A Comparison of the Effectiveness of

Electronic Versus Paper-Based Documentation

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BACKGROUND

Health care aides (HCAs) are integral to the health care system. HCAs provide personal support and basic health services in a variety of settings across the continuum of care. In Alberta, there are currently 16,000 HCAs providing care in institutions and the community (Alberta Health, 2007; ACCA, 2012; Cummings, 2013). As the senior population continues to grow, the demand for HCAs will increase exponentially each year (ACCA, 2012). Of increasing importance is the need to support HCAs to develop competencies necessary to deliver high quality care. HCAs have daily personal contact with residents and are often described as the most reliable source of information about long term care residents. As such, a key competency expected of HCAs is to observe and document information relevant to the planning and delivery of health care services (Alberta Health, 2007).

An ethnographic study by Cherry, Ford & Peterson (2011) on the use of electronic health records in continuing care demonstrated that technology enhanced HCAs' ability to communicate with nursing professionals. Moreover, HCAs who used electronic health records felt an increased sense of ownership and pride in their work. Although a great deal of attention has been paid to how technology can support the documentation activities of nursing professionals, few studies have been done on the HCA population (Cherry, Ford & Peterson, 2011; Sharkey, Hudac, Horne & Spector, 2011).

The Resident Assessment Instrument (RAI) in Long Term Care (LTC) is a care planning tool that systematically guides the collection of nursing assessment and HCA observation information. Following the integration of the RAI in Alberta, continuing care organizations have needed to explore the role of electronic health record (EHR) platforms in supporting communication typically attributed to paper forms and written documentation.

HCA observations captured using a RAI tracking form identify the unique health care needs of individual residents based on observations of their physical, emotional and cognitive needs. The accuracy of information entered into RAI is critical to ensuring the quality of RAI outputs. These outputs include measures and classifications used by (1) health care professionals to prioritize care services, (2) organizations in identifying opportunities to enhance the quality of health care services, and (3) government funders in allocating health care resources. However, the process of performing an accurate and comprehensive assessment requires gathering resident information from multiple sources.

Although RAI represents standardized assessment information, the process of collecting and reporting this information varies across LTC organizations. Third party software vendors support the collection of RAI data including the RAI tracking form information collected by HCAs. As such, many LTC organizations collect this information using a paper-based tracking form, with a few organizations using a web-based interface (e.g. Point of Care). The integration of a web-based interface requires additional resources (e.g. computers, IT support, staff training).

There is little information available to LTC organizations exploring the impact on the role of HCAs in replacing paper-based communication tools with computer-based documentation tools. This study

compared the use of a web-based interface with traditional paper-based documentation to explore impacts of computer-based documentation on communication processes supporting HCAs in LTC.

STUDY APPROACH

Two urban LTC units were selected on the basis of their similar physical and cognitive care needs, unit average RAI-MDS ADL Long Score, and Cognitive Performance Scores. A mixed methods approach was used to capture experiences of HCAs, inter-disciplinary (ID) team and stakeholders using observations, semi-structured interviews and focus groups. The study purpose and procedures were reviewed using the ARECCI Ethics Screening Tool to determine the level of risk and appropriate ethics review[1]. All staff signed informed consent forms prior to participating in observations, interviews or focus groups. All identifiable information was removed to ensure confidentiality.

Observations

HCAs approached for observations were selected on the basis of their willingness to participate in the project and current position held (e.g. full time HCAs with one or more years of experience) within the organization. An online observation form was developed to capture and classify HCA activities throughout an entire day shift (7:00am to 3:00pm). A research assistant shadowed an HCA from the beginning to the end of his/her shift and documented any initiation and change in activity. Activities were classified in the online from and described in an open text field included in the online form. Five broad activity categories were used by observers to classify HCA activity:

> **Direct Care**: Direct resident interactions including, hands-on or resident related care tasks (e.g. ADLs, repositioning / mobility, talking to resident or family, assisting with social activity, etc.).
> **Documentation**: Retrieving, recording or writing information whether electronic or written, formal or informal.
> **Team communication**: Any verbal communication between other staff. Time spent in formal or informal communication (e.g. care plan reviews, handover, reporting to LPN or RN or OT formally or informally). Interactions with physicians or pharmacist.
> **Indirect Care**: Any other task or activity that does not fit the above categories (e.g. retrieving equipment or supplies, setting for meals or activities, etc.)
> **Break**: Scheduled or unscheduled time off the unit / not resident related

Focus Groups and Interviews

HCAs (n=10) participated in focus groups. Stakeholder interviews were completed with RNs, Care Service Managers and RAI Assessors (n=5). Focus groups and interviews with unit staff were conducted to explore experiences and quality of existing communication structures and processes that either support or depend on HCAs. A focus group with organizational senior leaders, RAI program managers and

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[1] http://www.aihealthsolutions.ca/arecci/screening

educators was also conducted to compare and contrast organizational experiences establishing communication processes impacting HCAs.

RESULTS

Observations

A total of 793 observations of HCAs were completed across LTC units at Wing Kei Care Centre and Bethany Care Society during the fall of 2014, with 55 hrs. of observation occurring across 4 shifts at Bethany and 3 shifts at Wing Kei. The average time HCAs spent documenting was 39 mins. (SD 4) using paper and 19 mins. (SD 3) using the electronic health record (EHR).

Although greater time documenting was observed for HCAs using the paper-based system, documentation time represented less than 10% of HCA time at both sites. Slightly less time spent documenting was observed for staff using computer-based documentation (see Figure 1.0).

In contrast to paper-based documentation, which was observed to occur at the end of the shift, computer-based documentation was observed to occur throughout the shift (see Figures 2.0 and 3.0). Although there were some operational differences across sites with scheduled meetings to review and update care plans, these data indicated that HCA workflow changed with the implementation of computer-based documentation at the BCS site. HCAs documenting using paper-based systems were only observed documenting at the end of their shift in the charting room.

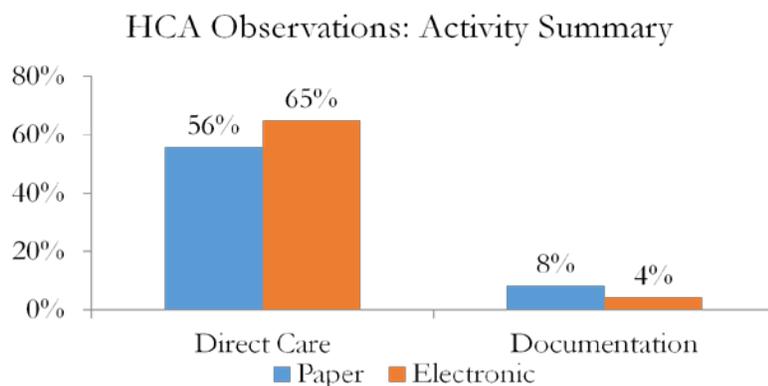**Figure 1.0 Activity Summary: Time in direct care and documentation**

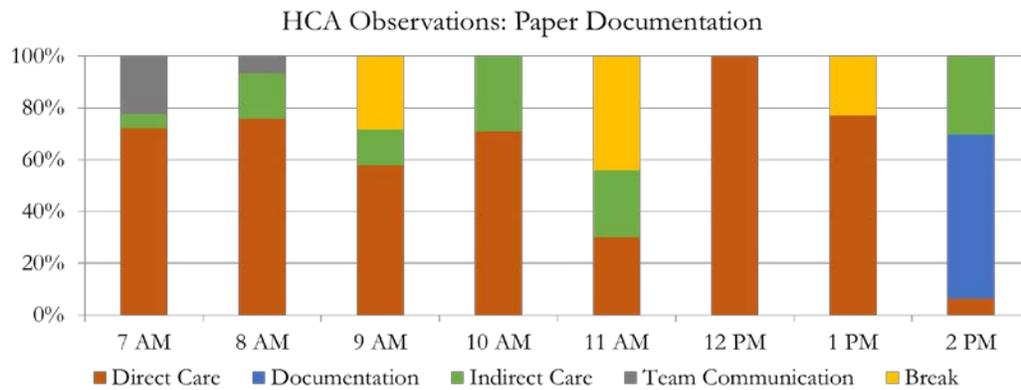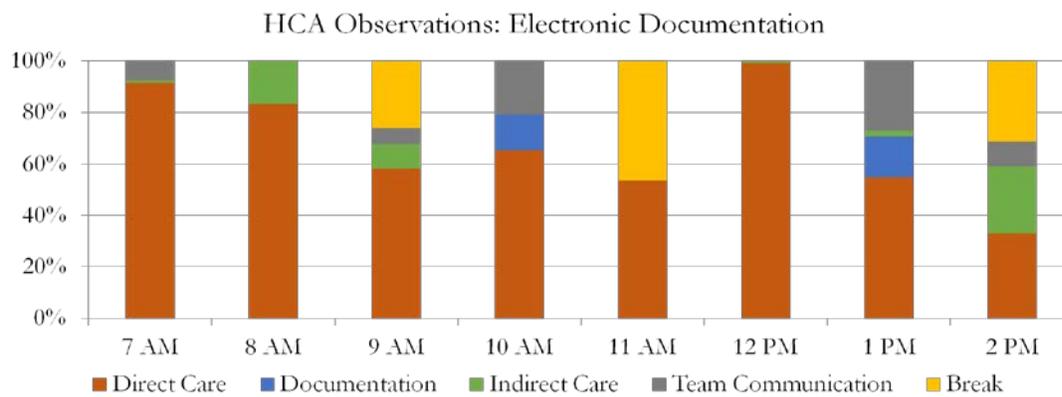**Figure 2.0 Activity Distribution: Paper-based documentation group**

HCA Observations: Paper Documentation

Figure 3.0 Activity Distribution: Computer-based documentation group

HCA Observations: Electronic Documentation

These data also indicated that the majority of HCA time was spent in direct care activities, with more direct care time observed where HCAs used computer-based documentation (see Table 1.0). However, electronic documentation was not observed to replace face-to-face contact, verbal communication nor one-on-one time with nurses and other HCAs.

Table 1.0 Time distribution by activity: Paper-based vs. Computer-based documentation

	Paper-based	Computer-based
Direct Care	61%	67%
Documentation	8%	4%
Indirect Care	15%	7%
Team Communication	4%	9%

Interviews and Focus Groups

HCA/RN Communication

HCA communication of resident information primarily describes exchanges between HCAs and nurses or other HCAs.

> "*The partner [HCA] and the nurse. And if the nurse is not available, we can communicate with the team leader.*" (HCA)

Care-related changes of a resident from shift to shift that impacted HCA daily practice and routines were identified most commonly as information prioritized by HCAs to be communicated. This was the same across computer- and paper-based documentation systems.

> "*It really impacts the care of residents because, if you don't know anything or change things that have to be changed, nothing will be done. So this is very important for our daily routine*" (HCA)

Differences were noted between groups regarding determination of information communicated. When relying on paper-based documentation systems, HCAs consistently identified that they primarily communicate changes in health status verbally to nursing staff. HCAs using computer-based documentation identified supplementing verbal reporting with narrative documentation and tools available through computer-based documentation accessible to nursing staff. HCAs felt that tools such as alerts helped them to prioritize information or tasks during their shift.

Computer-based documentation was described as the only communication tool that integrates both HCA observations and nursing assessment. The assessment and management of specific medical and health risk factors were described as being positively impacted as a result of integrating HCA observations and nursing assessment. Monitoring risks to skin integrity, diet and nutrition, and bowel care were common examples of information shared between nurses and HCAs through computer-based documentation. This was felt to positively impact the quality of care provided to residents.

> "*Skin integrity is another. There are alerts that come up that we have to clear every shift that alerts us if a resident has red area. Another thing is if a resident has an open area or a pressure area, the HCAs can alert us through POC if they can't find us right away. Then we'll track them down*" (RN BCS)

Nursing reliance on computer-based documentation information provided by HCAs also suggested HCAs were experiencing positive feedback regarding the value of the information they provide. In addition, HCAs felt that they were positively impacting quality of care through use of computer-based documentation. This was not identified by HCAs using paper-based documentation exclusively. Like HCAs, regulated providers (RP) felt that computer-based documentation validated the HCA's role on the team, as they saw team members using their input to make decisions about resident care. RPs in the focus group highlighted the importance of involving HCAs in the decision-making process.

> " *We pull up [the* computer-based documentation*] and we show them how that information feeds into the RAI….*" (RN)

Throughout the focus group, RP emphasized that computer-based documentation did not replace verbal reporting. RPs believed that computer-based documentation ensured consistent communication throughout all shifts. RPs felt that changes in care plan or resident status were communicated more quickly throughout all shifts. Moreover, RPs indicated that updated information from the HCAs enabled RPs to triage clinical information and address the most important priorities.

> " I can track how the resident is doing by pulling up the computer-based documentation….." (LPN)

RPs emphasized that computer-based documentation facilitated holistic care planning and resident centered care

> " We can see input from everyone….nursing, OT, dietitian… and so the whole team contributes to the care plan…." (LPN)

Documentation Effectiveness and Efficiency

HCAs participating in focus groups using computer-based documentation had previously used paper-based documentation. In contrasting these experiences, HCAs felt that the introduction of computer-based documentation did not represent a change in the type of information that they were already providing about their residents. However, HCAs indicated that computer-based documentation has improved access to care information that they use.

> "The change was big time. I love this computer because any changes I can go to POC dashboard and check them out myself. For example, if you go to the POC dashboard you can see who has a red area, who has a skin problem, and who has 3 days of bowel care" (HCA)

> "Like, if they have a behavior, then the staff will know. Then the next staff will be like, oh we have to watch out. Because sometimes the resident will hit you! So it helps a lot. That's the part of communication." (HCA)

Overall, computer-based documentation was described by HCAs as supporting the delivery of resident care activity in a way not identified by HCAs using paper-based documentation.

> "The POC serves as a reminder for us. We can see through our POC what we should do, and what is the most important thing to do. It is highlighted in our POC." (HCA)

Additionally, computer-based documentation was described by HCAs as contributing to more effective and efficient documentation in contrast to paper-based documentation.

> "Its so easy to use the POC, because you don't have to think about the words that you will use, and you don't have to repeat the words that you're using everyday when you're charting, right? By using the POC, you just click yes, no, what kind of behavior the residents have, no need for you to think, no need for you to rationalize. "(HCA)

Although HCAs did indicate that overall computer-based documentation was more efficient and effective, this required significant training and support from the site in order to successfully implement and integrate computer-based documentation into practice.

HCAs and key stakeholders identified that computer-based documentation did take a bit of additional time when it was introduced. Key factors which impacted ease of uptake included understanding the wording used in software, previous comfort with technology, and amount of support received from both management and fellow staff members. Casual staff who were both unfamiliar with residents and computer-based documentation were noted to have the most difficulties.

> *"I know my floor and my residents. But if some casual staff come they don't know the residents as well and it takes longer time."* (HCA)

English comprehension represented a commonly identified concern of frontline nursing, RAI Assessors and management staff across units. The concerns were specifically for HCA literacy following initial implementation of computer-based documentation, but also with ongoing use as staff become familiar with system navigation.

> *"I feel like, sometimes with a language issue, that some of the HCAs do not fully understand what the question is asking. Some of the wording is kind of difficult to understand and comprehend for some of the HCAs. That is where I am seeing coding issues some of the time."* (RN)

DISCUSSION

HCAs are essential to the provision of effective resident care. Maliddou et al (2013) completed 387 hours of observations in a Canadian urban LTC unit observing the activity of HCAs. In this study, HCAs spent the majority of their time interacting with residents (e.g. personal care, assisting with eating, socializing with residents, etc.) and 8% completing paper work (documenting and reporting). Given the remarkably similar findings of this study in tracking HCA documentation time, the experiences of paper-based communication appear relatively consistent with this previous work. This is particularly relevant given that recent research exploring communication and the effective exchange of clinical information has highlighted the importance in deliberate communication strategies supporting HCAs. Caspar (2008) identified deficiencies negatively impacting HCAs' capacity and willingness to exchange relevant resident care information. The current study examined whether computer-based documentation might address current limitations of paper-based communication processes and positively impact HCAs capacity for collaboration and contribution to resident care information.

The findings of this study suggest that computer-based documentation supports HCA practice, and enhances HCA and inter-disciplinary team (IDT) communication. HCAs and IDT members indicated that computer-based documentation facilitated integration of resident care information and care planning processes. Results indicated that HCA contribution to resident care information was positively impacted with the introduction of computer-based documentation. Furthermore, observation data suggests that computer-based documentation reduced documentation workload, which may benefit HCA workflow.

Barriers to documentation were noted in the course of the study. Both sites indicated that literacy was a potential barrier to communication – paper-based or computer-based - and employed various strategies to address and accommodate HCAs. Familiarity with technology was a further variable, as was time

required for training in the use of various documentation platforms. Casual staff were noted to have more difficulties using computer-based documentation tools. Used appropriately, however, computer-based documentation offers effective ways to enhance communication. By requiring that HCAs need only recognize rather than generate ideas and words, linguistic challenges and barriers can be more easily overcome. Further elaboration of these results implies that enhanced communication through computer-based documentation would provide for greater continuity of care between HCAs and nurses, which would contribute to overall quality of care.

CONCLUSION

This study offers insight into the impact on communication processes when using computer-based versus paper-based documentation in the HCA population. Although communication, written and verbal , is an expected competency for HCAs, few studies have explored current communication processes in health care environments. The findings suggest that computer-based documentation may enhance HCA communication with team members, and positively impact HCA workflow.

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