Computer-Mediated Nurse-Client Interaction in Supportive Living Environments

By

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Disclaimer

The views expressed in this capping project are those of the author and do not reflect the official policy or position of Alberta Health Services, the University of Alberta, the Faculty of Extension, or the Masters of Arts in Communications and Technology program.

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Abstract

Registered Nurse Case Managers in Supportive Living do not always bring their appointed laptop devices with them to clients for interRAI assessments. This qualitative research explored the experience of RN Case Managers with computer-mediated interactions with their clients in Supportive Living environments. A survey questionnaire was distributed to 12 RN Case managers whose responses were analyzed using the tools of the Constructivist Grounded Theory method. The study revealed that RN Case Managers have to adapt work process and alter the environment to effectively integrate the laptop into the interaction with clients. However, most of the nurses found no advantage to its use, citing that the computer impedes nurse-client engagement, creates discomfort, and is not appropriate for the cognitive and medical profiles of the Supportive Living clientele. The results of this study can be used to create a renewed education strategy that will recognize end-user input in technology use. It can also be used to evaluate current and future technology implementation.

Chapter 1: Introduction, Background and Research Question

E-health, the use of information and communication technologies in healthcare, has become so pervasive across multiple health practice settings, that it compels health care professionals to be proficient in its use. This is true for nurses who work in the front lines of health care delivery, as employers demand a growing skill set to engage in the "informatics revolution."

Computer competencies used to cover only basic computer skills, information literacy, and information management (Delaney, Gugerty, 2011). However, best practice standards now also dictate that nurses are able to use technology while engaging with clients in "a meaningful way," vital to the "person-centered" approach to care (RNAO, 2015). The ideal nurse-client interaction is one where nurses are able to display empathy while clients are actively engaged in their encounter (Fleischer, 2009).

This intensifies the argument that technology is somehow inhibitive of client participation (Barnard and Sandelowski, 2001; O'Keefe, 2009, Pols and Moser, 2009). While technology can support and compensate daily living activities, help interaction, educate clients, and enable the optimal use of healthcare services (Korhonen, 2015), it also changes the moral and social dynamics of the interaction (O'Keefe, 2009).

There is also a call for nurses to employ reflective analysis to examine how technology has reshaped nursing practice (O'Keefe, 2009; McConnell, 1998; Bernardo, 1998). It is within this context that my study exists.

1.1 Background

In Alberta, the province adopted a continuing care strategy that showcases an "aging in place" approach which includes investment in infrastructure to increase accommodations and healthcare service options beyond facility living and into more home-like, community based residences (Friesen, Phillips, Rogers, and Rudrum, 2016). Supportive living provides accommodation to clients where they can remain as independent as possible while maintaining access to health supports and services. Residents in a supportive living setting can range from seniors who require support services such as age, adults with chronic conditions and frailty, to young adults with mental health or physical disabilities (Government of Alberta, 2014). This health care setting promotes a client-centered approach by providing the care where the client lives, and places him in the center of care (Canadian Nurses' Association, 2016).

In a position paper, the Canadian Nurses Association highlights the importance of optimizing the nursing workforce to enable the best client outcomes amid the challenge of meeting expectations for responsible resource stewardship. (Canada Nurses Association, 2013) Given the complex nature of the clientele in Supportive Living, Alberta Health Services recognized the benefits e-Health technology provide to facilitate efficient care delivery in this setting. AHS, as the primary health governing body in the province then invested in technology and infrastructure to support the portfolio.

Case managers are at the frontline of this delivery system facilitating services that range from basic supportive care to complex care, including those clients with highly specialized clinical intervention at home.

The case managers are typically Registered Nurses (RNs), with a few allied health professionals, who specialize in the community setting. They function as care coordinators working with an interdisciplinary team and as a conduit between the client and the myriad of health resources in the community. Currently, the province of Alberta is organized into zones. Calgary zone is divided into North and South segments and the Integrated Supportive and Facility Living (ISFL) portfolio oversees the Supportive Living team (AHS, n.d.). According to an email exchange with the ISFL team's administrative assistant, the team currently employs at least 110 Registered Nurse Case Managers in full time and part time positions. Each RN Case Manager is assigned an average of 35-45 clients in his or her caseload.

A pivotal aspect of the Nurse-Client relationship in the supportive living environment is the assessment process that is administered through the interRAI Home Care Assessment System (RAI-HC). The system guides information gathering and supports the development of a customized plan of care for the client based on their assessed needs (InterRAI, n.d.). The interRAI-HC, an internationally adopted system was developed for use with adults in community-based settings. It is designed to highlight issues related to the functioning and quality of life of clients by assessing their strengths and needs, and from which a comprehensive care and service plan is drawn (n.d., InterRAI). The Alberta Health Services public website describes the interRAI process as "the standardized tool designed to collect information on a broad range of physical, mental and social abilities. InterRAI is commonly referred to as RAI is administered by RN Case Managers initially to assess the need for supportive living accommodations, annually as routine assessment, and for any significant change in the

client's status (Alberta Health Services, [AHS], n.d.).

The RAI system is installed in laptop computers with professional computing capabilities for nursing assessments and documentation. Each RN Case Manager is issues his or her own laptop computer. When the RAI is completed with the client directly on the laptop device, the nurse is able to generate the results "in real time," which can then be immediately discussed with the client and family. The Clinical Assessment Protocols (CAPS), a report that informs the care plan can be calculated on the spot; this facilitates the possibility for the client to be involved in the care planning process.

These laptop computers are equipped with Internet capability for electronic uploading into the provincial information system. This functionality allows the system to generate scores and indicators that can be interpreted and used by the provincial health authority for monitoring and decision-making. The RN Case Managers are also provided with smart phones with cellular data coverage that can be tethered to the laptop for Internet connection. To address technical issues that may arise related to connectivity when using the system, the "Smart Form" is a feature that allows the nurse to export the assessment form and make it available off-line. Smart forms can be created from the program as a separate file that can be then downloaded to the RN Case Manager's computer; it does not require Internet access thus reducing the risk for connection problems. The Smart form is capable of calculating the results allowing access for the nurse to discuss outputs with the client even without Internet connection.

Despite these tools and advantages, RN Case Managers often take paper print out of the RAI and leave their AHS-issued laptops behind. When assessments are not done

on the computer with the client, the nurse would have to set up a follow-up appointment with the client to discuss the results in a separate visit, reducing efficiency. As previously mentioned, this process also diminishes the client's ability to be involved in care planning.

The rationale for this directive is articulated in a recommendation report for AHS to equip remote care workers with mobile devices in continuing care (AHS, 2017). According to the report, best practice would have remote care workers access Clinical Information Systems (CIS) to either document point of care assessment findings, interventions, or communication notes for other providers at point of care. The report enumerates the risks of paper documentation at the point of care in lieu of bringing a mobile device. According to the report, it creates duplication of effort, increases risk for health information breaches and errors in data quality. The report also found that many remote care workers in Alberta working in community care currently record their assessments on paper and then go back to the office to enter information electronically (AHS, 2017)

The documentation standards from College of Alberta Registered Nurses (CARNA) is also often cited (CARNA, 2013). With regards to documentation, CARNA stipulates that nurses are to record "contemporaneously" (p. 4).

On the other hand, the "Clinical Documentation Framework" (AHS, 2017) provides a "foundation to advance policies, processes, standards, requirements and practices for clinical documentation" (p. 6). The framework identifies technology and other tools as "enablers." As such, it can improve the quality of documentation when it

enables clinical processes and professional decision-making and not dictate care (p. 12).

Timmons (2003) identified two broad types of resistance to technology among nurses. First are those who attempt to minimize or 'put off' the use of the systems and second, those who display extensive criticism of the systems. According to Timmons (2003), although outright refusal is very rare, resistance was as much about the ideas and ways of working that the systems embodied as it was about the actual technology being used.

In deference to Timmons' (2003) findings, my research will focus on the prescribed process, and not on the laptop device itself or the software. I make the following assumptions through the course of my research:

Assumption 1: RN Case Managers meet the requirements for computer skills as described in their job description.

Assumption 2: In keeping with the core nursing value of beneficence, RN Case Mangers will use technology if it provides a benefit to their clients.

1.2 Research Question

This qualitative study explores the experience of Registered Nurse – Case Managers working in Supportive Living (SL) in Alberta Health Services (AHS) Calgary Zone with computer-mediated interactions with their clients. My research will work on the premise that nurses have the ability, if not the obligation, to turn all client interactions into a positive experience for the client and serve a therapeutic goal (O'Keefe 2009; Pols and Moser, 2009).

I am emboldened by Corbin and Strauss (2008) in their statement that "the touchstone of a professional researcher's experience may be a more valuable indicator of a potentially successful research endeavor than another more abstract source" and that "a good research study may help to correct a situation" (p.23).

I have worked as an RN Case Manager for four years and within this period, we are instructed by management to bring our laptop devices to interview clients for the RAI (Resident Assessment Instrument) assessment. This directive is highlighted in new staff orientation and as ongoing practice. I observed that despite constant reminders and efforts from management to provide the tools, training and resources, RN Case Managers continue to struggle to integrate the laptop computer in their interaction with clients.

A major concern from my personal observation and that of O'Keefe (2009) seems to be that the presence of the laptop computer, as with technology, tends to insert itself between nurses and their clients and marginalizes the client's experience (O'Keefe, 2009). Therefore, I use the phrase "computer-mediated interaction" to refer to this intrusion of laptop computers in nurse-client encounters.

My study therefore explores how the presence of a computer device (i.e. laptop) affects the nurse-client relationship in the Supportive Living environment. The following research sub-questions guide this research:

1: What is the role of the computer laptop in the practice of RN/Case Managers working in supportive living environments?

2: Does the laptop computer influence the interaction and relationship between the RN Case Manager and the client who lives in a supportive living environment in a

negative way? How?

3: Does the presence of a laptop computer influence the interaction and relationship between the RN Case Manager and the client who lives in a supportive living environment in a positive way? How?

Chapter 2: Literature Review

2.1 Methodology of Literature Search Process and Eligibility Criteria

I took the mixed method approach to my literature review, synthesizing both quantitative and qualitative literature. Mixed methods reviews represent an important development for all individuals involved in evidence-based health care (Sandelowski, Leeman, Knafl, Crandell, 2012). My aim was to find literature on ICT and computer-mediated nurse-client interaction and how it affects nursing process. In the beginning I did not discriminate against other practice settings, realizing that investment in healthcare technology upgrades would logically be spent on the acute care setting.

The literature available on technology in healthcare is vast. Acknowledging that a literature review is a heuristic and iterative process, my initial efforts were characterized by throwing a wide net of key words from my concept map around my key thematic areas to search for literature related to my general topic.

I used the University of Alberta's digital databases primarily through the online library, by entering my keywords in the main search bar. Examples of the main search terms I used were information and communication technology (ICT), nurse-client, nurse-patient, e-health, supportive living, home care, home, technology acceptance and nursing. To strategize my search, I used Boolean logic in order to keep my search results to a manageable level given the vast amount of literature available on e-Health and other healthcare technology topics. I also used Google Scholar for searching literature, and to my surprise Google scholar more often allowed better access with my University of Alberta library credentials. The other electronic bibliographic databases that proved

useful for my review are Pubmed, Medline and CINAHL.

My search was able to generate at least 200 peer-reviewed articles, books, and other resources, which I then subjected to my eligibility criteria. From these, I was able to qualify 60 sources that I arranged in a matrix where they were classified into the following categories:

1. e-Health: technology in healthcare

2. e-Health in Home Care

3. e-Health and Nursing: Cold Technology, Warm Care

4. e-Health: The Nurses' Role

For my selection process I followed the systematic technique devised by Booth et al. (2016) to identify and categorize literature relevant to my research, with focus on ICT applications in homecare. I followed the stage-by-stage process described to determine my eligibility criteria. I defined the criteria that I wanted to meet for each stage based on my scope to reduce the risk of deviating from my scope. I eliminated literature that clearly did not pass the criteria, although I tried to be as flexible as possible, retaining articles that I had misgivings about. For these articles, I made sure to write comments about what I found relevant in that article.

For instance, I focused on the supportive living setting but did not discount literature on the experience of nurses in other practice settings, as they are able to provide insight into my review questions. When Des Roches et al. (2011) conducted a survey to

examine nurses' experiences with health information technology (HIT), they found that HIT was more available to acute care nurses than in other practice settings.

I initially did a superficial sift through the titles generated from my search. I considered how recent the publication was, given that my study is technology-related. I chose literature published from the year 2000 onwards, although I made exceptions for some articles that provided foundational knowledge about related topics.

For example, the study by Burkes written in 1991 explored the psychology of motivation through an adaptation of Vroom's expectancy theory as a framework to correlate nurses' attitudes towards the use of computers. The focus of the theory is the relationship between a nurse's preferences and expectancy or beliefs and their motivation for integrating computer technology in their practice. The premise of this study is that behavior results from conscious choices among alternatives but the ultimate purpose is to maximize pleasure and to minimize pain. According to Burke (1991), nurses' motivation to use nursing computer programs is a function of nursing satisfaction and acceptance of computers.

I checked the author's academic qualification and professional credibility. I also made sure to check where the article was published, such as if the article is coming from noted professional publications. When possible, I checked if the article was previously cited in other literature using the Hirsch index.

Dr. Alan Barnard, a prominent nurse academic who has published extensively about Technology and Nursing, is a major proponent of the role of nurses' participation in the philosophical inquiry into the experience, meaning and implication of technology

in healthcare (Barnard, 2002). He also brought up the philosophical discussion of whether technology really means progress in healthcare and its implications (Barnard, n.d.).

He collaborated with Sandelowski (Barnard & Sandelowski, 2001) and wrote the article "Technology and Humane Nursing Care" which I considered a pearl resource of my study. In this paper, they explored the presumed boundary between technology and humane care in an attempt to dispel traditional beliefs of technology as a dehumanizing agent in health care. This is an important paper to my research because it addresses the controversy of technology as a deterrent to quality healthcare.

Barnard and Sandelowski (2001) made a case against polarizing technology and healthcare, and present alternative approaches to understanding the relations between both. One such alternative is the authors' suggestion that this continued polarization may be rooted in only a few people's insistence on propagating a distinctive professional identity rather than of improving nursing care.

2.2 e-Health: Technology in Healthcare

The use of information and communication technology in healthcare was an emerging trend in healthcare as early as the 1970s. However, the term "e-Health" was first introduced in the late 90s as the catchphrase for the application of information technology (IT) in healthcare. The word lived up to its marketing potential, becoming a buzz word in healthcare and IT. The past 20 years saw the rapid growth of information technologies in healthcare and with it a "tidal wave" of knowledge from research (Korhonen, 2015).

As its use in the academic and scientific fields grew however, it became evident that a more comprehensive definition was needed. One popular definition was that e-Health is the "emerging field in the intersection of medical informatics, public health and business;" however, this definition was dependent on the field applying it and how. Eventually, eHealth developed as its own discipline as it gained recognition for its role as an "essential and central" component of healthcare improvement, and not merely an add-on (Eysenbach, 2001).

The most recent World Health Organization (WHO) report on eHealth provides an account of eHealth strategies around the world (WHO, 2016). According to WHO, eHealth is used in the healthcare for transmission of digital data, including data stored and retrieved electronically to support healthcare by allowing the interaction between patients and health service providers or peer-to- peer communication between patients and/or health professionals. Some of the more known technology currently being undertaken are m-health (mobile health), distance telehealth services (tele-radiology and

telepathology, remote patient monitoring, teledermatology), elearning (used to educate medical doctors and health care professionals), electronic health records, and social media (WHO, 2016).

2.3 e-health in Home Care

In the Canadian health care system, Home Care forms part of the broader continuing care sector, along with long-term care (facility living) and assisted or supportive living. The objective of home care is to provide cost-effective, ongoing, home-based care for clients of all age groups following hospital discharge, for palliation, aging in place, or for those that are cognitively and physically impaired (Fraser et al., 2017).

A scoping article done by Lindberg, et al (2013) reviewed existing research describing the use of ICT in home care for communication between patients, family members, and healthcare professionals. From the 1,276 studies considered, they found a predominantly positive description of how communication with ICT was performed in home care and the benefits and drawbacks with the use of ICT. A glaring outcome of this review was that the authors found 13 different terms used to define technology in home care services and home nursing.

The most frequently used terms were telehealth, telemedicine, technology and telecare, reflecting the growing use of these technologies in homecare. I found this reflected in my own review, where there seem to be inconsistent use of terminologies. This can be attributed to the varying technologies that are available and the geographic locations of the literature reviewed.

There is an emerging body of knowledge on e-Health acceptance, utilization, and integration in the Home Care setting. One of which is the study of Zhang et al. (2010) where homecare nurses' technology adaptability and user acceptance are identified as critical factors in technology implementation. The authors defined user acceptance as either a catalyst or barrier to the success of a technology. It is the key to maximizing the performance of any information, communication and technology (ICT) system and therefore must be investigated early. The sooner that user resistance is identified means there is better opportunity for implementers to mitigate potential risks for user rejection.

A study set in homecare conducted by Vilstrup et al (2017) focused on clients' rather than on nurses' perception on the use of tablet devices in their homes. The study showed that participants verbalized feelings of trust in the use of iPads and its ability to optimize documentation, communication, and learning. In interviews with the respondents, iPads were seen as "natural reflection of the societal growth of technology use" and as a "symbol of professionalism." One respondent was also quoted as saying that nurses who use their IPads in their cars after the visit are less preferable to those that use them during the visit. Clients' response of "everybody's using it" reflects this shift in perception and public understanding of the ability of technology to improve healthcare.

2.4 e-Health and Nursing: Cold Technology, Warm Care

One of the recurring themes in literature is the effect of technology on the "caring" aspect of healthcare, in support of the premise that the presence of technology distances nurses from patients. The study by Pols and Moser (2009) used 'warm care' and 'cold technology' to describe the contrast between technology and caring in healthcare.

According to the study, technology was framed as cold because it was deemed "purely rational and instrumental," as functional “means to an end.” Pols and Moser (2009) cited the proliferation of robotic and technology in Western healthcare to dispel fears that technology will replace warm human contact, noting that healthcare technologies are not only functional but also social and affective. The argument is that the opposition between cold technology and warm care does not hold true. There are different relations between people and technologies within different use practices, which technologies may instead contribute to affective relations.

According to O’Keefe (2009), technology changes the moral and social dynamics within nurse-patient encounters because technology becomes the main reference point to interpret and evaluate clinical patient outcomes. Both Hawthorn et al, (1995) and Sandelowski (1999) support the “one-ness” of technology and the nursing. Hawthorne et al (1995) says it is the overemphasis on science and technology that cause this shift of focus from the caring aspect of healthcare. He proposes that the essence of caring and profession are one.

In Sandelowski’s (1999) article, he identified two distinctive processes in consideration of the semiotics of nursing and technology. According to him, largely two processes relate nurse and technology - first by the metaphor that depicts nursing as technology and second by opposition that nurses are in conflict with technology. Sandelowski (1999) proposed that nurses’ tendency to differentiate themselves from technology stems from the traditional understanding that all the wrongs in healthcare can be attributed to technology. Further, Sandelowski describes well the paradox of how as nurses try to distance from technology and its scientific cadence, it invariably brings it

closer to the other traditional image of nursing as a "feminine" profession (1999).

In collaboration with Barnard, Sandelowski (2001) explore the presumed boundary between technology and humane care. The authors suggest that this continued polarization may be rooted in only a few people's insistence on propagating a distinctive professional identity rather than of improving nursing care.

2.5 e-Health: The Nurses' Role

Another theme I found in my review is that nurses have the ability, if not the obligation to turn the technology-mediated nurse-client interaction into a positive experience for the client. Berg's paper (1999) is often cited in healthcare implementation literature with his emphasis on the organizational perspective. According to Berg (1999), getting technologies to work in health care requires organizational change but the end-user should maintain center-stage, meaning nurses.

Archibald and Barnard (2017) stressed technology is more than a tool of health care, but as integrated inseparably with care and humanity. McConnell (1998) stressed the role of the nurses as the midpoint of this technologic-humanistic dualism, to ensure that the technology and humanism coalesce effectively. It is the nurses' role to meld caring and expertise, a skillset that can be developed by education, clinical practice, research, and administrative considerations.

Bernardo's paper (1998) made a prediction about technology in nursing in the new millennium. He proposed that it is the "manner" that nurses use technology to improve healthcare that makes a difference in their quality of life. He described this

desirable "manner" as the ability of nurses to provide "true presence."

2.6 Summary and Synthesis of Literature Review

Health care is moving from the 'face to face age' to the 'information age' (While and Dewsbury, 2013), and with it a new generation of scholars wanting to understand this trend.

Mayor and Bietti (2017) conducted a scoping study of literature on nurse-client interaction in the presence of technology across multiple settings. They identified asymmetry in favor of nurses in acute care, where the nurses have the "power." When the encounters occur at the clients' homes (home care nursing), this pattern was reversed, as the client gains leverage. This changes again when a technological device is brought into the client's home and the nurse regains control. However, little is known specifically in the supportive living environment, which can be considered the middle ground of these two settings.

The central focus of the research of Alliex and Irurita (2004) was to develop a theory to explain the process of nurse–patient interaction in the presence of technology specifically in acute care. A combination of interviews, diaries and observations of nurse-patient interactions informed the research. According to the results of the study, nurses tend to be "stymied" in person-centered interactions in the presence technology prominence (which meant nurses giving technology importance) and technology awareness (which meant nurses being acutely aware of the presence of technology).

A computer system at the client's bedside tends to distract the nurse's attention away and compromise the interaction. It impacts the nurse-patient relationship by reducing the verbal and visual interactions between the nurse and the patient (Duffy and Kharash, 2010).

Alliex and Irurita (2004) coined the term "maximizing" as an effective strategy that nurses use to deal with the impact of technology on their interaction with clients. Although the study was situated in acute care not in homecare, it addresses the issue of how the presence of computers affects the nurse-patient interaction. Similarly, Rhodes et al. (2008) found that nurses' intentional nonverbal cues such as body orientation and direction of gaze are critical in defining the character of the nurse-client interaction.

The UK-based study by Adams (2001) examined the conversational and discursive processes that occur between community psychiatric nurses and their patients in home visits. Adams argue that the style of these interactions contribute to the quality of healthcare to chronically confused people and their informal caregivers. He audiotaped conversations and managed to identify three conversation formats between the nurse and the patient's informal caregivers – the interview format, the information delivery format and the social interaction format. The transcripts were analyzed using conversation analysis and discourse analysis from which Adam concluded that nurses' use of positive conversational and discursive strategies contribute to the ability of patients to stay in community.

Bowers (1992) proposed that home visits are socially constructed events in which the sense of the talk is dependent upon several factors - the setting and context, the

location of the visit in the patient's home, and the client's stock of typified knowledge of conduct of guests and hosts.

Gaudet (2016) used passive participant observation to explore the culture of nurse-patient interactions. From his observations, Gaudet (2016) concluded that technology should be appropriately interfaced with the existing workflow of nurses to support its adoption. His nurse-respondents' reported the challenge of prioritizing patient needs' while completing the demands of information technology. Jones and Collins (2007) agreed that the task-related focus of computer-mediated nurse consultations could present difficulties for patient participation.

The most important and recurrent finding in my literature review is that the increased use of e-Health in healthcare affects the therapeutic goals of nurse-client interactions. However, nurses continue to exert control over most of the progress of the interaction. In general, there is a gap in the literature on home health care (including supportive living) and information technology, given the increasing use of technology in this nursing area that needs to be addressed. (Smith et al, 2011; Stricklin et al, 2003)

Chapter 3: Research Design and Methodology

3.1 Theoretical Framework

I articulated my research question intentionally to use the qualitative descriptive approach. My aim is to capture as many perspectives as my respondents provide in this study, while having the flexibility to discover variables that I would not otherwise find with another method. Any methodology that attempts to understand experience and explain situations will have to be complex (Corbin and Strauss, 2008, p.8).

A study's theoretical framework becomes the underlying structure of the research, and becomes the basis from which the study begins (Merriam and Tisdell, 2015, p. 85). Corbin and Strauss described the Constructivist methodological approach extensively and I relied heavily on their text for my study's theoretical framework and subsequent data analysis (Corbin and Strauss, 2008).

Constructivism is a research paradigm that denies the existence of an objective reality, and claims that the world consists of multiple individual realities influenced by context. Constructivist grounded theory is an "evolved" version of the original grounded theory by Glaser (Mills et al, 2006). Grounded Theory, on the other hand, strives to generate theory "grounded" in the data (De Chesnay and Banner, 2015). This traditional method involves developing a research question from an initial inductive mode of inquiry that becomes progressively deductive as the research process continues.

Several characteristics distinguish constructivist grounded theory from its traditional counterpart, and I want to stress two of these characteristics that I apply to my research – theoretical sensitivity and the constructivist's treatment of literature (Mills et

al, 2006).

Theoretical sensitivity is defined as a multi-dimensional concept that includes the researcher's level of insight into the research area. Professional experience can enhance sensitivity. As a Registered Nurse who worked as a Case Manager in supportive living, I have lived the experience of my participants, which makes me attuned to the nuances and complexity of their words and action, and consequently improves my ability to reconstruct meaning and data (Mills et al, 2006). According to Corbin and Strauss (2008), "past experiences provides the mental capacity to respond to and receive the messages contained in data – our findings are a product of data plus what the researcher brings to the analysis" (p. 33).

The second characteristic that distinguishes Constructivist Grounded theory is its treatment of technical and nontechnical literature. Whereas Glaser cautions against doing a literature review because it may contaminate, constrain or inhibit data analysis, the constructivist approach promotes active engagement with literature from the beginning of the research process (Mills et al, 2006). Corbin and Strauss (2008) put emphasis on the advantages of using literature – they can be used as a resource for making comparisons which can help identify the properties and dimensions of relevant concepts. Literature can also enhance sensitivity, provide a cache of descriptive data with very little interpretation, and it can be used to simulate questions during the analysis.

3.2 Researcher Positionality and Reflexivity

Positionality is a central component in the process of qualitative data collection. In traditional qualitative research, researchers are "positioned" either inside or outside the social group being studied. 'Insiders' are individuals who have a place in the social group being studied before the start of the investigation and 'outsiders' are non-members of the group (Moore, 2012).

This is an important consideration in my research, because I am an "insider" in the domain of my research focus. I was a Registered Nurse Case Manager in the Supportive Living team for four years where I am conducting my research. As an insider, I can potentially affect my research in various ways. I will have access to the setting, respondents and information, and my own biases may affect the way I construct my questions and shape my conclusions (Berger, 2013). It is therefore important for me to continuously examine my research process in the context of my positionality and assumptions. This examination is described in qualitative research as reflexivity. Reflexivity also entails critical self-evaluation of a researcher's positionality as well as active acknowledgement and explicit recognition that this position may affect my research outcome (Berger, 2013).

I have always been a proponent of the use of technology to promote efficiency and productivity in my professional as well as personal life. As an RN Case Manager, I experienced the challenge of managing a full caseload (and their families) – collaborating and coordinating with multiple health professionals, addressing crises, resolving conflicts – and meeting the demand to document everything to meet organization and accreditation requirements as well as for posterity measures. Yes, a computer system that allows point-of-care documentation and all

its functionalities should be welcome. I consider myself above-average in terms of being tech-savvy, having dabbled in the Information Technology industry for years. But I find I struggle meeting the expectation of bringing the laptop to clients' homes – I did not find it at all efficient. And I saw the same sentiments reflected in my colleagues. I did not start this research to justify my non-compliance; on the other hand, I hope to find a resolution.

3.3 Research Participants

I used a purposive and non-random selection method to invite RN Case Managers from Alberta Health Services Calgary Zone Integrated Supportive and Facility Living portfolio. Purposive sampling allows the investigator to select a sample from which the most can be learned, but comes with its own limitation. The method suggests that only a subset of the population will be represented by the research, which creates some limitation to the depth of the study. I am constrained by my limitations with regards to time and resources to conduct a more extensive sampling method.

The RN Case Managers are trained to use the RAI assessment tool as part of their orientation process, and all are required to use the laptop computer at least once at this stage under observation of interRAI educators.

I initially had a target sample range of 10 to 15 RN Case Managers to allow me an adequate number of participants to maximize the information I need to answer my research question (Merriam and Tisdell, 2012). Mayan (2016) in her discussion about bias in qualitative research asserts, "In qualitative inquiry, there is no such thing as a biased sample. When a phenomenon is unknown (and a qualitative approach is necessitated), then we sample for the best examples of the phenomenon" (p. 19).

Within a week of the letter of invitation to participate being sent to participants, I received a total of 12 emails from the RN Case Managers email list, expressing their interest to participate in my study. All 12 participants responded to the invitation through email but I still offered the questionnaire both in paper or electronic form. I prepared the electronic forms in two formats in PDF and Microsoft Word document. The PDF file allowed my participants to print the document and hand-write their responses. The Word document was editable, which allowed my respondent to enter their answers directly into the form.

When I sent the survey questionnaire by email, I included a cover letter with a description and purpose of my research. See Appendix A for the cover letter I sent to the respondents. The cover letter provided instructions on how the questionnaire should be completed. Included in the letter is a statement informing the respondents that by completing the questionnaire, they are implying consent to participate in the study. I included my contact information to ensure that respondents are able to contact me for clarification. I then attached the survey questionnaire as a separate file.

I offered the respondents options to return completed survey forms - through email, postal service or pickup. Although the questionnaire was designed so that it can be completed comfortably in 20 minutes, I allowed my participants infinite time to answer the questions. The open-ended questions allow for reflective thoughts, although I made a point to request having the forms returned within a week. In the end, it took two weeks for all the completed forms to be returned. In this time period, I was contacted by four respondents on four separate occasions – asking for an extension to the deadline for submitting the questionnaire. I did not receive questions or comments to discuss items

regarding the questionnaire. Out of the 12 participants, eight sent the completed questionnaire through email in electronic format, and four in paper form. All 12 participants indicated they want a copy of the executive summary once my study is completed.

3.4 Ethics

Since my study involves human participants, I applied for approval from the University of Alberta Research Ethics Board to ensure that I meet guidelines for ethical conduct. I completed the online application through the Research Ethics and Management (REMO) tool and had to refine my proposal according to university standards. The process entailed I revise my study a few times because of inconsistencies with my sections. I received official approval on May 18, 2018.

In the early stages of my study, I connected with the Alberta Health Services (AHS) Provincial Research Administration (PRA) office and they provided me with an Internet link that led to an internal website with resources to secure operational approval to conduct my study within the organization. The website included resources related to AHS privacy principles and ethics guidelines.

Organizations like AHS typically have review committees in place to ensure that safeguards exist to protect the anonymity and confidentiality of research participants (Corbin and Strauss 2008, p. 29). This stage of the process included completing an online questionnaire that contained information about my study, and my approval number from the University of Alberta Research Ethics board. My study was then reviewed and endorsed to the assigned Administrator for approval.

During this application, I learned that AHS policy does not allow researchers to recruit prospective participants directly. I had to first recruit and appoint an AHS leader to send the letters of invitation to potential participants. After a discussion about the responsibilities attached, my manager agreed to assume the role. As soon as I received the letter of approval, my AHS leader promptly sent the invitation letter through internal email to list containing RN Case Managers in the Calgary zone.

The invitation email included information about my research and an explanation of the responsibilities and ethical considerations that will be observed in the conduct of the study. Paramount among these is that participation in my study will not affect the respondents' employment. I stipulated that participation is confidential and information collected will be kept anonymous. My invitation letter is appended as Appendix B.

3.5 Research Instrumentation and Data Collection

I used the cross-sectional survey method in the form of a written questionnaire as my primary data collection strategy. Cross-sectional surveys involve the collection of data from participants at a certain point in time, generating their insights relevant to the research (Merrigan et al, 2012).

Table 1 on the next page provides a list of the questions in the questionnaire. It consists of one screening question, six open ended questions, and one optional question. The first is a scaled question to determine the frequency my respondents used their laptop computers to administer interRAI assessments in the past year. The succeeding six questions are open-ended questions requiring a spontaneous response in the respondents' own words. Two of these questions are of two-parts – they contain a closed-format

question with options followed immediately with an open-ended question asking for an explanation for the answer. I also added an optional question to solicit the respondents' opinion about the broader issue of the effect of the use of laptop computers on patient care outcome. See Appendix B for the cover letter and Appendix C for the actual Questionnaire sent to the respondents.

I pilot-tested the tool with two RN Case Manager colleagues to review potential issues. I specifically solicited their opinion about the questionnaire's length and comprehensibility. We then discussed their suggestions about appropriate order of the questions before agreeing that it meets standard criteria.

Table 1. *List of Questions in Questionnaire*

Closed Question	1. Please check the most appropriate response (or underline). In the past year, how often did you use your AHS-issued laptop computer to administer RAI assessments on your clients? o All the time o Almost all the time o Some of the time o Hardly ever o Never
Open-Ended Questions	2. Are there instances when you intentionally do not bring your laptop computer to do a RAI assessment? When? 3. How does the presence of a laptop computer affect **your ability** to engage your client in the RAI assessment process? Please check (or underline) the most appropriate response. o Enhances o Detracts o No effect Please elaborate on your answer in item 3. 4. How does the presence of a laptop computer affect **your client's ability** to interact with you? Please check (or underline) the most appropriate response. o Enhances o Detracts o No effect Please elaborate on your answer in item 4. 5. How do you integrate the laptop computer in your interaction with your client (i.e. when doing RAI assessments) to optimize the nurse-patient interaction? 6. What advantages do you find when using a laptop computer to administer your RAI assessment on your client? 7. What challenges do you find when using a laptop computer to administer your RAI assessment on your client?

3.6 Data Analysis

Corbin and Strauss (2008) described analysis in qualitative research as a dynamic process "of examining something in order to find out what it is and how it works" (p. 46). Through either the inductive or a deductive process, the researcher can use the acquired knowledge from the data after careful consideration of its components and properties to make inferences. The authors stressed that interpretation is a key process in analysis.

To minimize feeling overwhelmed by the amount of data coming through, I did an initial read through of my respondents' survey forms as I collected them. This process is in keeping with best practice for qualitative research (Merriam and Tisdell, 2016) which Corbin and Strauss (2008) also prescribed, "if it is possible, analysis should begin after the first data have been collected" (p. 58). See Appendix D for the transcript of survey question and responses.

At this stage, I made an initial list of possible domains using a detailed open coding, or microanalysis, to makes sense of my data. I went through the data and identified possible categories within each domain. This iterative process also involved identifying recurring patterns or themes.

I used the analytic tools recommended by Corbin and Strauss (2008) to analyze my data, as described in their book, "Basics of Qualitative Research." Of note, I made comparisons between residents' responses, where I sometimes found contrasting and similar statements that I feel I need to investigate further. I also tried to discern the meaning of the words and language that my respondents used. I found that being an RN Case Manager and having the work experience is invaluable to my understanding of the

terminology and context my respondents used.

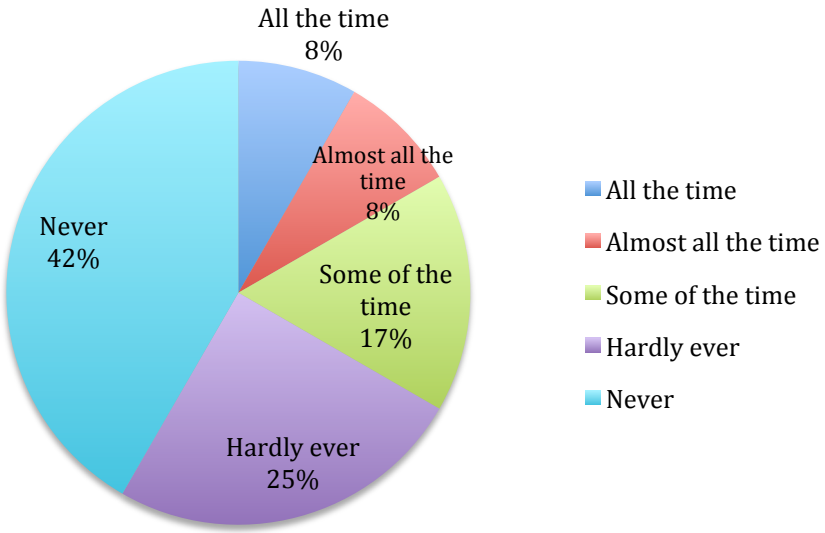
When I finished my microanalysis, I then used a broader perspective to analyze the data I gathered. At this point, I reflected on the bigger picture, relating the results of my study to issues related to the guideline that promotes the use of laptop computers at the point of care for the interRAI assessment. This strategy is used in the constant comparative method of data analysis developed by Glaser and Strauss (1967) typical of grounded theory framework. This strategy is characterized by constantly comparing incidents or information from the data with each other; and then subsequently these comparisons will lead to categories, which will also be compared against others.

Chapter 4: Findings

A list of responses, categories and themes are provided in each of the following tables in the Findings section to present the summary of responses. I grouped together related questions in a logical sequence as it appeared on the survey questionnaire.

Overall, the survey showed that most RN Case Managers do not use their laptop computers to administer the interRAI in the supportive living environment. Of the 12 respondents, five indicated they did not use their laptop in the past year to do the patient assessment at all, and three said they hardly ever used it. One nurse even said, she used it "once in the past year." Out of the 12, only one nurse claimed that she used the laptop consistently. Chart 1 in the following page is a visual representation of the results of this frequency.

Chart 1. *Frequency of Laptop Use by RN Case Managers for interRAI assessment*



4.1 Description of Categories for Question 2

The intent of the second question is to probe into the nurses' reasons for their deliberate action not to bring the laptop. Table 2 to 6 are integrated in the text discussion below and provides a summary of the coding and analysis.

Table 2. *Summary of Responses and Categories for Question 2*

Question 2	Are there instances when you intentionally do not bring your laptop computer to do a RAI assessment? When?	
	Responses: Hearing, Vision, Dementia, Alzheimer, Seniors, Mental Health, Age, Elderly, buddy shift, pass tests, educators, Paper	Categories: Medical and Cognitive Status Client Demographics Compliance

Medical and Cognitive Status of Clients. The nurses indicated that with the medical and cognitive status of the clients served in Supportive Living environments it is not appropriate to use laptops for interRAI assessment. This is the foremost reason cited for why the RN Case Managers leave their computer devices behind. Some of the common terms that came up about the clients were "paranoid," "suspicious," "dementia," and "mental health issues."

One respondent said it is a challenge to introduce the laptop in the interaction because the clients "don't understand the concept of electronic records; think that I am a sales person and did not welcome my presence; or they became paranoid with the computer." In contrast, the nurses find that clients who are not cognitively impaired do not usually have a problem with the "impersonal nature" of an interview with a computer

present.

Clients' physical or medical issues can also affect how they react to the laptop. Someone pointed out, "Sometimes there are impediments such as deafness, blindness, etc. requiring increased effort to complete the interview and the computer is just another piece of equipment which gets in the way of interviewing."

Client Demographics. Some of the respondents hinted that clients' age influences their decision to not bring a computer. One of the respondents commented that "the elderly do not appreciate technology," and "seniors have commented about dislike of computer (iPad, laptop) when talking to health professionals." Another explained, "It was unsettling for the elderly clients I was working with. As I would fill in my items on the RAI, they would squirm and seem offended, or they would ramble off on a tangent and it would take a long time to redirect the conversation back to the assessment."

Compliance. One respondent said she only brings the laptop to mentor new employees. The need to model the prescribed process appear to be a catalyst for CMs to use the laptop. New employees "need to see it done on the laptop because that's how they will be tested." Otherwise, the respondent added, "in all other instances I intentionally bring a paper copy and do not bring my laptop to complete my RAI."

Another claimed the laptop after urging from educators. The educators had said "once people start using their laptop with smart forms, that they like it." However, after trying she found that it "is not as accurate and I end up needing to use so much paper to

write everything down that I pretty much write out the RAI when I could have just used a RAI paper form and saved some time from writing it all out."

4.2 Description of Categories for Question 3 and 4

Table 3. *Summary of Responses and Categories for Questions 3 and 4*

Question 3	How does the presence of a laptop computer affect **your ability** to engage your client in the RAI assessment process? Please check (or underline) the most appropriate response. **(n) = 12** o Enhances (0) o Detracts (9) o No effect (2) o No answer (1)
	Responses: awkward, multi-tasking, looking at the computer more, less engaged with client, slow down, impersonal, less eye contact, engage, hinder, distracting, barrier, focus, cannot concentrate, cumbersome, creates distance, no table, electric outlets,
Question 4	How does the presence of a laptop computer affect **your client's ability** to interact with you? Please check (or underline) the most appropriate response. **(n) = 12** o Enhances (0) o Detracts (9) o No effect (2) o No answer (1) d
	Responses: Eye contact, connection, lose opportunity to socialize, barrier, attention, Uncomfortable, Distract, paranoid, curious, digression, formal, intimidating, anxious, annoyed, suspicious, lose focus, unsettling,
Categories from Question 3 and 4	Logistics Constrains connection Inhibits social interaction

Logistics. Bringing the laptop forces the RN Case Managers to multi-task, and thus affects their ability to manage the interaction. Someone said the laptop "makes interviewing and typing and engaging the client awkward," and that being focused on the computer causes the RN to "misinterpret or miss social cues" from the client. "Juggling a cell phone and the laptop is difficult," someone said. "It is far more effective to sit at a desk and bring the gathered information to the computer. Often a phone is needed to contact family and not available in a client's room."

Constrains Connection. The RN Case Managers reported feeling unable to "connect" with the clients. Many cited losing "eye contact" with their client as an issue, a recurring response to both questions 3 and 4. Some of the comments included - "I find it difficult to work with the computer on my lap. I end up looking only at the computer, rather than the client." Also, touch - "because my hands are busy, I am unable to use touch, such as touch their arm for reassurance," one of the respondents said. This sentiment echoes the recurring theme in literature about technology diminishing the "caring" aspect of healthcare.

Most RN Case Managers are concerned that the device makes the clients feel uncomfortable and "unsettled." They cite the elderly/seniors and those with cognitive or mental impairment as most likely to feel discomfort with a computer present. The laptop also tends to make both client and nurse uncomfortable when they have to endure "long pauses" while the nurse enters information in the computer.

Inhibits Social Interaction. The laptop computer also distracts the RN Case Manager, respondents shared - "As you go through the RAI questions, most often you have to bounce back and forth between the questions or start at a mid-point in the RAI,"

and "I cannot stay fully in the conversation." The laptop has the same effect on the client - one said, "The constant looking up and down at the computer screen makes it difficult for the client to keep on track with the questioning" and their attention is diverted.

The majority of the responses, 9 out of the 12 RN Case Managers feel that the presence of the laptop detracts clients from engaging with them because it somehow creates a "barrier," preventing the nurse from establishing rapport. The laptop causes some clients to feel "suspicious or paranoid" which dissuades them from engaging.

A concern echoed by a number of the respondents is that reading the questions from the laptop, going "point-by-point", prevents a "therapeutic" and "social" interaction from occurring. According to one of the respondents, "it takes away from the social experience that these seniors want and need to get out of every interaction."

The RN Case Managers are not impressed with how the laptop creates a "formal" tone to their interaction with clients. From all accounts, it creates a barrier – physical, social, and mental – for the nurse to have a "casual, positive interaction with clients." Two of the respondents expressed that the laptop prevents them from having "face-to-face" interaction. One respondent just wants to have "a normal conversation, while integrating questions from the RAI." This statement illustrates the point further, "On several occasions during an assessment I will walk around their room asking questions about the family pictures on the walls and at the same time assessing their cognitive abilities. The laptop would hinder in developing the nurse/patient relationship."

4.3 Description of Categories for Question 5

Table 4. *Summary of Responses and Categories for Question 5*

Question 5	How do you integrate the laptop computer in your interaction with your client (i.e. when doing RAI assessments) to optimize the nurse-patient interaction?	
	Responses: Not bring, paper RAI, explain, requirement, put to the side	Categories: Not use laptop Change process Change environment

Not use Laptop. According to half of the nurses surveyed, to optimize their interaction with the clients, they deliberately leave the laptop behind. One other recurrent theme was that the nurses found using paper is better. Paper does "not take as long," and it allows writing down notes and observations that can be used for coding in the laptop after the home visit.

Change Process. For those who do bring it, explaining the presence of the computer device is key to integrating the laptop in their interaction with clients. A respondent noted, "I educate my client and the family about the purposes of a RAI assessment and how the data are used by health care services." The message typically conveyed is that the laptop is necessary to complete the assessment and that "the information entered will help develop care plan." "I tell them we will review the results at the end and decide on actions together," another said.

One shared that her clients typically makes no objections when it's explained that bringing the laptop is a requirement, or that it is "the method of choice for my employer."

With this strategy, "patients who are elderly would question it and then reluctantly accept it."

A respondent explained her method to adapt the laptop computer into her process - "I do my research on the client prior to the RAI assessment," she said. "I review the chart, Netcare, medication profile, and the interRAI tracking document. Then I phone the client's family to obtain information. Only information from the client's perspective is then left to be collected from client and by clinical observation."

Change Environment. Placement or positioning of the laptop device is another common activity used by RN Case Managers. "I place the laptop on a hard surface off to the side and try to look at the client more than the laptop,"

4.4 Description of Categories for Questions 6 and 7

Table 5. *Summary of Responses and Categories for Question 6 and 7*

Question 6	What advantages do you find when using a laptop computer to administer your RAI assessment on your client?
	Responses: no advantage, depends on situation, works well with cognitive clients, save paper and trees, speeds up assessment, useful for compiling data.
Question 7	What challenges do you find when using a laptop computer to administer your RAI assessment on your client?
	Responses: Slows down assessment, balancing on lap, furniture, physical Barrier, poor connection, bringing too many things, less social, more impersonal, distracts clients, cumbersome, greater chance for error.
Categories from Question 6 and 7	Efficiency Accuracy Ergonomics No advantage to using laptop

Efficiency. Half of the RN Case Manager respondents said the laptop computer saves them time. Entering the information directly into the computer is more efficient than writing it on paper then again encoding the data after. They also save time if they complete the RAI in the one visit, generate the report and immediately discuss the results with the clients. Paradoxically, the time element is also a recurrent theme as a challenge in computer-mediated interactions. According to a respondent, using a computer slows her down; she had to "spend more time trying to re-engage" the client.

One other respondent described the process - "having to constantly trying to keep your screen up and finding your spot, and getting it to save, and on and on it went. Then getting people back on track at times, sometimes depending on the client, I could be there for 2 hours. Whereas 45 min to an hour with a paper copy and then 20 minutes to enter it in the office. It was always faster to use paper."

According to another respondent, "If the rationale for bringing the computer to the client's room is to make the RAI assessment more efficient time-wise, this is not always possible." The challenge she cites is that "clients are not always credible, so I will still need to follow-up with the staff and client's family," to verify the information provided. Another commented that even if the RAI is completed in one home visit, most clients would not understand the scores generated by the program anyway, so it would require a call to the family.

Accuracy. One of the respondents cited that entering the data directly into the computer reduces the risk for coding errors. However, like any other technology, the laptop computer runs the risk for technical issues to come up. An RN Case Manager said she found her laptop "often requires reboot if I change from cable connection to hotspot

or air card," which she said she needs to do if she takes the laptop to the client's suite. To reduce the risk, a respondent learned to "deal with technology" by ensuring that computer issues have been "resolved prior to starting the interview."

Another RN Case Manager expressed frustration when she described the steps she goes through to setup for a RAI assessment with a laptop computer. She said this entails "removing attached cords from office to client's suite: computer lock, Ethernet cord, power cord, monitor cords x 2, and head phone cord (USB head phone to make and receive calls)." And then once setup is done, she finds "unreliable Internet coverage (no Wi-Fi at the site, have to use hotspot from a smartphone, which also has poor coverage due to the building being in a new suburb community." She concludes, "This is the main reason I opt to leave computer in the office."

Ergonomics. The RN Case Managers find ergonomics a challenge when using a laptop computer for RAI assessments. Ergonomics is defined as an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely" (Merriam Webster, n.d.)

Three of the respondents used the word "cumbersome" to describe their experience. From all accounts, there is no adequate space in the clients' space to setup a workspace. "The client's rooms are small and several rooms do not have a table to set up the laptop," one respondent shared. "Electric outlets are limited," another reported, "Majority of the time I would be standing in the room holding onto the laptop."

An RN Case Managers who has been assessed and setup with an ergonomic workstation noted that in her experience, clients often have limited furniture for guests. She describes, "if there is no extra chair, the laptop must go on a counter and my back

would be to them. If there were a chair but no table, I would have to balance the laptop on my lap. Using a laptop in the client's room would not be ergonomic."

No advantage to using laptop. Out of the 12 respondents, 4 said there is no advantage to using the laptop when used for interRAI assessments with the client. One said, "I do not find any advantage. I find it cumbersome," then added at an apparent attempt for humour, "it would save paper and thus save trees."

4.5 Description of Categories for Question 8

I added the last question to get a general sense of how my respondents see laptop use and its effect on patient care outcome. I return to my previous assumption about the value of beneficence, or about nurses' inherently wanting to do good for their clients. Of the 12 respondents, 8 chose to answer the optional question. Four of the RN Case Managers said the laptop has a negative effect, three does not see any effect.

Table 6. *Summary of Responses and Categories for Optional Question 8*

Question 8	Does the presence of a laptop computer in your interaction with your clients affect patient care outcome in a positive or negative way? Negative effect – 5 No effect – 3 No effect on clients without cognitive issues - 2 Left blank – 1 "It seems the way things are going to be" - 1	
	Responses: Seniors do not see value in the computer, barrier, slows me down, agitates clients, affects relationship with client, less interaction, coding errors	Categories: No effect on patient care Affects care negatively Resignation

No effect on patient care. Three of the respondents said they do not feel using the laptop in the interaction affect the patient care outcome. According to one respondent, even when the laptop slows her down, or agitates a client with cognitive impairment, she finds other ways to compensate to meet patient care. Two other residents said this non-effect is especially true for clients who are not cognitively impaired. One said, "If they understand and don't have a problem with the technology, I don't think it has any effect on patient care outcome."

Affects care negatively. Three respondents said the laptop affects patient care outcome negatively, most of these respondents citing its effect on the nurse-client relationship as a factor. One of the respondents said, "the clients need touch, conversation and engagement with people not a computer.' Also, when the client is less able to interact, this will affect the accuracy of information collected for the interRAI assessment, affecting the care plan. "The client tends to under report their needs or concerns," a respondent described this scenario, "The answers then may not be accurate to what is really happening. This will affect the outcome of the RAI assessment; client CAPs may be under reported."

This negative effect can also be attributed to how the laptop affects the nurses' efficiency, one said, "I personally feel it is big barrier and it slows me down. It affects my relationship and my ability to feel I have interacted effectively with my client."

Resignation. One of the responses exudes a sense of resignation– "it seems the way things are going to be," then added, "I felt much more efficient using pen and paper."

4.6 Summary of Findings

From my analysis of the responses, four major themes from the categories emerged. Table 7 below shows a summary of the emergent themes and their associated categories.

Table 7. Overall *Summary of Themes and Categories.*

Theme 1	Most RN Case Managers do not bring their laptops at point-of-care with client to administer interRAI assessments	Categories: Medical and Cognitive Status Client Demographics Logistics
Theme 2	Laptop is a barrier to positive nurse-client interaction.	Categories: Constrains Connection with Clients Inhibits social interaction
Theme 3	There are limited benefits and a number of challenges with using laptop at point-of-care with clients to administer interRAI assessments.	Categories: No Advantage/Benefit Efficiency Accuracy Ergonomics as a Challenge
Theme 4	RN Case Managers' alter the environment and adapt their process to integrate the laptop into the nurse-client interaction.	Categories: Non-compliance Change Process Change Environment

The first theme from the research I found is that RN-Case Managers in Calgary Zone Supportive Living do not use the laptop at the point-of-care for their interRAI assessment. Instead, they bring a "paper RAI" or print out of the assessment. The result of the screening question supports my research topic, and show that indeed there is an issue worth consideration.

The respondents said using a laptop to administer the interRAI is not appropriate for the demographics as well as the medical and cognitive status of supportive living clients. Some cited the logistics of bringing the laptop such as technical issues and the complexity of setting up in client's room.

The second theme examines nurses' perspective on how the laptop affects the nurse-client interaction. The main findings of my study show that a large percentage of the respondents perceived laptops as deterrent to positive nurse-client interaction. In particular, the laptop causes both nurse and client discomfort, acts as a barrier to "therapeutic relationship", and diminishes the social aspect of the encounter. This finding reflects O'Keefe's (2009) finding in his study – that technology changes the moral and social dynamics between the nurse and client; and echoes literature in support of the premise that technology distances nurses from patients (Pols and Moser, 2009).

The third theme looks into whether the RN-Case Managers find value in using the laptop for interRAI assessments and the challenges that need to be overcome to realize them. A pattern of responses emerged from the results of this question. Interestingly, a significant amount of the nurses found no advantage to using the laptop computers.

One of the respondents seemed perturbed, stated she does not understand the purpose of a computer for interviews. One vouched that the laptop is useful for "compiling data," but felt it is "inappropriate" for management to mandate the use of laptops for RAI assessments. Another added humour to the question, stating that using computers will save paper, and therefore save trees.

The fourth theme is about using a laptop to administer the interRAI assessment, the RN Case Managers altering the environment and adapting their process to have effective interaction with the client. When the conditions are not amenable, the nurse makes the judgment to leave the computer behind. One of the respondents said, "If a

client is cognitively able to answer the questions, has a good clean area for me to sit at, the room is quiet, and there are few distractions, it works well."

If these conditions are not met, the RN Case Manager anticipates that the laptop can affect the assessment process negatively; they then make the judgment to not use the laptop device. The negative effects can mean the client becomes paranoid and suspicious; or the client becomes disengaged and will not provide the information necessary to complete the RAI; or affects the nurses' ability to catch social cues, which are invaluable to the assessment.

Chapter 5: Discussion and Conclusion

The growing importance of e-Health underscores the role of information and communication technology to improve healthcare delivery (WHO, 2016; While and Dewsberry, 2013; Korhonen, 2015). Registered Nurses are at the forefront of this development, as they bring the technology in direct contact with clients in multiple practice settings. Their role is pivotal to the success or failure of technology implementation (Lindberg et al, 2013; McConnell, 1998)

In Alberta Health Services Calgary Zone, RN Case Managers in the Supportive Living team are provided laptop computers to support best practice. This is in keeping with the organization-wide recommendation for remote care workers to use computer devices at the point-of-care to ensure accuracy and reduce the risk for information breach (AHS, 2017).

My research used the qualitative descriptive design with a Constructivist Grounded theory approach to explore the experience of Registered Nurses in computer-mediated interactions. The aim of my study was to describe these nurses' perceptions and their experiences with the use of laptop devices by analyzing their responses to open-ended questions. From my literature review, I found a gap in knowledge on how technology affects nurse-client interaction in supportive living particularly.

My study found that the experience of the RN Case Managers in the front lines is not congruent with the organizational rationale for instituting the use of the laptop for interRAI assessments. According to AHS, the benefits of using the laptop for electronic point-of-care documentation is to improve efficiency, reduce risk for errors, and to

prevent health information breach (AHS, 2017), with the ultimate goal of patient-centered care.

The survey showed that most RN Case Managers do not use their laptop computers to administer the interRAI in the supportive living environment. They cited the factors that affect their decision to use (or not use) the laptop, which are - its effect on the nurse-client relationship, client factors (such as medical and cognitive status, demographics), as well as concerns about efficiency and logistics. Many responses allude to how the laptop diminishes the "connection" between the RN Case Manager and the client and that the presence of the laptop computer inhibits social interaction.

This concern echoes the "cold technology" and "warm care" argument that besiege proponents and critics of technology in nursing (Pols and Moser, 2009). According to the respondents, the laptop takes away their attention from the client, by losing eye contact, or opportunities for "touching," which are hallmarks of the "warm" nursing care and nurses' "true presence" (Bernardo, 1998). With the nurses' attention on the computer monitor, the laptop impacts the relationship because it reduces the verbal and visual interactions between the nurse and the client (Duffy and Kharash, 2010).

When asked as an optional question in my study whether using the laptop affects the patient care outcome, the opinion of 10 out of the 12 respondents is that it has either no effect or negative effect. This provides a hint as to why RN Case Managers feel less compelled to comply with the directive - it does not inspire beneficence and yet requires considerable effort. As was established in my study, integrating the device constitutes a change in the nurses' process and requires the nurse to "maximize" these encounters with intentional verbal or nonverbal cues, as well as deliberate positioning of devices as

strategies (Alliex and Irurita, 2004; Rhodes et al.,2008).

Here, I will use reflexive analysis to apply context to my findings.

One can argue that nurses' perception about clients' resistance of technology in their care may be ill conceived and that clients could be more receptive to the use of the laptop than thought. Vilstrup, et al (2017) found this to be true for the study they conducted in home care in Denmark. Their participants expressed trust in the use of iPads and its ability to optimize their care. The tablet device was regarded as "natural reflection of the societal growth of technology use" and as a "symbol of professionalism" (p. 142). According to the researchers, this reflects a perceptual shift in public understanding of the ability of technology to improve healthcare. The respondents' rationale for not using the laptop to administer the interRAI assessment can be construed as either sound clinical judgment or from preconceived notions/misconceptions about the clients' acceptance of technology.

The importance of technology has been well established, but it can only be as good as the people using and the process supporting its use. Gaudet (2016) articulates it well in his paper - technology should be appropriately interfaced with the existing workflow of nurses to support its adoption. The literature shows that for technology integration to work in health care, it would require allowing the end-user, i.e. nurses, to maintain center-stage and the midpoint of this technology-human dualism (Berg, 1999; McConnell, 1998). The AHS Clinical Documentation Framework itself states that technology facilitates professional decision making rather than dictates care (AHS, 2017).

Two distinct views can be deduced from these. First, since it is the responsibility of the RN Case Manager to be center stage, they need to deal with the challenges as

described and comply with the process as mandated, with no questions asked. McConnell (1998) supports this when he stressed the role of the nurses to meld caring and expertise, a skillset that can be developed by education, clinical practice, research, and administrative considerations. Therefore, it could be left for AHS leadership to ponder whether avenues such as skill building or administrative sanctions can address nurses' compliance.

The second view is to consider RN Case Managers as responsible professionals that should be allowed to assess each client's situation and exercise their clinical judgment whether a laptop device is appropriate to use or not. This view will look to the professional regulating body, such as CARNA, with its implementing regulations related to documentation standards.

Given these two alternatives, one recommendation for change could be for AHS to create a working group from within the Calgary Zone Supportive Living portfolio to re-examine the rationale behind the directive mandating RN Case Managers to use the laptop to administer interRAI assessments at the point of care. The working group may involve RN Case Managers to articulate their experiences and concerns, which can then be validated, and then used to evaluate current practice. The key to maximizing any technology implementation is to ensure the nurses' acceptance and adaptability and any issue must be investigated early to mitigate rejection (Zhang et al, 2010). The findings of the working group can be shared to other zones to find if they are encountering the same issues. They can also be used to inform other technology implementations.

Directions for Future Research. The findings of my study raise the following questions that warrant further inquiry.

- What is the client's perspective on electronic documentation at the point-of-care in Supportive Living environments?
- What is the client's informal caregiver's (i.e. family) perspective on electronic documentation at the point-of-care in Supportive Living environments?
- What do RN Case Managers do to "maximize" their technology-mediated interactions with clients?

References

Adams, T. (2001). The conversational and discursive construction of community psychiatric nursing for chronically confused people and their families. *Nursing Inquiry,* 8(2), 98-107.

Alberta Health Services, n.d. Getting a Case Manager. Retrieved from https://www.albertahealthservices.ca/cc/Page15484.aspx

Alberta Health Services, (2017). *Clinical Documentation Framework.* Alberta: Author.

Alberta Health Services, (2017*). Recommendation Report: Continuing Care Remote Care Worker Technology Support.* Alberta: Author.

Archibald, M., & Barnard, A. (2017). Futurism in nursing: Technology, robotics and the fundamentals of care. *Journal of Clinical Nursing,* doi:10.1111/jocn.14081

Alliex, S., & Irurita, V. (2004). Caring in a technological environment: how is this possible?. Contemporary Nurse : *A Journal For The Australian Nursing Profession, 17(1-2), 32-43*. https://doi.org/10.5172/conu.17.1-2.32

Barnard, A. (2002), Philosophy of technology and nursing. *Nursing Philosophy, 3: 15–26*. doi:10.1046/j.1466-769X.2002.00078.x

Barnard, A., & Sandelowski, M. (2001). Technology and humane nursing care: (Ir)reconcilable or invented difference? *Journal of Advanced Nursing, 34: 367–375.* doi:10.1046/j.1365-2648.2001.01768.x

Berg, M., (1999). Patient care information systems and health care work: a sociotechnical approach, *International Journal of Medical Informatics* 55, 87–101

Berger, R. (2013). Now I see it, now I don't: researcher's position and reflexivity in qualitative research. *Qualitative Research,* 15(2), 219-234. doi: 10.1177/1468794112468475

Bernardo, A. (1998). Technology and true presence in nursing. *Holistic Nursing Practice*, *12(4), 40-49.* doi: 10.1097/00004650-199807000-00007

Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic approaches to a successful literature review*. Los Angeles: Sage.

Bowers, L. (1992). Ethnomethodology II: A study of the community psychiatric nurse in the patient's home... part 2. *International Journal of Nursing Studies,* 29(1), 69-79.

Burkes, M. (1991). Identifying and relating nurses' attitudes toward computer use. *Computers in Nursing,* 9)5), 190-201.

Canadian Nurses Association. (2013). *Optimizing the Role of Nursing in Home Health.* Ottawa, Ontario: Author.

College and Association of Registered Nurses of Alberta (2013). *Documentation Standards for Regulated Members.* Edmonton, Alberta: Author.

Corbin, J. M., & Strauss, A. L. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Los Angeles: SAGE.

De Chesnay, M., & Banner, D. (2015). *Nursing Research Using Grounded Theory : Qualitative Designs and Methods in Nursing*. New York, New York: Springer Publishing Company.

Delaney, C. & Gugerty, B. (2011). Competencies: Nuts in Bolts. In *Nursing informatics: where technology and caring meet* (pp. 81-92). Minneapolis, MN, USA: Springer. doi: 10.1007/978-1-84996-278-0_6

Des Roches, C. M., Miralles, P., Buerhaus, P., Hess, R., & Donelan, K. (2011). Health Information Technology in the Workplace. *JONA: The Journal of Nursing Administration, 41*(9), 357-364. doi:10.1097/nna.0b013e31822a7165

Duffy, W., Kharasch, M., Du, H. (2010) Point of care documentation impact on the nurse-patient interaction. *Nursing Administration Quarterly*. 34(1):E1-E10. doi: 10.1097/NAQ.0b013e3181c95ec4

Ergonomics. (n.d.) In Merriam Webster.com. Retrieved from https://www.merriam-webster.com/dictionary/ergonomics.

Eysenbach G. (2001). What is e-health? *Journal of Medical Internet Research 2001;*3(2):e20. doi: 10.2196/jmir.3.2.e20

Fleischer, S., Berg, A., Zimmermann, M., Wste, K., & Behrens, J. (2009). Nurse-patient interaction and communication: A systematic literature review. *Journal of Public Health (09431853)*, 17(5), 339-353. doi:10.1007/s10389-008-0238-1

Fraser, K. D., Sales, A. E., Baylon, M. B., Schalm, C., & Miklavcic, J. J. (2017). Data for Improvement and Clinical Excellence: a report of an interrupted time series trial of feedback in home care. *Implementation Science,* 121-10. doi:10.1186/s13012-017-0600-

Friesen, S., Brémault-Phillips, S., Rogers, L., & Rudrum, L. (2016). Environmental Design That Supports Healthy Aging: Evaluating a New Supportive Living

Facility. *Journal of Housing for the Elderly, 30(1), 18-34* doi:10.1080/02763893.2015.1129380

Gaudet, C. (2016). Electronic Documentation and Nurse-Patient Interaction. *Advances in Nursing Science*, *39*(1), 3-14.

Glaser, B., Strauss, A., (1967), *The discovery of grounded theory; Strategies for Qualitative Research.* Chicago: Aldine Publishing Company.

Government of Alberta. (2014). *Supportive Living Guide.* Edmonton, Alberta: Alberta Health.

Hawthorne D. & Yurkovich N. (1995) Science, technology, caring and the professions: are they compatible? *Journal of Advanced Nursing*, 21, 1087–1091. doi: 10.1046/j.1365-2648.1995.21061087.x

InterRAI Organization. (n.d.) *Home Care.* Retrieved from: http://www.interrai.org/home-care.html

Jones, A., & Collins, S. (2007). Nursing assessments and other tasks. In S. Collins, N. Britten, J. Ruusuvuori, & A. Thompson (Eds.), *Patient participation in health care consultations: Qualitative perspectives* (pp. 143-163). Maidenhead, UK: Open University Press.

Korhonen, E., Nordman, T., & Eriksson, K. (2015). Technology and its ethics in nursing and caring journals. *Nursing Ethics*, 22(5), 561-576. doi: 10.1177/0969733014549881

Lindberg B, Nilsson C, Zotterman D, Söderberg S, Skär L. (2013). Using information and communication technology in home care for communication between patients, family members, and healthcare professionals: a systematic review. *International Journal of Telemedicine and Applications.* 461829. doi: 10.1155/2013/461829

Mayan, M. (2016). *Essentials of qualitative inquiry.* Walnut Creek: Left Coast Press.

McConnell, E. (1998). The Coalescence of technology and humanism in nursing practice: it just doesn't happen and it doesn't come easily. *Holistic Nursing Practice* 12, 23–30.

Mayor, E., & Bietti, L. (2017). Ethnomethodological studies of nurse-patient and nurse-relative interactions: A scoping review. *International Journal of Nursing Studies,* 70, 46-57. doi:10.1016/j.ijnurstu.2017.01.015

Merriam, S. & Tisdell, E. (2016). *Qualitative Research : A Guide to Design and Implementation.* San Francisco, CA: Jossey-Bass.

Merrigan, G., Johnston, R. T., & Huston, C. L. (2012). *Communication research methods*. Don Mills, Ontario: Oxford University Press.

Mills, J., Bonner, A., & Francis, K. (2006). The development of constructivist grounded theory. *International Journal of Qualitative Methods, 5*(1), 25-35. doi:10.1177/160940690600500103

Moore, J. (2012). A personal insight into researcher positionality. *Nurse Researcher,* 19(4), 11-14. doi: 10.7748/nr2012.07.19.4.11.c9218

O'Keefe-McCarthy, S. (2009). Technologically Mediated Nursing Care: The Impact on Moral Agency. *Nursing Ethics: An International Journal For Health Care Professionals*, *16*(6), 786-796. doi: 10.1177/0969733009343249.

Pols, J., & Moser, I. (2009). Cold technologies versus warm care? on affective and social relations with and through care technologies. *Alter-European Journal of Disability Research, 3*(2), 159-178. doi: 10.1016/j.alter.2009.01.003

Registered Nurses' Association of Ontario. (2015). *Person- and Family-Centred Care.* Toronto, ON: Registered Nurses' Association of Ontario.

Rhodes, P., Small, N., Rowley, E., Langdon, M., Ariss, S., Wright, J., (2008). Electronic medical records in diabetes consultations: participants' gaze as an interactional resource. *Qualitative Health Research.* 18, 1247–1263. doi: 10.1177/1049732308321743

Sandelowski, M. (1999). Troubling distinctions: A semiotics of the nursing/technology relationship. *Nursing Inquiry*, *6*(3), 198-207. doi:10.1046/j.1440-1800.1999.00030.x

Sandelowski, M., Leeman, J., Knafl, K., Crandell, J. (2013). Text-in-context: a method for extracting findings in mixed-methods mixed research synthesis studies. *Journal of Advanced Nursing* 2012; 69(6): 1428-37

Smith, D., Morris, A., Janke, J. (2011). Nursing satisfaction and attitudes with computerized software implementation: a quasi-experimental study, *CIN: Computers, Informatics, Nursing* 29 (4): 245–250.

Stricklin. M., Bierer, S., Struk, C. (2003). Home care nurses' attitudes towards computers: a confirmatory factor analysis of the Stronge and Brodt Instrument. *Computers, Informatics, Nursing* 21(1): 103–111.

Timmons, S. (2003). Nurses resisting information technology. *Nursing Inquiry*. 10(4):257-269. doi: 10.1046/j.1440-1800.2003.00177.x

Vilstrup, D., Madsen, E., Hansen, F., & Wind, G. (2017). Nurses' Use of iPads in Home Care-What Does It Mean to Patients? A Qualitative Study. *Computers, Informatics, Nursing,* 35(3), 140-144

While, A. & Dewsbury, G., (2011). Nursing and information and communication technology (ICT): a discussion of trends and further directions. *International Journal of Nursing Studies*. 48:1302–1310.

World Health Organization. (2016). *Global diffusion of eHealth: making universal health coverage achievable. Report of the third global survey on eHealth.* Geneva: World Health Organization.

Zhang, H., Cocosila, M., & Archer, N. (2010). Factors of adoption of mobile information technology by homecare nurses: A technology acceptance model 2 approach. *Computers, Informatics, Nursing,* 28(1), 49-56. doi:10.1097/NCN.0b013e3181c0474a

Appendix A

Email Transcript

Date

Dear Respondent,

Thank you for agreeing to participate in my study!
The survey questionnaire attached consists of 6 open-ended questions and one optional question. The questions allow free-text and there is no word-count limit to your responses. You are welcome to use an extra sheet of paper or page if necessary. The survey will take an average of 15-20 minutes to complete. You can answer the electronic form using any word processing program (for example MS Word). Alternately, if you require a hard copy, I can mail you a printed version. Please let me know by email or phone number if this is your preference and I will make the necessary arrangements. Once you have completed the questionnaire, you can send the form back to me by email or by post. If you opt to send the form by post, I will provide you with a self-addressed stamped envelope.

I will appreciate having the completed questionnaire within a week of you receiving them, at the latest at midnight of Wednesday, July 18, 2018.
Please let me know if you have any questions related to the contents of the survey.

All the best,

Mia Trillanes, RN GNC(c)
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Appendix B

Information Letter

Study Title:
Computer-Mediated Nurse-Client Interaction in Supportive Living Environments

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Background

The application of Information and Communication Technologies in healthcare is known to make significant improvement in health care. Its use has become so pervasive that it permeates across multiple health practice setting compelling health care professionals to be proficient in its use. This is true for Registered Nurses/Case Managers working in the Alberta Health Services Calgary Zone Supportive Living portfolio and the expectation that they will use a laptop to administer computer-based nursing interRAI assessments with clients.

The focus of my research is to explore how the presence of a computer device (i.e. laptop) affects the nurse-client relationship particularly in the Supportive Living environment. The interaction between the Registered Nurse and the client is an important aspect of the therapeutic relationship. Best practice indicates that for this relationship to be optimized, the client must be properly engaged.

I would like to invite you to be a participant of my study. I want to find your perspective as an RN/Case Manager on whether the presence of a laptop device influences your interaction with clients.

I will use a survey questionnaire method to collect data. The survey questionnaire consists of 6 open-ended questions and one optional question. It will take an average of 15-20 minutes to complete. If you agree to participate, I can send you the questionnaire in electronic form (through email) or if you require a hard copy, I can mail you a printed version. I will appreciate having the completed questionnaire within a week of you receiving them. Once you have completed the questionnaire you can send the form back to me by email or by post. If you opt to send the form by post, I will provide you with a self-addressed stamped envelope.

Your participation in this survey is completely voluntary and all of your responses will be kept confidential. As the researcher, only I will have access to your information. By completing the survey form, you are implying consent to participate. Although participation in my study poses low risk to your person, some of the questions may make you feel uncomfortable. You may skip

any of these questions. Even if you agree to be in the study you can change your mind and can ask to withdraw at any time. Once you have submitted the survey form however, you will not be able to withdraw anymore. The data I collect will be kept in a secure locked cabinet, and electronic data will also be password protected. Within five years, I will destroy the data in a way that ensures it remains confidential.

I hope that the information we get from doing this study will help us better understand how computer-mediated interaction affect the nurse-client relationship and ultimately best nursing practice. The results of my study will be used in support of my capstone project for my Master of Arts in Communication and Technology degree at the University of Alberta. Let me know if you want an executive summary of the study results, and I will send you a copy.

If you have any further questions regarding this study, please do not hesitate to contact me, Mia Trillanes at 587-892-8186 or my email at trillane@ualberta.ca

The plan for this study has been reviewed by a Research Ethics Board at the University of Alberta. If you have questions about your rights or how research should be conducted, you can call (780) 492-2615. This office is independent of the researchers.

Thank you.

Appendix C
The Questionnaire

A. Profile Section. Please check the most appropriate response (or underline).
In the past year, how often did you use your AHS-issued laptop computer to administer RAI assessments on your clients?

- o All the time
- o Almost all the time
- o Some of the time
- o Hardly ever
- o Never

B. Open Ended-Questions.

1. Are there instances when you intentionally do not bring your laptop computer to do a RAI assessment? When?

2. How does the presence of a laptop computer affect **your ability** to engage your client in the RAI assessment process? Please check (or underline) the most appropriate response.
   - o Enhances
   - o Detracts
   - o No effect

   Please elaborate on your answer in item 2.

3. How does the presence of a laptop computer affect **your client's ability** to interact with you? Please check (or underline) the most appropriate response.

   - o Enhances
   - o Detracts
   - o No effect

   Please elaborate on your answer in item 3.

4. How do you integrate the laptop computer in your interaction with your client (i.e. when doing RAI assessments) to optimize the nurse-patient interaction?

5. What advantages do you find when using a laptop computer to administer your RAI assessment on your client?

6. What challenges do you find when using a laptop computer to administer your RAI assessment on your client?

7. (Optional Question)
   Does the presence of a laptop computer in your interaction with your clients affect patient care outcome in a positive or negative way? Please elaborate.

Thank you for your responses.

Do you want a copy of the Executive Summary?

Please underline the most appropriate response:
Yes
No

Appendix D
Transcript of Survey Results

Question A	How often did you use your AHS-issued laptop computer to administer RAI assessments on your clients?
Respondent	**Responses**
R1	Never.
R2	Hardly ever (Once in ~11 years)
R3	Hardly ever
R4	Never
R5	Some of the time
R6	Never
R7	Some of the time
R8	Never
R9	Hardly ever
R10	All the time
R11	Almost all the time
R12	Never

Question 1	Are there instances when you intentionally do not bring your laptop computer to do a RAI assessment? When?
Respondent	**Responses**
R1	Left blank
R2	Left blank
R3	Almost all the time (intentionally not taking laptop)
R4	Currently I work on a dementia unit so I do not interview my clients directly, I speak with family, staff, recreation, and I review charting and flow sheets. However, when I worked in Home Care I did use my lap top when I went to people's homes. In my experience, it took me longer to do and it was unsettling for the elderly clients I was working with. As I would fill in my items on the RAI, they would squirm and seem offended, or they would ramble off on a tangent and it would take a long time to redirect the conversation back to the assessment. I found it much easier to do it on paper (took about half as long), and then a quick enter into the RAI on the laptop once I was out of the residence. I certainly never felt that it sped up my assessment or fostered a seamless conversation and rapport.
R5	On many occasions, I opted to bring just a piece of paper and pen to complete RAI assessments. The reason are that, it is inconvenient for me in those circumstances. I do research on client prior to the RAI assessment (review client's chart, Netcare, electronic chart from the site, medication profile, and RAI tracking document). Then I phone call client's family to obtain information from their perspective. Only information from client's perspective is then left to be collected from client and by clinical observation. I adopted to this practice in Supportive Environment. I often have to interact with clients with dementia; Alzheimer's; or other mental health issues, I find using a computer during the assessment in this population can be challenging. They don't understand the concept of

	electronic records; think that I am a sale person and did not welcome my presence; or they became paranoid with computer. However, I used to do RAI, real time, all the time in home care setting.
R6	I never bring my laptop to the room for a RAI assessment.
R7	Yes, especially when a client lacks capacity to answer the RAI questions. I find it difficult both to engage with the client and a wasted effort disconnecting reconnecting and gathering the information needed. This is done by family and staff interviews and by information obtained on the RAI tracking tool. In this instance it is far more effective to sit at a desk and bring the gathered information to the computer. Often a phone is needed to contact family and not available in a client's room. Juggling a cell phone and the laptop is difficult. As well, a good portion of the RAI's I have been doing are on client's with some degree of dementia or communication problems such as hearing loss. Client's who are cognitively able to answer the questions and understand that technology and the use of computers is not ingrained in society, usually do not have a problem with the impersonal nature of an interview using a computer.
R8	Never bring laptop to do a Rai; many of our clients have some level of dementia. Will get 3 different responses when I interview the client, staff and family members. Will put all this information together and then make a decision of what seems to be the most relevant response to the RAI question.
R9	I only bring my laptop for a RAI when I am mentoring a new staff member and they need to see it done on the laptop because that's how they will be tested. In all other instances I intentionally bring a paper copy and do not bring my laptop to complete my RAIs. I have been told many times by the educators that there will be a time when I will not have an option and will have to do my RAI on the laptop but until then I believe my RAI assessment are more accurate without my laptop. The educators also tell me that once people start using their laptop with smart forms that they like it but I have tried and I still found it is not as accurate and I end up needing to use so much paper to write everything down that I pretty much write out the RAI when I could have just used a RAI paper form and saved some time from writing it all out.
R10	Yes, I do this when a client may indicate they aren't happy with the laptop being used or if I have a straightforward RAI and have just a few questions I need to ask the resident.
R11	If a client is very demented and can't answer most questions themselves I may write down the information I need and not bother taking my computer.
R12	I do not bring my laptop for RAIs at all.

Question 2	How does the presence of a laptop computer affect **your ability** to engage your client in the RAI assessment process? Please check (or underline) the most appropriate response.
Respondent	**Responses**
R1	Detracts. Makes interview awkward; typing and writing while trying to engage the client
R2	Detracts.

	I find it difficult to work with the computer on my lap. I end up looking only at the computer, rather than the client. Because my hands are busy, I am unable to use touch - such as touch their arm for reassurance.
R3	Detracts I am slow typing so when I bring it, I spend more time looking at the computer than engaging with the client.
R4	Detracts. As explained above.
R5	No effect. I find that doing RAI in real time, is my preferred option. When the network and computer cooperate, it actually a time saver. However, when it freezes, it really annoyed me.
R6	Detracts. The presence of the laptop in the room would create an impersonal approach with the client and myself. During the interview, there would be less eye contact due to the writer looking at the laptop for the next question. The client's rooms are small and several rooms do not have a table to set the laptop on therefore the ability to engage with the client would be a challenge. Majority of the time the writer would be standing in the room holding onto the laptop. On several occasions during an assessment I will walk around their room asking questions about the family pictures on the walls and at the same time assessing their cognitive abilities. The laptop would hinder in developing the nurse/patient relationship.
R7	Detracts. As you go through the RAI questions, most often you have to bounce back and forth between the questions or start at a mid-point in the RAI. This is often distracting.
R8	Detracts. May have issues with computer that need resolved before I can start interview; Seniors may not understand the role of a computer in an interview and may be unsettled by it; Seems like I am spending more time working with the computer than I am focused on the client; Less eye contact; Sometimes there isn't a place to put the computer and you end up performing a balancing act; Sometimes there are impediments such a s deafness, blindness, etc. requiring increased effort to complete the interview and the computer is just another piece of equipment which gets in the way of interviewing.
R9	Detracts. When I complete the RAI with paper I am able to easily skip through to sections that the client may divert off to in the conversation and it becomes more of an enjoyable conversation instead of a strict question and answer when you are trying to follow the RAI on the lap top and have to continually redirect client back to questions regarding the area you are in instead of being able to jump around when the conversation steers in a different direction you can ask questions about that area while the client is on that topic instead of redirecting their train of thought. When I try to do a RAI with a laptop I have to have the lap top on my lap and I have to focus so much on where I am and trying to put in coding that I am not able to fully concentrate on the client and may misinterpret or miss social cues.
R10	Left blank.

	Sometimes it enhances, is., if I don't the resident well. It detracts when it's not working properly such as poor internet connection. It often requires reboot if I change from cable connection to hotspot or aircard which has to be done if I take my laptop from the office to the client's suite.
R11	No effect. I don't really find that the computer affects my ability to engage with my clients. It can be a bit cumbersome to have the computer on my lap when the client doesn't have a table for me to set it on.
R12	Detracts. In the past I tried to use my laptop with clients, it is cumbersome to set up on a table in their rooms. Barriers include, no table in room or table is full of client's belongings. Electric outlets are limited. The laptop is a focus of attention, creates distance and difficult to engage with client.

Question 3	How does the presence of a laptop computer affect **your client's ability** to interact with you? Please check (or underline) the most appropriate response.
Respondent	Responses
R1	Detracts. Laptop puts a physical barrier between me and client
R2	Detracts (I believe). I cannot be sure of how the client feels - but think that they likely feel that my nose is in the computer, and they cannot get my attention or that I am not paying attention to them (much as many people feel in the GP's office.
R3	Detracts. Elderly people not familiar with computers can be uncomfortable as they are more used to face-to-face conversations. They can find it distracting to sit with long pauses while I enter information. Also, some with dementia can be suspicious or paranoid about what you are doing.
R4	Detracts. It greatly decreases my ability to make effective eye contact and stay in the conversation fully; It makes the patient visibly uncomfortable, the older they are.
R5	No effect. A handful of client appreciate the use of technology, while some had a curiosity about the presence of a computer during the assessment.
R6	Detracts. The presence of the laptop would be a distraction to the client because they would be focusing on the computer and what the writer was doing or saying about them instead of feeling comfortable in their home and having a conversation. Some clients that have dementia would not understand the purpose of the laptop and may become paranoid. This paranoia could cause the client not to interact with the writer at all.
R7	Detracts. Most often the constant looking up and down at the computer screen makes it difficult for the client to keep on track with the questioning and digression

	occurs.
R8	Detracts. Don't understand the purpose of a computer to interview. May make the interview more formal for the client rather than the casual conversation that can take place without it. May be intimidating.
R9	Detracts. When the laptop takes so much concentration and fiddling to go from section to section and look at the coding and try to code as I am trying to hold a conversation it takes away from the social experience that these seniors want and need to get out of every interaction. When I am looking to my laptop instead of just being able to scribble down quick notes I am not able to give as much eye contact and other physical cues that I am trying to pay attention to what they are saying and to pick up on their social cues.
R10	Left blank. I get some skeptical facial expressions, or I am asked why I am using that.
R11	No effect.
R12	Detracts. Client is curious or distracted by the computer. Many feel intimidated and think their information is shared with others. Even holding the paper RAI causes noticeable anxiety, annoyance and suspicion.

Question 4	How do you integrate the laptop computer in your interaction with your client (i.e. when doing RAI assessments) to optimize the nurse-patient interaction?
Respondent	Responses
R1	I use paper RAI during interview. I input RAI into computer in my office
R2	I don't do it.
R3	For clients who understand computers, I have explained to them that I am doing an assessment and the information I enter will help develop a careplan. I tell them we will review the results at the end and decide on actions together.
R4	In home care we would flip it around and use the pen to touch screen the answers which helped a bit but it still wasn't as "personal" of an assessment as it could be without it. Patients who are elderly would question it and then reluctantly accept it. And as I said earlier, it slowed me down as I had to spend more time trying to re-engage and create that open interaction.
R5	I educate client/family about purposes of a rai assessment and how the data are used by health care services.
R6	I have never brought the laptop into a client's room because most of my client's attention spans are low and I would not be able to get all the information anyway in the short time frame. Some of the information is provided by staff and family as the client is not always credible. If I brought the laptop in the room and I was able to complete the assessment in the room, I would show them the triggered caps to develop the care plan. Most clients of mine would not understand this therefore it would a waste of time.
R7	I explain that this is the method of choice for my employer. This is usually acceptable. I have had no objections once this is explained
R8	Do not use.

R9	I optimize by not using my laptop when at all possible. I have much more meaningful interactions without it.
R10	I try to look at the client more than the laptop and place it on a hard surface off to the side.
R11	I don't know that there is a way to integrate it in to the interaction. I just usually ask at the beginning if they mind if I use it.
R12	I have stopped trying three years ago. Client interaction, especially seniors, I prefer face to face and carry a normal conversation integrating questions from the RAI. This approach produces honest and concise answers for better input for the RAI. The computer creates a barrier for a casual, positive interaction with the client. I use the paper copy for reference as needed.

Question 6	What advantages do you find when using a laptop computer to administer your RAI assessment on your client?
Respondent	Responses
R1	None
R2	I do not find any advantage. I find it cumbersome; It would save paper and thus save trees.
R3	The outcomes can be reviewed and discussed right away versus going back for a second visit to review the outcome.
R4	I find it beneficial as far as entering it and as a useful way to compile data but I do really feel that it is inappropriate for management to mandate us to use it in our face to face interactions. All of the Case Managers I know feel the same way about it as I do. Some of the younger ones don't feel it's an issue but I think that is a bit of a blind spot for people who are very dependant on computers and technology, so they choose not to acknowledge that it can create a barrier in elderly populations, as well as slow down the assessment in general if you are trying to be therapeutic in your interaction.
R5	Time saver; no need to re-enter in the computer after the assessment.
R6	The only advantage I could think about with using the computer is some of the questions could be answered in the room possibly speeding up the assessment with a cognitively intact client.
R7	If a client is cognitively able to answer the questions, has a good clean area for me to sit at, the room is quiet, and there are few distractions, it works well.
R8	No advantage
R9	None.
R10	It sometimes takes less doc time after the interview if I have it with me during the interview, but it really varies depending on the situation/circumstances.
R11	I don't have to enter the information again after doing the RAI
R12	When using the laptop it takes less time and less interaction.

Question 7	What challenges do you find when using a laptop computer to administer your RAI assessment on your client?
Respondent	Responses
R1	Computer *arrow down figure* (*decreases) speed of interview; Difficult to

	find proper ergonomics to use laptop in client's suite.
R2	Balancing it on my lap; finding a space in the client's room to place the laptop; difficult to be close to the client
R3	Our clients often don't have furniture for guests to sit on, or a table to set the laptop on. If there is no extra chair, the laptop must go on a counter and my back would be to them. If there is a chair but no table, I would have to balance the laptop on my lap. My workstation has been set up ergonomically as I have had problems with numbness in my hands. Using a laptop in the client's room would not be ergonomic.
R4	I have to connect first, which is often distracting and time consuming, and sometimes impossible. I have declined to use Smart Forms to date, as I find it to be yet another step in the system and it created issues often in Home Care for other coordinators who used it. Once I would get it going, then I would have to get the conversation restarted and it became a much more formal, point by point type of interaction than a therapeutic conversation. Constantly trying to keep your screen up and finding your spot, and getting it to save, and on and on it went. Then getting people back on track at times, sometimes depending on the client, I could be there for 2 hours. Whereas 45 min to an hour with a paper copy and then 20 minutes to enter it in the office. It was always faster to use paper.
R5	Removing attached cords from office to client's suite: computer lock, Ethernet cord, power cord, monitor cords x 2, and head phone cord (usb head phone to make and receive calls). Unreliable internet coverage (no wifi at the site, has to use hotspot from a smartphone, which also has poor coverage due to the building being in a new suburb community. This is the main reason I opt to leave computer in the office.
R6	The challenges would be where to put the computer if there is no table.Space is a problem in some rooms and appropriate seating available for the writer.
R7	Distractions, hearing difficulty in an uncontrolled environment, collecting of information. Time consumption (disconnecting, reconnecting, downloading the app etc.; this takes a lot of time.
R8	Disadvantage of having to redo the Rai, taking into account multiple responses from multiple people. Can put several responses on a piece of paper and make a decision of what the appropriate response should be. No room to document relevant comments.
R9	When I try to do a RAI with a laptop I have to have the lap top on my lap and in these client rooms with barely a place to sit there is not room for me to also be able to write down facts and when I have conflicting coding I can't just write down what the client says to compare to the staff and family answers so I would have to either put the code in the client says which may be wrong and chance forgetting to change it later or not put it in and try to remember all the answers the client says when I get back to the office and write it down then to compare to staff and family. Either way there is greater chance of error of my coding with a laptop then being able to write things down with a paper RAI in front of me guiding my questions and being able to just write down notes that the client says and then go back to my office and work on the coding between the client, staff and family and ensure that I am coding it correctly instead of hastily trying to code while also trying to concentrate on a conversation.
R10	Please see #2

R11	As above, the only challenge is when the client doesn't have appropriate furniture to set the laptop on.
R12	I find it is a barrier, just like bringing in another person to the visit. The conversation usually is distracted and difficult to refocus on the task . Always a concern where to sit with the computer. I do not want the laptop on my lap. I need a steady surface.

Question 8	(Optional Question). Does the presence of a laptop computer in your interaction with your clients affect patient care outcome in a positive or negative way? Please elaborate.
Respondent	**Responses**
R1	Seniors have commented about dislike of computer (iPad, laptop) when talking to health professional.
R2	I feel in a negative way - as noted previously, it may make the client feel that I am more interested in the computer than on them. This generation of senior is not used to the technology used today - they may not see the value.
R3	It could impact in a negative way if the client doesn't understand and becomes agitated. If they understand and don't have a problem with the technology, I don't think it has any effect on patient care outcome.
R4	I personally feel it is big barrier and it slows me down. It affects my relationship and my ability to feel I have interacted effectively with my client. However, I don't feel that it affects my patient care in any way. I always found other opportunities to engage and ensure my care plan was up to date and effective for my client on a regular surveillance visit etc. No effect.
R5	No difference in population that has adequate cognitive ability. However, in dementia, Alzheimer's, and mental health population, I find that computer distracts them and sometime, to the point they don't welcome my presence.
R6	In my opinion the presence of the laptop would be a negative outcome in patient care due to the age of the clients not growing up with computers and the impersonal connection. The clients need touch, conversation and engagement with people not a computer.
R7	I do not believe it has any effect on patient care what so ever. I believe it is an ineffective way of completing the RAI in our demographic.
R8	Ultimately, use of the laptop would not influence client care.
R9	It can impact clients in a negative way if my coding is not correct from greater potential errors pointed out in question 6 happening and if it is being used for alternate level of care it can affect where a client will end up.
R10	It seems to be the way things are going to be, I felt much more efficient using pen and paper.
R11	Left blank.
R12	The presence of the computer affects patient care negatively. I find the RAI assessment answers are not thought through as well as without the computer. The client tends to under report their needs or concerns. Some have asked if they will be questioned regarding their health care needs by another company. The answers then may not be accurate to what is really happening. This will affect the outcome of the RAI assessment. Client CAPs may be under reported.