption. To better understand admitting nurses' information needs, we need to understand how clinical work is and could be accomplished. Human factors methods aid in such understanding including how context affects both work processes and information needs. The study objective was to examine plan of care (POC) decision-making during the homecare admission process using selected human factors methods. Accordingly, we focused on the supportive aspects and the insufficiency of one point-of-care home care EHR with rigidly structured data used in one community by one nurse managing 3 readmissions as observed by three researchers and an assistant.

2. Methods

The research team collected data during observations of nursing visits to admit homecare patients and conducted thematic content analysis on these data. The team consisted of three researchers: a public health informatician (PS) with knowledge of homecare, a human factors engineer (EB) knowledgeable in health informatics, a nurse informatician (KB) with homecare expertise, and a research associate, a biomedical engineering student (CE). Drexel's IRB approved the study.

2.1. Setting, participants

The research setting was a nonprofit urban homecare agency which is part of a larger health system. The agency serves a population that includes a low socio-economic status, minority population with complex care needs in Camden, NJ. The agency implemented the most widely used homecare EHR system, Homecare Homebase, in 2008. To support care planning at the patient bedside, the EHR is installed on a hand-held tablet running the Android operating system. The agency deploys two nurses to conduct the admissions for the annual patient population of 389 Camden Medicare beneficiaries. One nurse was available to be observed by the study team. This nurse provided written consent and the patients being admitted during the study period provided oral consent to participate in the study.

2.2. Observations

We observed the first admission visits for three different patients. Team members (PS, EB, CE) conducted the following data collection methods: observation of the nurse admitting a patient, observation of the nurse completing the admission documentation, and a structured interview with the nurse. In the home, the types of data collected included: 1) nurse/patient conversations; 2) nurse access of paper artifacts; and 3) notes taken by the nurse. At the agency, the nurse was also audio-recorded when not calling other healthcare providers. We copied de-identified physical documentation and reviewed the nurse's electronic product. Following documentation completion, we audio-recorded a structured knowledge elicitation session with clarifying questions. In addition, we interviewed agency experts (i.e., two nurse administrators familiar with both the clinical operations and the EHR) to clarify issues related to HIT usage and nurse procedures.[2] The research associate transcribed the field notes and audio

recordings. Researchers (PS, EB) checked the transcripts of the field notes for accuracy and completeness; CE made corrections in the transcriptions as necessary.

2.3. Thematic content analysis

Team members (PS, CE) conducted thematic content analysis of the transcribed documents to identify data related to nurse decision-making. We inductively analyzed data about (i.e., observations) and from (i.e., interview responses) the admission visit to identify themes. We used the Health Information Technology Reference-based Framework (HITREF) conceptual framework to sensitize the initial organization of the categories. The HITREF is an evidence-based HIT evaluation framework which encompasses six HIT dimensions that guide EHR assessment through outcomes measurement.[3] Data were then incorporated as interpretive units in the NVivo software program[4] for data management and analysis. Themes that appeared at least three times (saturation)[5] were identified.

3. Results

3.1. Observations

We focused on admission nurse decision-making regarding which patient problems to be addressed in the POC, the non-nursing resources to be consulted (i.e., the disciplines involved such as physical therapy, social work), and the nursing visit pattern. The visit pattern involved two decisions: frequency of subsequent visits and time of next visit.

Nurse selection of problems to be included in the POC was not assisted by the EHR. Instead, the nurse referred to the patient problems and other contributing conditions identified in the hospital discharge and/or the physician homecare referral documentation. The nurse identified specific criteria for inclusion: problems that concerned the nurse; keeping the patient safe; pain management; and fall risks if there were many steps in the home. The EHR assisted POC development related to identification of interventions for each problem. Following nurse documentation of the assessment, the EHR presented a standard set of patient problems. The nurse selected a POC problem which triggered the display of a pathway which had decision branches that the nurse traversed as she selected POC interventions.

Nurse identification of resources was not supported by the EHR. Resource decisions were prompted as the nurse reviewed the patient assessment, surveyed the patient's home environment, and as the patient raised concerns. When the nurse identified a patient challenge that could be addressed by a non-nursing resource, she explained to the patient the intended benefit and asked the patient if he/she would like the resource to visit him/her (i.e., shared decision-making).

Nurses made patient admission visits within the 24-48 hour timeframe as required by Medicare. They make two decisions related to frequency of visits: (1) the number of visits per week; and (2) the day for the first return visit. The EHR provided assistance to the nurse for the first decision, but not the second decision. To determine the number of weekly visits, the EHR calculated a numeric frailty measure based on the patient's current health status as documented by the nurse in the Outcome and Assessment Information Set. A frailty indicator above the specified cut-off point indicated the scheduling of three visits in the first week. For the patients not classified as frail, in

addition to the admission visit, the nurse scheduled two more visits for the first week for both patients and scheduled two visits for the second week for one patient. Agency experts stated that more visits are scheduled at the start of the home care episode compared to the end of the episode as per the best practice guidelines.[6]

Nurse selection of the visit pattern decision for scheduling the subsequent return visit was not assisted by the EHR. We observed different visit pattern decisions between the patients not categorized as frail. The nurse explained that scheduling the return visit the next day was based on the patient's needing assistance within 48 hours. Subsequently, agency experts explained additional reasons for scheduling the first follow-up visit for the next day: 1) if the nurse detected presence of symptoms; or 2) if the patient or caregiver required additional demonstration of a nursing procedure.

3.2. Thematic content analysis

Three themes related to EHR characteristics attained saturation. No themes were related to satisfactory EHR characteristics (e.g., facilitators to EHR use as intended). All themes were related to dissatisfactory characteristics (e.g., challenges to EHR use as intended) categorized in the HITREF component Efficiency. The first dissatisfactory theme was related to redundant communication to team members. The nurse, after having documented in EHR structured text the need for a clinical service, pursued that need via additional communication methods. For communication to the social worker, the *nurse* documented the need for services in the summary note, explaining, "When they read my note they'll see that's one of his issues, is that he's going to need help with transportation and food." *Researcher:* "Is reading your note the only way that they know?" *Nurse*: "No. I called her [social worker] too." *Researcher*: "You call and document in free text." Similarly, to communicate to the nurse who will make the next patient visit, the admission nurse relied on email and the telephone as an additional communication method. The *nurse* explained, "Right now I'm sending an email to the nurse and I'll have his [patient] name on here…And then I'll paste that [clinical data] on there and she can see it." To communicate clinical admission information that required review to her supervisor, the nurse stated that she also sent an email.

A second dissatisfactory Efficiency theme focused on redundant documentation of clinical data in the EHR. During three situations, involving different types of data, the nurse documented the same information in two different places. The nurse documented wound care in the nursing note as well as the wound care assessment. When asked about the duplicate documentation, the nurse explained, "What I did for her [patient] notes: I added, even though they have that wound assessment in there, that new one [recently added functionality]. We also put in the old nursing note where you can see, so the nurse can see, what that initial wound is. Even though it comes up on the new one, we still put it in the old one too." For other clinical information, the nurse wrote free text in the summary note template which previously entered structured data.

A third theme was related to workflow and system flow mismatch as evidenced by workarounds and workflow reorganization. For all three patients, the nurse handwrote generalized free form observations about diverse clinical information (e.g., weight loss, needed durable medical equipment) on a pre-printed blank document labeled "cheat sheet" instead of documenting in the EHR. Another workaround was recording memory jogs in a free text field as the EHR did not have a reminder field. The workflow reorganization was related to the nurse's inability to document (using touch) when she wore sterile gloves during the physical exam. Instead, she reorganized her

work to record in the EHR before she began the exam. During the exam, she documented on paper.

4. Discussion

We used human factors methods to examine homecare admission POC decision-making and to identify where the study's EHR assisted the nurse in selection of the POC problems, allocation of non-nursing resources, and determination of the nursing visit pattern. The EHR assisted the nurse in determining the frequency of patient visits by calculating patient frailty using already recorded information. However, the EHR introduced inefficiencies due to redundant documentation, redundant communication methods, workarounds, and reorganization of clinical workflow. The homecare EHR should benefit nurses by supporting efficiency and team communication[7] without creating new problems already identified to occur in hospitals, such as workarounds to circumvent poor system design.[8]

5. Conclusion

Human factors methods facilitate insights into homecare admission point of care decision-making and related EHR use. Our findings suggest that the EHR in this study was both a facilitator and a barrier in nurse POC admission decision-making, an understudied informatics area of investigation.

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