Informatics at the Crossroads of Care Coordination

Charlotte Seckman, PhD, RN-BC, CNE

The 2016 Summer Institute in Nursing Informatics (SINI), held July 20 to 22, marked the 26th year for this pioneering conference. Once again, hundreds of nurses and other informatics professionals convened on the campus of the University of Maryland School of Nursing in Baltimore or via live Web streaming to celebrate this event, attend educational sessions, and network with colleagues. A unique addition was the introduction of the "Mini-SINI," which provided a new forum for registrants to meet as a group in their own healthcare organizations, view Web-cast lectures, and participate in discussion and activities. With support from sponsors such as Orion Health, Infor Healthcare, UMBC Health IT Graduate Program, and the University of Maryland Medical Center, SINI 2016 explored innovations in healthcare informatics across the spectrum of care; the impact of informatics on quality, safety, and outcomes; and health information exchange and interoperability.

Two new preconference workshops were very popular this year. Eun-Shim Nahm, PhD, RN, FAAN, Kathleen Charters, PhD, RN, Kristin Seidl, PhD, RN, and Charles Gabrial, MS, facilitated a hands-on workshop on data analytics, providing a toolkit on how to use analytics in practice. A Nursing Informatics Certification Review course, a concurrent offering, was presented by Charlotte Seckman, PhD, RN, of the University of Maryland, and Marisa Wilson, DNSc, MHSc, CPHIMS, RN-BC, from the University of Alabama. National leaders in the field of informatics provided insight and direction through plenary sessions and distinguished lectures throughout the week.

Mary Alice Annecharico, MS, RN, senior vice president and chief information officer at Henry Ford Health System, opened the conference with an exciting key note address on network integration of information technology. At the end of the day, Bonnie Westra, PhD, RN, associate professor,

University of Minnesota School of Nursing, shared insights on big data at the interdisciplinary level to improve care. Oliver Degnan, senior vice president of product and development at IBM Watson Health, Continuum of Care, opened Day 2 with a discussion about computational healthcare and data-driven analytics. Ann O'Brien, MSN, RN, senior director of clinical informatics at KPIT Care Delivery Business Information Office, opened Day 3 with practical thoughts on transforming information systems to meet enterprise-wide goals. The conference closed with Mary Beth Mitchell, MSN, RN, chief nursing information officer, Texas Health Resources, providing the end-note address on informatics leadership in a dynamic healthcare environment.

Interspersed with the distinguished lectures were 36 invited and peer-reviewed podium presentations and 27 peer-reviewed poster presentations. Participants could choose from four different concurrent tracks to meet their learning needs. A special track for informatics novices was offered for those who were new to the profession and wanted to learn essential knowledge and skill sets for clinical informatics. In addition, experts presented and facilitated think tanks that explored a community planning model as a foundation for bridging information gaps and addressing integration across care settings.

Participants enjoyed networking and social events that included a welcome luncheon with roundtable discussions on current and emerging topics; a networking reception followed by a tour of Davidge Hall, the nation's oldest medical school building; a buffet luncheon during the exhibitor event; and a social event reception with live music and food.

Overall, the essence of SINI is found in the commitment to provide quality educational content, expert presenters, and opportunities for participants to network in a collegial environment. In addition, we received numerous excellent abstracts that were carefully reviewed and scored by an 18-member planning committee. Awards were given to the highest-rated abstracts for posters and podium presentations for research and practice along with a people's choice award selected by attendees. The award-winning abstracts follow.

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Outstanding Research—Podium

Identifying Home Care Clinicians' Information Needs to Achieve Better Care Coordination in Fall Risk Management

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Problem Statement: In home care, falls rank as the top potentially avoidable event (PAE) that leads to hospital readmissions and emergency room visits. Therefore, fall-risk management becomes paramount for home health agencies (HHAs). Effective fall-risk management, defined as assessing and reducing fall risks by making the necessary and appropriate interventions, requires a careful identification of home care clinicians' information needs. Currently, home care clinicians have access to little information that can inform the coordination of care for fall-risk management. This study aimed to (1) identify clinicians' information needs for fall-risk management and how they manage missing or inaccurate data; (2) identify problems that impact effectiveness and efficiency associated with retaining, exchanging, or processing information about fall risks in existing workflows and currently adopted health information technology (IT) solutions; and (3) offer informatics-based recommendations to improve fall-risk management.

Methods: A case study was carried out in a single not-for-profit suburban Medicare certified HHA. Qualitative data were collected through observations, semistructured interviews, and focus groups. Maximum variation sampling was adopted to recruit a diverse sample (N = 40) of full-time nurses, physical therapists, and occupational therapists. The framework method was used for analysis.

Results: Overall, the information needs for fall-risk management were categorized into six domains: physiological, care delivery, educational, social, environmental, and administrative. Examples include a brief fall-related patient history, weight-bearing status, medications that affect balance, and the availability of caregivers at home.

The clinicians stressed that they started the care episode with little information relevant to fall-risk management. The unavailability and inaccuracy of important information related to falls such as the weight-bearing status delayed necessary therapeutic services aimed at reducing patients' fall risks, thereby jeopardizing their safety. Most referrals were faxed, were illegible, and lacked many information critical for fall-risk management. While the electronic health record (EHR) made fall-risk assessment instruments available, locating fall-related documentation was difficult and consumed the clinicians' time. To improve the care coordination in fall-risk management, the HHA should consider interoperability and integration of its EHR with the referring organizations, redesigning its EHR to better support its fall-risk management workflows, and raising its staff and all referring organizations' awareness on the importance of capturing and exchanging information relevant to fall-risk management.

Significance: The results highlight home care clinicians' information needs for fall-risk management and identified opportunities to improve the workflows and health IT solutions to effectively and efficiently retain, exchange, and process relevant information. HHAs can use this evidence to ensure that their clinicians' fall-risk information needs are addressed by improving their workflows and currently adopted health IT solutions. The findings can also be useful to health IT vendors to understand the exchange and integration needs for fall-risk management in home care. As HHAs transition to the value-based payment system proposed by the Centers of Medicare & Medicaid Services, the results can help HHAs in their efforts that target the reduction of PAEs and the improvement in the quality of care and health outcomes.

Outstanding Practice—Podium

EHR Downtime/Recovery Planning: Panic Prevention

Flo Mielcarek, MSMIS, RN-BC
Martha Badger, MSN, RN-BC, CPHIMS
Kathleen Gall, MS, RN, NE-BC

Problem Statement: This presentation describes the successful implementation of an electronic health record (EHR) downtime and recovery process at a large multi-facility Midwest healthcare organization. Following an EHR software upgrade in February 2015, the Clinical Ops Informatics team led by nursing informatics specialists conducted timely and informative multidisciplinary "lessons learned" sessions. It was noted that the just-in-time preparation prior to the upgrade did not leave the healthcare system well prepared for the downtime, even though it was a planned outage. Process gaps identified during lessons learned sessions included (1) lack of clarity of downtime/recovery policy; (2) lack of understanding and preparedness regarding resources necessary for downtime/recovery; (3) communication gaps before, during, and after the planned outage; and (4) data integrity concerns that arose because it took close to 3 days for healthcare system staff to back-enter clinical notes and data into the EHR.

Methods: An extensive review and revision of the Downtime and Recovery Policy were undertaken in 2015 to reflect real-time experiences and correct inconsistencies identified during the upgrade debrief. In collaboration with each site's emergency preparedness committee, tabletop drills were executed. The drills emphasized the need to preplan, included leaders and frontline caregivers, and will be held annually. Planned and unplanned downtime scenarios and recovery steps were included in the drill.

Results: Solutions have been identified to address communication issues across all venues. The downtime and recovery process has been incorporated within the Emergency Preparedness Committee's purview to improve communication and provide leadership. Device agnostic communication software will be implemented. This software incorporates multiple communication modes and has a backup strategy should the healthcare system lose Internet access. For easy transition to and from paper during downtime and again during recovery, three solutions were identified: a downtime/recovery toolkit for an easy transition to paper, a process to flag gaps in the EHR caused by downtime documentation, and streamlined expectations for data back-entry versus scanning documentation.

Significance: Providing increased process standardization, improved communication and preparedness for downtime and recovery have multiple advantages. It has the potential to increase quality of patient care, mitigate the risk of lost resources during transitions to and from downtime and recovery, and to improve employee satisfaction.

Outstanding Research—Poster

Use of Documentation in the Patient Record for Interprofessional Communication and Collaborative Decision Making: Implications for the Reduction of CLABSI

Jennifer Thate, MSN, RN, CNE
Brittany Couture, BS
Sarah Collins, PhD, RN

Problem Statement: One of the primary purposes of clinical documentation is communication to support interprofessional collaboration and continuity of care. Poor communication has been identified as a major contributing factor to adverse events in healthcare. Recent estimates would make healthcare-related harm the third leading cause of death in the United States. One such category of healthcare related harm is healthcare-associated infections. The Joint Commission identified the reduction of healthcare- associated infections, including central line–associated bloodstream infections (CLABSIs), as a national patient safety goal for 2015. Efforts to reduce CLABSIs have primarily focused on issues related to insertion, with less attention paid to preinsertion and postinsertion assessment and communication dependencies, such as the prompt removal of lines that are no longer necessary. Shortening dwell time and eliminating the continuance of nonessential central venous catheters (CVCs) require highly functioning interprofessional teams who effectively communicate information related to assessment data, plans, and evaluations. This study was conducted to elucidate what information is used to determine the need for CVC access and/or removal and how this information is communicated between the interprofessional healthcare team. The aim was to identify the necessary components of an informatics tool to support interprofessional communication and facilitate collaborative decision making regarding the need for CVC access or removal.

Methods: This qualitative descriptive study took place in the medical intensive care unit of a large academic hospital. Institutional review board approval was obtained. Semistructured interviews were conducted with nurses. Interviews were audio recorded and transcribed, followed by inductive thematic analysis of the data with conformation by research team members.

Results: The interviews ranged from 10 to 20 minutes. The eight participants had 6 to 30+ years of experience, 88% were female, and all but one worked more than 31 hours per week. Thematic analysis indicated that information related to CVCs is found in disparate areas of the patient record. Verbal discussions are the primary means for exchanging information used in CVC management, and information documented in the record is not regularly used to support collaborative decision making regarding CVCs. Another theme was the perceived importance of input from the intravenous therapy nurse, who assesses the availability of peripheral access and communicates this verbally to the nurse at the bedside. Also noted was the perception that nurses and physicians differ regarding what factors necessitate CVC access and clinician characteristics influence physician receptiveness to input.

Significance: Our findings suggest that no standardized set of documentation informed decisions related to CVC management and that communication occurred verbally during rounds or opportunistically throughout the day. Prior studies have demonstrated that reliance on verbal communication may increase the risk of information loss. Other identified issues from previous work include the interruptive nature of verbal communication, the impact of power differentials, and the underrepresented view of the nurse in verbal exchanges. Reliance on verbal communication may impact poor CVC outcomes and practices, such as increased dwell time and continuance of nonessential CVCs. Further research is needed to understand the impact of communication and documentation practices on CVC management and outcomes.

Outstanding Practice—Poster

Leveraging Data Analytics to Investigate the Relationship Between Patient Demographic and Falls in Home Care

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Problem Statement: An emergency room (ER) visit due to a fall is the most frequently encountered potentially avoidable event (PAE) during home care episodes. Preparing a safe home environment for patients is a prerequisite for home care to fulfill its promises. As the elderly population increases in number and diversity, understanding the patient demographics associated with falls can facilitate targeted interventions for reducing fall risks during home care episodes. Data analytics provides an opportunity to address such focused quality improvement needs.

Methods: This study involved a secondary analysis of data primarily collected between 2010 and 2014 from a Medicare-certified not-for-profit home health agency (HHA) in the mid-Atlantic region of the United States. The data included basic patient characteristics, age, gender, ethnicity, and zip code, from the electronic health records of the HHA; falls data from a PAE reporting system; Median Household Income data from the Populations Studies Center at the University of Michigan; and Rural-Urban Commuting Area (RUCA) codes from the University of Washington. Basic patient characteristics and falls data were merged using the episode IDs and resulted in almost 30 000 observations. Median income and RUCA were used as proxy measures for socioeconomic status and rurality, respectively, and were merged with the episode-level data via zip code. Using the R statistical environment, the statistical analysis involved descriptive analysis followed by the development of binary logistic regression models. The basic patient characteristics, RUCA, and median income formed the patient demographics, which were used as the predictors in modeling; an ER visit due to a fall during a home care episode was a binary outcome used as the response variable.

Results: The descriptive analysis revealed that there were 11 482 males and 18 252 females; the average age was 70. Whites formed the majority (57%), followed by African Americans (39%), Asians (7%), and Hispanics and Latinos (6%). The statistical models showed that age, RUCA, and ethnicity (white) were significant at $P = .01$. The likelihood of ER visits due to falls quadratically increased by age (ie, at a faster rate). Patients living in the suburban settings visited ERs for falls more significantly. Whites did so significantly more compared with African Americans. Gender and median income were not significant.

Significance: Leveraging data analytics provides useful and interesting local insights to HHAs. For example, by controlling for age and urban setting, it was observed that whites visit ERs for falls at a significantly higher rate. This study demonstrates that data analytics, with effective use of relevant data from disparate sources, presents an opportunity to HHAs for tailoring care toward their specific patients' demographic profiles and improving the care quality and patient safety outcomes. As the home care industry starts to make a transition from a volume-based to value-based reimbursement model, the use of data analytics opens new avenues for HHAs to provide care from a proactive standpoint. Knowledge mined from episode-level data gives HHAs improved decision-making capabilities and strategic advantage, which can improve their capacity to both remain a viable business and provide quality care successfully.