

Supporting Home Care Nurse Decision Making at the Point of Care Through Clinical Dashboard Design



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FEEDBACK provided to clinicians on their performance is important for improving health care quality¹ and is a key component of the IHI triple aim initiative.² Dashboards are a form of Health Information Technology (HIT) that display information in a visualized format which can be used to help provide feedback on quality performance measures. In this presentation we will present the preliminary results from the first phase of our study, which is focused on (a) identifying existing quality measures related to the care of patients with congestive heart failure (CHF) that are relevant to home care nurses and that are under their control (actionable) and (b) to explore if and how nurses' numeracy and graph literacy impact their ability to comprehend data presented in a visualized format. The results of this phase will be used to develop a prototype dashboard for home care nurses at the point of care to help implement evidence based guidelines for the care of CHF patients.

Methods: To identify existing quality indicators that were meaningful and actionable by home care nurses, 6 focus groups were conducted with 61 nurses working in a large not for profit home care agency in the Northeast region of the United States between November 2015 and February 2016. Focus group participants were provided with a list of 23 statements derived from evidence based practice guidelines on the management of patients with heart failure and asked to identify the top 5 statements that they felt were a priority in terms of receiving feedback and rank them from 1 (top priority) to 5 (least priority). The focus group discussion then explored the rationale for priority rankings and how a dashboard could be designed to provide that feedback. Data was analyzed using thematic analysis.

To explore nurses' numeracy and graph literacy and their ability to comprehend visualized data a multi-factorial experimental research design using an online survey was used. Graph literacy was measured using the graph literacy scale³ which was developed specifically for the health domain and measures graph reading skills and comprehension across different types of graphs. Numeracy was measured using the expanded numeracy scale.⁴ 196 nurses from two home care agencies located in the North East region of the USA were randomly allocated to 1 of 4 experimental conditions. Outcomes include knowledge and understanding of the information presented in the visualized dashboard.

Results: Quality indicators related to the tracking of vital signs, symptoms and weight changes were ranked the highest by nurses (e.g. identification of weight gain). The second highest ranked quality indicator related to ensuring a patient had received education to support self-management. Themes arising from the discussions included how feedback could improve workflow and communication between visits.

Nurses answered approximately 10 of 13 graph literacy items and 7 of 8 numeracy items correctly—slightly higher than average scores for the U.S. population. Across the whole sample, nurses most easily understood information presented in the format of a bar graph. There was an interaction between numeracy, graph literacy and comprehension. Nurses with low numeracy were less able to interpret line graphs, those with low graph literacy were less able to interpret spider graphs, and those with low literacy and numeracy were less able to understand information presented as a table.

Discussion: This study has identified specific elements of feedback on the care of CHF patients that home care nurses would find valuable for improving care. These elements of care are exclusively at individual patient level, and are required by nurses in real time. The findings demonstrated that nurses' numeracy and graph literacy have a significant impact on their comprehension of information presented in visual formats.

Conclusion: The results will be used to develop dashboards that provide feedback on quality indicators to home care nurses, in real time, at the point of care. The dashboards will be dynamic; presenting the same information in different formats, to enable nurses' to comprehend the data effectively. Future research will evaluate the effectiveness of the dashboards in improving care processes and patient outcomes.

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