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Multi-disciplinary communication networks for skin risk assessment in nursing homes with high IT sophistication

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ABSTRACT

Background: The role of nursing home (NH) information technology (IT) in quality improvement has not been clearly established, and its impacts on communication between care givers and patient outcomes in these settings deserve further attention.

Objectives: In this research, we describe a mixed method approach to explore communication strategies used by healthcare providers for resident skin risk in NH with high IT sophistication (ITS).

Methods: Sample included NH participating in the statewide survey of ITS. We incorporated rigorous observation of 8- and 12-h shifts, and focus groups to identify how NH IT and a range of synchronous and asynchronous tools are used. Social network analysis tools and qualitative analysis were used to analyze data and identify relationships between ITS dimensions and communication interactions between care providers.

Results: Two of the nine ITS dimensions (resident care-technological and administrative activities-technological) and total ITS were significantly negatively correlated with number of unique interactions. As more processes in resident care and administrative activities are supported by technology, the lower the number of observed unique interactions. Additionally, four thematic areas emerged from staff focus groups that demonstrate how important IT is to resident care in these facilities including *providing resident-centered care, teamwork and collaboration, maintaining safety and quality, and using standardized information resources.*

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Conclusion: Our findings in this study confirm prior research that as technology support (resident care and administrative activities) and overall ITS increases, observed interactions between staff members decrease. Conversations during staff interviews focused on how technology facilitated resident centered care through enhanced information sharing, greater virtual collaboration between team members, and improved care delivery. These results provide evidence for improving the design and implementation of IT in long term care systems to support communication and associated resident outcomes.

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1. Introduction

For over a decade the Institute of Medicine has been addressing quality of care in healthcare organizations, including nursing homes (NH) [1,2]. However, during this time, the role information technology (IT) plays in NH quality improvement has still not been clearly established, and its impacts on communication and resident outcomes deserve further attention. In this research, we describe a mixed method approach used to explore communication strategies for skin risk used by healthcare providers in NH with high IT sophistication (ITS). We incorporated rigorous observational methods and used networking analysis tools to understand when and where skin risk communication interactions between nurses and nurse assistants occur in NH with greater IT adoption. We also used qualitative focus groups to identify how health IT and a range of synchronous and asynchronous tools are used to support risk assessment communication. Ultimately, if our understanding of communication and workflow in NH with high IT use can be improved, we can develop guidelines for IT design, implementation to increase utilization of these tools, and benchmarks for success to support resident outcomes in NH considering IT adoption or expansion.

1.1. Parent studies

The specific aim and research questions for this study were developed from findings of several previous NH studies conducted in the Midwestern United States. These previous studies have been described in past manuscripts; however, they will be briefly reviewed here again.

The first study developed a survey tool to measure NH ITS using nine dimensions related to the functional, technological, and integration of NH IT [3]. Development of the IT sophistication variables and survey items was based on Nolan's Stage Theory drawn from prior work in manufacturing and acute care settings [4,5]. Dimensions were defined as the types of NH activities supported by IT; including, the extent of use of IT, and how well IT is integrated with internal and external systems, respectively. Each of these three dimensions was explored in the activities related to resident care, clinical support, and administration with input from NH IT experts.

In the second study, the ITS tool was used in a statewide survey of Missouri NH to explicate total ITS measures in each of the nine domains [6]. A total of 199 facilities (41% response

rate) participated in the second study. Participating facilities were stratified by ownership, bed size, and regional location. Homes were stratified into metro-urban-rural regions, based on population, using Beale codes to identify three county continuum codes. Metro included total facilities with 250,000 people or more in central, fringe, and metro counties; urban status designation was given in counties with between 2500 and 250,000 people that were adjacent and not adjacent to metro areas; finally, rural status was assigned to facilities in rural counties with less than 2500 people. These variables were considered as total ITS was assessed across the state [7]. Results indicate that the functional ITS domain was related to NH bed size and location, while IT integration domain was associated with type of ownership.

During the third study, NH facilities participating in the statewide ITS survey were recruited to participate in a study to determine correlations between seven nationally reported NH quality measures related to skin care, and total ITS scores [8]. In this final study, we found statistically significant positive correlations between the percentage of residents with decline in activities of daily living and every ITS domain. We also found significant negative correlations between the percentage of residents with incontinence and ITS in the clinical support domain. We believe, increasing IT sophistication improves communication between clinicians and nonclinicians, such as NA, and this is the reason for the significant correlations between IT sophistication and quality. Although this study does not address the relationship between quality and IT sophistication, we believe increasing IT sophistication influences how interactions take place in clinical settings. These findings lead us to the current specific aim and research questions.

Specific Aim:

Explore skin risk assessment communication strategies used in high IT nursing homes

Research Questions

1. What technologies or environmental tools are used to communicate skin risk during staff interactions in nursing homes with high ITS?
2. Do staff interactions about skin risk assessment differ within nursing homes with varying levels of high ITS?

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