

Finding Common Ground:
The Road to Electronic Interprofessional Documentation

by

Kristie McDonald
BScN, University of Victoria, 1998

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of the Requirements for the Degree of

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Abstract

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This thesis portrays a research study undertaken to explore the unknown concept of electronic interprofessional documentation. Academic literature largely centers on multidisciplinary electronic documentation yet clinicians provide care using an integrated interprofessional model. Current design of electronic health records (EHRs) continue to propagate a deluge of data resulting from disparate siloed documentation. End users report challenges with finding data. Additionally, care planning and decision making are delayed. To bridge the gap between electronic design and interprofessional delivery of care, more understanding of shared documentation is required. The provenance of the design of this study is based on the concept of common ground and the framework for complex diverse data. Common ground is a shared communication space within a team with a shared purpose (Cioffi, Wilkes, Cummings, Warne, & Harrison, 2010). The framework for complex diverse data posits that data must be linked to other interconnected data; linked data enables connection of diverse pieces and insight-sharing within a team. A descriptive qualitative study was designed to answer the research question: *What are the common data elements between disciplines?* A case scenario of a patient with a fractured hip was created; participants generated clinical notes based on the video and patient record. The clinical notes were coded and results indicated numerous diverse common data elements. These were analyzed and major findings such as categories appropriate for use by all disciplines on admission and design implications for care planning throughout an acute care stay were identified. Further, as disciplines and care team members do have different documentation patterns, it is suggested attendance to differences in the entry of data yet maintaining a common ground in the display of patient information is vital. Finally suggestions such as duplicate checking for documentation through a common care plan that tracks assessments and completed

interventions alongside planned interventions are made. Creation of a standardized interprofessional terminology is key in building the road leading to interprofessional electronic documentation.

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Dedication

I dedicate this thesis to my nieces Kamila, Abby, Christina, and Kaity. I hope you grow in the knowledge that you are important in this world; work hard, play hard, and be kind to all. Do your homework, listen to your parents, and eat your fruit and veggies. We have many more magic mystery tours coming up now that auntie has finished her homework so strap on your running shoes and play clothes! Let's go exploring.

Chapter 1

Introduction

Information and communication technology (ICT) has changed the way Canadians share information, study, interact, and conduct business (Canada Nurses Association, 2006). Indeed, digital information is used to manage finances, pay bills, customize musical playlists, and book flights; it has become a way of life (Ball & Gold, 2006). Aligning with everyday life, there is a major move to integrate ICT into healthcare (Finkelman, 2013). Subsequently, ICT tools, such as the electronic health record (EHR), have been created. An EHR is an electronic longitudinal patient record of health information created through encounters in a care delivery setting (HIMSS, 2014). The EHR enables healthcare professionals to document and access patient information, communicate, and make decisions (Hripcsak, Vawdrey, Fred, & Bostwick; 2010). The benefits of an EHR are tough to argue. It is a secure patient-centered record, available to all appropriate care providers, comprised of information captured throughout the spectrum of care (Noah, 2011). Indeed, at the provincial level information management and technology is a key priority (British Columbia Ministry of Health, 2014a). However, the design of an electronic health record is a challenge as it requires alignment of complex clinical concepts. One such concept, interprofessional clinical documentation, has not been widely considered in EHR design. This is evidenced by the lack of academic literature on the topic ‘interprofessional electronic documentation’. This significant gap in knowledge warrants investigation through research (Sultz & Young, 2013). A background discussion sets the stage for why interprofessional electronic documentation is a topic worthy of further work.

Background

The concept of interprofessional practice has been widely supported for many years (Ash & Miller, 2013; Bainbridge, Nasmith, Orchard, & Wood, 2010; Burzotta & Noble, 2011; College of Health Disciplines, 2008; McLaney, Strathern, Johnson, & Allen-Ackley, 2010; Orchard, Curran, & Kabene, 2005). Defined as active involvement of different professionals learning with, from, and about each other, interprofessional practice involves cooperation, rather than competition, to gain mutual respect and shared knowledge/decision making (The McGill Educational Initiative on Interprofessional Collaboration, 2014). Team members exemplify interpersonal and communication skills, provide patient-centered and family-focused care, and practice collaboratively (College of Health Disciplines, 2008). Additionally, partnered decision-making, acknowledging clear roles and responsibilities, skilled team functioning, and continuous quality improvement all improve the delivery of care.

Interprofessional practice has proven to reduce error rates, improve health and quality of life, and increase patient satisfaction (Ash & Miller, 2013). Canadian governing healthcare bodies at both a national and provincial level identify interprofessional care as a strategic priority (Health Canada, 2012; British Columbia Ministry of Health, 2014b). Indeed, national groups such as the Canadian Interprofessional Health Collaborative (CIHC) have been created to build the evidence base, result communication, and sustainability of interprofessional collaborative practice (Health Canada, 2012). At an international level, bodies such as the British Department of Health who are committed to interprofessional documentation through a single assessment process, prioritize the negation of duplicate documentation (Caldwell & Atwell, 2003). Supported from governing leadership, many teams function from an interprofessional model. It

is important to understand how processes, such as interprofessional clinical documentation, can be supported in an electronic environment.

Since the period of Florence Nightingale, documentation of patient care has become a foundation of professional practice (Chelagat et al., 2013). Documentation reflects professional processes, supports teamwork, and is a source for quality improvement and staff performance data (Finkelman, 2013). Clinicians have a responsibility to document care planning, care provided, and patient outcomes (Finkelman, 2013). Essential to governing bodies, documentation within the patient record protects patients, staff, and organisations from risk of physical and legal harm (Blair & Smith, 2012). Most importantly, clinical documentation defines the patient; it is the embodiment of the patient story (Hripcsak, Vawdrey, Fred, & Bostwick, 2010). Void of the patient story, the EHR consists solely of demographics, diagnostic results, and scheduled appointments; it would be of little benefit to interprofessional teams, governing bodies, and, ultimately, to patients. Knowing the patient story guides clinical decision making thus enabling patient centered care (Chunchu, Mauksch, Ross, & Pauwels, 2012). As patient centered care requires effective and efficient sharing of patient information, clinical documentation is the ‘vehicle’ to share knowledge (Mamykina, Vawdry, Stetson, Zheng, & Hripcsak, 2012). Sharing and seeking knowledge in order to deliver holistic comprehensive care is a key focus of interprofessional teams (Burzotta & Noble, 2011).

Medical record-keeping is first noted in ancient Greek medical case histories. Evolution of medical records is founded in collections of diet and recipe advice, lessons learned from autopsies and successful cures; they contained patient name, date, complaint, histories, diagnoses, therapy and payment (Kassell et al., 2015). They are all designed to collect information. Similarly, rooted in the work of Nightingale, clinical documentation remains core

to interprofessional practice for the nursing and allied health professions. In the realm of electronic clinical documentation, there is the ability to support interprofessional practice through a design that is reflective of professional work, care planning, legalities, and the patient story. Unfortunately, designing an EHR that supports interprofessional documentation must attend to multiple components within a complex healthcare system.

All clinical processes occur within the context of a healthcare system comprised of interactive sociotechnical components (Sittig & Singh, 2010). For example, clinical context interconnects with hard/software infrastructure, human-computer interfaces, people, workflow/communication, internal culture/policies, external governance, and system evaluation (Sittig & Singh, 2010). During EHR design, if portions of these components are left unattended, clinical documentation is negatively affected. This leads to poor adoption, increased error rates, and workflow disruptions (Ammenwerth et al., 2002; Ash, Berg, & Coiera, 2004; & Borycki, 2010). Indeed, a poorly designed ICT, that is not holistic in nature, places patients at risk, negatively affects the healthcare system and, consequently, compromises the success of an ICT initiative (Meeks, Takian, Sittig, Singh, & Barber, 2014). In light of this, design of electronic interprofessional documentation must account for all sociotechnical components. A look into current knowledge reported in the literature about electronic interprofessional documentation is the first step in appreciating other sociotechnical components.

Using the boolean search term “electronic interprofessional documentation” in both *Medline* and *CINHAL* databases, resulted in only one article. The article was the outcome of a systematic review of 26 articles on care pathways (Deneckere et al., 2012). Researchers concluded a positive, but cautious, relationship with care pathways and interprofessional practice. Although this article shed some light on one possible electronic documentation

component, care pathways, there is a disturbing lack of literature supporting *interprofessional* documentation. Interprofessional care and clinical documentation are foundational processes within a healthcare system, yet the concept of ‘interprofessional documentation’ remains virtually non-existent. This speaks to a major knowledge gap in the field of health informatics. Arguably, this gap is reflective of significant flaws in current EHR design. Without knowing, or understanding a phenomenon such as interprofessional electronic documentation, current designs do not support clinical practices. This is a foundational and key design flaw in records that are currently designed with a multidisciplinary care model and may be contributing to poor adoption often expressed in academic literature pertaining to electronic documentation. As much has been written about electronic multidisciplinary documentation, a deeper look into the phenomenon of design components of electronic interprofessional documentation may help illuminate current knowledge influencing EHR design.

Multidisciplinary care fosters collaborative, but largely independent work. Although patient needs are often discussed, multidisciplinary team members address a particular portion of patient care (Ash & Miller, 2013). They often believe they are the most qualified to manage patient care and work in competition with others (Ash & Miller, 2013). They use different language sets, duplicate service, foster distrust and disrespect, and maintain dogmatic professional boundaries (Orchard, Curran, & Kabene, 2005). They ‘guard their own patch’ (Sheenan, Robertson, & Ormond, 2007). As a direct result, patients are often asked the same questions on multiple occasions. Subsequently, electronic multidisciplinary documentation cultivates redundant information (Caldwell & Atwal, 2003). Redundant information documented in several sections of the patient record, buries unique, and possibly vital, data. Electronic

documentation designed to meet the needs of a multidisciplinary team fosters siloed practice, communication, and, ultimately impacts decision making (Caldwell & Atwal, 2003).

As the needs of a patient are beyond the expertise of any one discipline, removing barriers such as organizational structure, power imbalances, and role socialization, will foster a true appreciation for the overlap, complementary, and unique skillsets exemplified by team member (Orchard, Curran, & Kabene, 2005). Unfortunately, as these barriers are very challenging to overcome, multidisciplinary team work remains the norm for many work environments. As a result, the abundance of literature on multidisciplinary electronic documentation is the current unsettling reality in academic literature informing EHR design. Unfortunately, it may have contributed to another disturbing phenomenon: the data deluge.

‘Drowning in data’ is a term coined by a group of researchers who argue that a deluge of raw data and lists of isolated facts overwhelms clinicians (Leonardo, Resick, Bingman, & Strotmeyer, 2004). Poorly designed EHRs foster a rapid increase in volumes of data; this causes users to search and filter through a disparate amount of information (Unerti et al., 2009). This information is often redundant and may be a direct result of siloed multidisciplinary processes. Steinberger et al., (2009) found information mismanagement often affect physician cross-coverage; abnormal lab results are buried among normal ones. Others identified that narrative notes do not meet the needs of those reviewing and are largely unnecessary (Braaf et al., 2011). Further, narrative notes adversely affect other team members’ abilities to make timely and effective decisions; vital information is lost in routine patient care documentation (Tornvall et al., 2008). Multidisciplinary documentation provides minimal context, is a burden to sift through, leads to information overload, and adversely affects decision making and patient outcomes (Collins & Vawdrey, 2012; Steinberger, Douglas, & Kirschbaum, 2009). There is a

high risk that continuing to disregard an interprofessional design, will propagate ineffective and harmful documentation processes. Identifying data obtained and used by each team member, including allied health (AH) professionals, is the first step in supporting interprofessional practice. Disturbingly, although AH members contribute a significant portion of patient information, they are poorly represented in academic literature pertaining to multidisciplinary documentation. AH team members such as physiotherapists, occupational therapists, social workers, dietitians, pharmacists and respiratory therapists, are integral to patient care. Despite this, they are not well represented in current research. A search in *CINAHL* and *Medline* for all disciplines was conducted. Each discipline designation was combined with the search terms “electronic health record” and “multidisciplinary documentation”. The majority of the research focuses on physician (N=177) and nursing (N=184) processes and not those of AH (Appendix A). All AH disciplines combined represent only 21% of the studies. These search results represent a disturbing gap in the research AH partners are integral to the interprofessional team. Their documentation practices are to be considered when exploring interprofessional electronic documentation as information sharing is fundamental (Burzotta & Noble, 2011). In the rush to create the EHR, it would seem that the contributions of AH team members are widely ignored.

It has been established that interprofessional practice and electronic clinical documentation are widely accepted. Unfortunately, multiple challenges inhibit the integration of interprofessional electronic documentation into EHR design. Complex interconnected sociotechnical components, the constant threat of a data deluge, and silent allied health partners, inspire deeper exploration into this phenomenon. A key to uncovering the basic components of electronic interprofessional documentation begins with an understanding of common ground.

Discussed extensively by Coiera (2000), common ground is a communication space between two communicating agents; it is a major center for information flow. Teams with a shared purpose (Cioffi et al., 2010) and a shared system can coordinate activities that are conducted over and through a common information space (Tornvall, Wilhemsson, Halså, & Vard, 2008). Finding common ground involves physical proximity, the ability to interpret the environment, familiarity of motives, and consequences of others' work (Reddy, Dourish, & Pratt, 2001). Common ground facilitates effective communication where interactivity and time pressure is high (Collins & Vawdrey, 2012). Teams with common ground are more likely to teach and learn from each other and develop trusting relationships (Kuziemsky et al., 2009). Closely aligned, if not completely overlapping with, interprofessional practice, the theory of common ground is the major influencer for the burgeoning topic of interest: aligning interprofessional practice with electronic documentation. While common ground theory supports a high level interprofessional infrastructure, discrete patient data shared between and among multiple disciplines is foundational to illuminate some details that can establish an interprofessional design.

Based on the concept of a shared language, interprofessional discrete data entry embodies a core set of patient-centered competencies (Finkelman, 2011). The use of patient data within

and among disciplines allows for cooperative care (Hayrinen & Saranto, 2010). Further, Fitzpatrick (2004) argues that a microcosm of common information in a patient chart serves as a focal point for many interdependencies of an interprofessional team. Understanding more about the microcosm of common information will lead to improved design decisions such as decreased redundancy and an emphasis of vital data; this will support improved patient care. Thus, understanding commonly shared discrete patient information will provide the necessary details.

Unfortunately, the greatest challenge, although it highlights a major knowledge gap, is the lack of academic literature on electronic *interprofessional* documentation, let alone shared discrete patient information. However, a closer look at what is known about the phenomenon of electronic *multidisciplinary* documentation may provide some insight into its interprofessional counterpart. Further, it may help to illuminate the many sociotechnical influencers on current state design. The purpose of the forthcoming literature review is to understand current knowledge of electronic multidisciplinary documentation. Once current knowledge is established, this will help inform the research question: *What are the common data elements between disciplines?* This knowledge will influence EHR design that supports interprofessional practice. Accordingly, the road to interprofessional electronic documentation, using a descriptive design, begins with a literature review of electronic multidisciplinary documentation.

Chapter 2

A Synopsis of the Literature

The purpose of a literature review is to describe, summarize, evaluate, and clarify current knowledge (Boote & Beile, 2005). Additionally, a literature review prompts researchers to identify and articulate a relationship between what is known and the phenomenon of interest (Boote & Beile, 2005). Knowledge leads to wisdom, which is to know when and how to apply knowledge to complex problems (Finkelman, 2014). Wisdom is what is required for appropriate EHR design decisions. A literature review of electronic multidisciplinary documentation conducted from August-September 2013, illuminates multiple concepts, sub-themes, themes, and current gaps. The intent is to answer the question: *What are the common data elements between disciplines?*

Data Sources

A search was carried out in the *CINAHL* and *Medline* databases. Using a Boolean search that consisted of the terms: ("multidisciplinary care" or "interdisciplinary care" or "interprofessional care") And "electronic documentation" And "electronic health record" yielded 2 results. The search was broadened by using the terms: 'Multidisciplinary documentation and electronic health record' yielding 213 results. The inclusion criteria included the following: (1) articles with available abstracts and references; (2) articles from scholarly publications that were peer reviewed; and were (3) between the years 2000-2013. Although, the inclusion criteria allowed for both a manageable and meaningful critique, the exclusion of some publications may result in only a partial reflection of current academic literature in the forthcoming synthesis. Article titles and abstracts were reviewed. A total of 16 articles were found irrelevant, as, upon further review, they did not focus on the aforementioned topic of interest. A manual search from

the reviewer's personal collection was conducted, yielding 3 additional articles. While conducting the review of the articles, a few more were selected from reference lists. In total, 73 articles were included for further analysis.

Literature Review Methods

The primary investigator (PI) undertook content analysis after initially appraising the articles for relevance. Each article was read, summarized, and categorized as either primary, secondary, conceptual, or anecdotal sources. Articles that were included comprised of primary, secondary, anecdotal, or clinical information related to multidisciplinary electronic documentation. Once an impression of the information was obtained, recurrent concepts and phrases were noted and recorded. Patterns among the data and recurring categories were identified and tracked resulting in major themes and subthemes. An overview of the articles will be presented, followed by a discussion of the themes, subthemes, current gaps in research, and next steps.

Literature Review Results

Review of source types and methodology. Using a narrative literature review approach, the reviewer critiqued, summarized, and drew conclusions about the body of literature (Cronin, Ryan, & Coughlan, 2007). Classifying and grouping by article types offers a high level overview of types of sources (Table 1). The majority of sources included were anecdotal (N=20). Primary sources were the next highest number of source types (N=19) and included both quantitative (N=10) and qualitative approaches (N=9). As the quantitative studies all utilized a nonexperimental design their level of evidence is considered moderately strong at level IV. Of the qualitative studies, evidence level VI, most were ethnographic (N=5), a few were

case studies (N=3) and one utilized grounded theory. The secondary sources consisted of systematic (N=3) and literature reviews (N=2).

Table 1

Summary of Source Types, Approaches, and Electronic vs Paper Processes

Source Type	Number (%)	Electronic	Paper	Electronic & Paper	Unknown
Primary Quantitative approach	19 (33%)	13	5	1	
Qualitative approach	9				
Secondary	5 (9%)	1		1	3
Conceptual/theoretical	13(23%)	12			1
Anecdotal/opinion/ clinical	20 (35%)	15	5		
Total included	57	41	10	2	4
Percentage		72%	18%	3%	7%

Literature Review Discussion

Source types and methodology. Of the primary sources, true experimental designs were not found. It is with some concern that many primary studies were found to have several limitations. This reduces generalizability of findings and limits external validity to other populations and environmental conditions (LoBiondo-Wood & Singh, 2013). The secondary sources ranked minimally stronger at an evidence level of V. Although some of the conceptual/theoretical sources were grounded in some data, neither they nor those in the anecdotal category offered much scientific evidence. While some believe opinions, ranked level VII, are the lowest level of evidence (LoBiondo-Wood, Haber, & Cameron, 2013), others believe opinion leaders are trusted experts that can evaluate new information in the context of group norms (Titler, Adams, & Cameron, 2013). Although the strongest level of evidence of the studies appraised was IV and external validity is limited, the reviewer maintains that both

nonexperimental and qualitative research do support a scientific nursing body of knowledge. Indeed, various methods of research are based on alternative paradigms and are essential to develop a robust approach to evidence-informed nursing practice (Barroso & Cameron, 2013). Despite their limitations, many of the studies provide deeper insight about multidisciplinary care and electronic documentation. They remained integral to this knowledge synthesis activity. Additionally, the analysis also emphasized that, although most studies examined electronic documentation (N=41), very few actually explored electronic multidisciplinary documentation. As understanding current knowledge can help identify gaps and inform future research, a discussion of themes follows.

Themes from Literature Review

Multidisciplinary teams are integral to patient care. The concept of multidisciplinary teams was discussed in many articles as the impetus for their respective studies (Allen & Rixson, 2008; Allen, Gillen, & Rixson, 2009; Cioffi et al., 2010; Demiris, Washington, Oliver, & Wittenberg-Lyles, 2008; Deneckere et al., 2012; Kuziemy et al., 2009; Stevenson, Gunilla, Petersson, & Johansson, 2010; Vawdry et al., 2011). Frameworks for shared multidisciplinary competencies outline the skills and knowledge clinicians require in order providing patients with optimal, integrated care (Canadian Nurses Association, 2011; College of Health Disciplines, 2008). Multidisciplinary care involves all members of the healthcare team working together collaboratively; it is considered essential to safe care and improving patient outcomes (Rowlands & Callen, 2012). Collaborative and cooperative team work is considered fundamental to the provision of safe care and improving patient outcomes (Ash & Miller, 2013; Rowlands, & Callen, 2012). A RAND report found empirical evidence that supported a link between teamwork and patient outcomes (Sorbero, Farley, Mattke, & Lovejoy, 2008). As care is often

complex, not one team member can do it alone (Ash & Miller, 2013). Much is written about the theme of multidisciplinary care.

As previously established, specifically in regards to electronic multidisciplinary documentation, academic literature about multidisciplinary care is abundant. While there are those who are proponents of this form of integrated care, there are many others who support an interprofessional model (Ash & Miller, 2013; Bainbridge, Nasmith, Orchard, & Wood, 2010; Burzotta & Noble, 2011; College of Health Disciplines, 2008; McLaney, Strathern, Johnson, & Allen-Ackley; 2010; Orchard, Curran, & Kabene, 2005). It is unfortunate that interprofessional electronic documentation is not represented in academic literature. This may be a result of 1) a lack of awareness of this phenomenon in the informatics community; 2) barriers such as lack of interprofessional infrastructure and unclear processes; 3) a resistance by some disciplines to lose their unique identities through the blurring of roles and, therefore, leading to; 4) a lack of interprofessional practice in communities designing an EHR. Regardless, as this initial theme was recurring throughout the literature, it strongly aligns with interprofessional practice in that teamwork is required for integrated patient care. Similarly, patient centered care is another theme identified in the literature.

Patient needs are at the center of multidisciplinary care, although challenges are evident. The patient is at the center of coordinated care (Reddy, Dourish, & Pratt, 2001). Stevenson et al. (2010) believe that teams are required to look at all variables that paint the whole picture of a patient. As teams are to be patient-centered, not disease centered, an increase in team effectiveness can lead to improved interaction with the right clinician helping the right patient independently manage their care (Cioffi et al., 2010). Comprehensive care with a holistic approach leads to higher client satisfaction; a desired outcome of patient centered care (Demiris

et al., 2008). Although many studies cite that patients are the focus of multidisciplinary teams, challenges in patient centered care were also discussed.

Multiple challenges in patient centered care were common throughout the literature. One such challenge is rotating shifts as they regularly alter team makeup and interrupt continuity in care (Demiris et al., 2008; Keenan, Yakel, Dunn Lopez, Tschannen, & Ford, 2013). Additionally, as teams comprise of different professionals working in complex contexts and who are temporary and interactive in nature, control over care is a challenge (Allen & Rixson, 2008). Team members are at risk of both 'patient ownership' and withholding patient information (Rowlands & Callen, 2013). Further, tasks such as documentation, interrupts direct patient care 50% of the time (Ammenworth et al., 2002). Adding to the complexity is that each patient is unique and their condition can rapidly change in severity; this further challenges shifting teams (Kuziemyky et al., 2009). Unfortunately, patient safety is often at risk in light of the many challenges in providing patient centered care (Deneckere et al., 2012; Keenan et al., 2013). Despite challenges, some authors illuminated that patient centered documentation helps defines the patient (Hripcsak, Vawdrey, Fred, & Bostwick, 2011). It maps out the patient journey (Allen & Rixson, 2008) and provides patient-centered recording (Hayrinen & Saranto, 2010). Insightfully, one study concluded that documentation would have more meaning if it was standardized to the patient, not the discipline (Jones, Jamerson, & Pike, 2012).

Although the studies indicated that patient-centered care was vital, very few studied the impact of electronic multidisciplinary documentation and its actual effect on patient centered care. Indeed, although this remains a gap in current knowledge, this theme further supports the need to design a record that is truly patient centered. This can begin with an understanding of the most basic elements of a patient: the discrete patient data that comprises the common ground

utilized by different disciplines. Regardless, the concepts of patient centered care and common ground seem to also relate to communication, the next theme to be explored.

Verbal communication for multidisciplinary teams is essential yet wrought with challenges. Communication, described as a social fabric among and across internal and external group processes, is such a foundational concept to EHR design that a framework has been established (Kuziemyky et al., 2009). It is a very common theme throughout most of the articles. One sub-theme, communication through conversation, was explored by Rowlands and Callen (2013). They believe that the main repository of information is in the minds of providers and the largest information network is built with a complex web of conversation. Others highlight that multidisciplinary team members turn to each other first for conversation to support decision making (Coiera, 2000). Beyond individual conversation, rounding and meetings, additional sub-themes, were also discussed. Reddy et al., (2001) found that multidisciplinary rounding encouraged communication of individual perspectives. Coiera (2000) supported the view that pre-emptive meetings with early communication negated the need for last minute, poorly timed information exchanged. Kuziemyky et al. (2009) found that team members enjoyed teaching and mentoring each other during meetings. A third sub-theme, the use of tools to guide verbal communication such as care plans (Hyde & Murphy, 2012) and use of electronic information through the computer at shift handoff was discussed (Keenan et al., 2013). Despite the integration of verbal communication within team processes, challenges remain.

As verbal communication is synchronous in nature it tends to lead to high levels of interruption thus resulting in loss of information and disruption of workflow (Collins, Bakken, Vawdrey, Coiera, & Currie, 2011; Rowlands & Callen, 2013). Although communication behaviours are a professional skill, team members often interrupt due to a ‘synchronous bias’

(Coeira, 2000). Synchronous bias is when team members favour interruptive communication mechanisms, such as paging, face-to-face discussion, and the telephone, over less interruptive methods that are available to them. Indeed, telephone tag was found to be highly interruptive (Keenan et al., 2013). Negatively impacting patient care, while verbal communication reduces cognitive load as completed tasks are “ticked off the list”, it is transient and often not recorded in the patient record (Collins et al., 2011).

Additionally and also occurring outside of the patient record, non-synchronous mechanisms such as email, voicemail, and notes, negate the appropriate acknowledgment of message receipt and task acceptance (Collins et al., 2011). While both synchronous and asynchronous communication present challenges, communication styles differ among professions.

As different professions are trained to communicate differently, verbal exchanges are often influenced by a sense of professional hierarchy (Rowlands and Callen, 2013). Similarly, disciplines tend to verbalize differently; nurses are inclined to provide a narrative description, and physicians wanted succinct and to-the-point verbal exchanges (Steinberger, Douglas, & Kirschbaum, 2009). Communication style differences are further complicated during team meetings. As team members often rotate, many meetings are spent repeating the same information from the previous weeks, members with vital pieces of information are not present, and a significant amount of time is spent searching for and through patient records (Ammenworth et al., 2002; Demiris, 2008). While synchronous and asynchronous communication, differing communication styles, and complexities of team meetings are some of the challenges discussed in multidisciplinary electronic documentation literature, the greatest

challenge, and the fourth sub-theme found throughout the literature, is designing an electronic system that supports communication (Ash, Berg, & Coiera, 2004).

Communication failure highlights the challenges in merging verbal and electronic communication. As communication errors are leading cause of death with 50% of adverse events in primary care due to communication issues, enhancing communication with electronic processes is a high priority (Coiera, 2000). Collaborative multidisciplinary interactions are mainly verbal; they are not supported electronically (Demiris et al., 2008). With verbal communication there is a fluidity between asking, telling, inquiring, and explaining that is not replicated between person and computer (Coiera, 2000). This leads to communication failure. Because communication failure affects patient safety, ongoing effort is focused on designing computerized systems to augment, not replace, verbal exchanges (Prideaux, 2011; Varkey et al., 2006). Research exploring the relationship between verbal communication and electronic documentation exists.

Ammenworth et al. (2002) believe that asynchronous communication integrated into the electronic health record (EHR) would improve the challenges with synchronous communication. This is supported by Braaf et al. (2011) who maintain that documentation supplements and coordinates work with verbal exchange; this increases verbal reliability and that communication supplemented with documentation during shift change is critical to a safe hand over. Similarly, the type of documentation, such as the use of symbols to help categorize patient criticality and test results, has also been researched (Galliers, Wilson, Randell, & Woodward, 2011). Conversely, some researchers focus on the impact of not recording verbal communication. Prideaux (2011) discovered that the act of not documenting verbal communications actually conceals a large portion of clinical work; he maintains that all meetings and phone calls should

be electronically recorded. Neglecting the basic premise of upholding patient centered care, Collins et al. (2011) found that patient goals verbally discussed were not routinely entered into the EHR. While there has been some research on alignment, or misalignment, of clinical discussions with electronic documentation, patient centered care and clinical knowledge development continue to be affected (Collins et al., 2011). In order to avoid communication failure, some informatics researchers have created frameworks to align verbal communication and EHR design.

Recognizing that very few studies examine how health information systems can support team processes, Kuziemyk et al., (2009) built a framework for interdisciplinary team communication. Observing and interviewing a palliative care team, they concluded that electronic data support, process facilitation, and team video conferencing were three tools that increase team function. Although Kuziemyk et al. (2009) recognize that psychosocial data, although is often the largest patient concern, is often neglected in EHR data, they posit that EHRs provide accurate up-to-date data, are crucial for decision making, and enhance strategies for both patient safety and efficient use of team resources. Another study sought to describe and model workflow and information flow in chronic disease care (Unertl, Weinger, Johnson, & Lorenzi, 2009). These researchers conclude that a gap exists between information technology and provider needs. They developed ten guidelines to support design of electronic records. These include, but are not limited to, that applications should be designed to support shared needs and behaviours, that the EHR should be designed so users are able to search quickly and easily filter out important information, and that new tools and processes should be as efficient as existing processes.

Widely discussed in electronic multidisciplinary documentation academic literature, communication within multidisciplinary teams remains a constant, yet challenging concern. Verbal communication during conversations while rounding, during meetings, or 1:1 are a natural and vital process. Challenges such as frequency of interruptions and the neglect of recording verbal exchanges can be overcome by designing EHRs to adequately support and enhance, not replace communication. Communication failure can be avoided. Although frameworks are available in current literature, there continues to be a lack of information about what specific pieces of patient information are found to be clinically significant across multiple disciplines. As clear and effective communication is vital for interprofessional teams, a design that provides quick and easy access to clinically significant information recorded by teammates, and which supplements verbal exchanges, is indicated. Conversely, the next theme, which focuses on electronic documentation processes within multidisciplinary teams, was also found in much of the literature.

Electronic Documentation, or ‘how to get information in’, is vital but complex.

Documentation, or how information is entered into the patient record, is defined as a written, printed, or electronic text that involves the accumulation and dissemination of patient information (Braaf et al., 2011). The importance of documentation is an age old clinical challenge. Berg and Bowker (1997) present a sociological philosophy that finds no separation between modern medicine and the medical record; documentation is fundamental to the everyday production of the human body. The record is where health care providers’ “... tasks begin, end, and are coordinated, where inscriptions accumulate...” and that the “...medical record mediates the relations that it organizes...” (pp. 514). It supports decision making (Hayrinen & Saranto, 2010), is an ongoing record of patient experience and a central repository of course of patient

care (Ammenworth et al., 2002), and it fulfills legal obligations (Finkelman, 2013; Prideaux, 2011; Tornvall et al., 2008). Some researchers discussed multiple challenges with paper records such as unavailability, missing information, non-standardized, untimely, and poorly integrated (Ammenworth et al., 2002; Kuziemyk et al., 2009). Electronic documentation, although it creates opportunity, also leads to complexities (Stevenson et al., 2010).

Unfortunately, documentation itself actually leads to communication failure. It can be void of concise yet robust information; some call for further research on how all disciplines document and use documentation to communicate (Braaf, Manias, & Riley, 2011). Similarly, other studies noted issues with electronic documentation. Poor design increased time spent documenting (Hripsak et al., 2011; Johnson et al., 2008; Stevenson et al., 2010). Some found that even if it was available, clinicians continued to use paper documents (Hyde & Murphy, 2012) or scrap paper to then later transcribe some, not all, important pieces of information (Stevenson et al., 2010). Although challenges remain, documentation is an important and core skill for health care providers. Recognizing it as a fundamental clinical practice, knowing which pieces of patient information are clinically significant across all disciplines, and designing EHRs support the reuse of others documentation, redundancy, time spent, and the need to use paper will decrease. The exploration of documentation closely aligns with the sub theme found in the literature: multidisciplinary care planning.

Care plans are a potential tool for electronic multidisciplinary documentation. Many studies focus on documentation and the role of care planning (Allen & Rixson, 2008; Ammenworth et al., 2002; Deneckere et al., 2012; Estrada & Dunn, 2012). Care planning is defined as an intervention for a well-defined group of patients over a well-defined period of time that is complex, mutually agreed on, and which organizes care (Deneckere et al., 2012). A care

plan maps out a patient's journey and coordinates care for providers; it aims to have "the right people, doing the right thing, in the right order, at the right time, in the right place, with the right outcome" (Allen & Rixson, 2008, pp 78). Interestingly, care plans are management technologies that formalize teamwork and interventions (Allen, Gillen, & Rixson, 2009). If utilized for an appropriate patient group, standard interventions improve quality of care and decrease workload (Allen & Rixson, 2008). Care plans also provide process reminders and incorporate the effective use of symbols to represent complex care (Ammenworth et al., 2002). They increase the likelihood that barriers of patient progress are identified, recorded, and followed up on; they prompt education, and the communication of pertinent information at shift change (Hyde & Murphy, 2012). Although care plans appear to be beneficial, research on the challenges of care plans was also found.

Multiple care plan challenges exist in the literature. Older nurses react negatively to care planning (Estrada & Dunn, 2012). Deneckere et al. (2012) found that the evidence for improved care processes was weak. Stevenson et al., (2010) found that electronic standardized care plans, although 'easier', could lead to the deskilling of nurses and compromise individualization of patient care. Nurses indicate that care plans do not support everyday practice and are not user friendly (Stevenson et al., 2010). Despite the conceptual differences between care plans and flow sheets, there is a duplication of data (Klehr, Hafner, Spelz, Steen, & Weaver, 2009). Van Zelm (2011), cautions that complex interventions, such as care plans, have not yet proven their effectiveness. Allen & Rixson (2008), in their systematic review of 39 studies, did not find any that explored the economic value of care plans. Despite challenges and limited findings with electronic multidisciplinary care plan documentation there remains an argument for further investigation.

Indicated by many studies, electronic care plans could be the impetus for healthcare providers to be viewed as the key to improving multidisciplinary care (Ammenworth et al., 2002; Hyde & Murphy, 2012; Poder, Fogelberg-Dahml & Wadensten, 2011; Sockolow et al., 2012). Allen et al., (2009) compare care plans to acupuncture: they are useful for redirecting energy flow, but do not add new energy. This aligns well with the impetus that care plans, if well-designed and accessible by all, can complement and enhance, not add to, workflow (Keenan et al., 2013). Additionally, nurses, as early adopters of care plans, believe care plans common to all disciplines would be a means of interdisciplinary communication (Estrada & Dunn, 2012). Indeed, aligning with the intent of this study, further research focusing what discrete patient information would be clinically informative to all members of a multidisciplinary team would inform electronic care plan design elements. In addition to the subtheme of care plans, two subthemes, standardized taxonomies and natural language processing, offer interesting insight into current knowledge of electronic multidisciplinary documentation.

Standardized taxonomies support the common language required by interprofessional teams. Language, which requires the ability to describe patient conditions and concepts that are meaningful, is the core of common understanding (Thoroddsen, Ehnfors, & Ehrenberg, 2010). Further, clinicians require standardized taxonomies to classify work, legitimate their role, and make them visible (Berg & Bowker, 1997). When clinicians document a diagnosis they are communicating a judgement to others (Matney et al., 2011). Electronic documentation using standardized taxonomies was discussed throughout multidisciplinary literature.

Early work on terminologies was specific to nurses. Beginning in the 1970s, development of the Nursing Minimum Data Set (NMDS), allowed standardized documentation to facilitate, measure, and report work unique to nursing (Jenkins et al., 2006). The resultant plethora of six

sets of nursing terminologies has created multiple challenges related to interoperability as many do not align (Matney et al., 2011). In addition to nursing, allied health disciplines have completed some early work in standardized language (Jenkins, Myers, Charney, & Escott-Stump, 2006) (Appendix B). Regardless, much work has been completed to standardize terms used in clinical documentation; yet challenges remain.

Despite multiple and ongoing efforts to create a standardize data entry system, some maintain that it reduces the totality of the patient as a whole being and holistic care is not reflected in subsequent documentation (Prideaux, 2011). There is some trepidation with the incorporation of standardized electronic documentation in nursing practice as some feel that it does not reflect holistic nursing (Tornvall et al., 2008). For others, it is hard to ascertain medical relevance if standardized data is viewed out of context (Stevenson et al., 2010). Others believe there is a loss of rich information (Reddy et al., 2011) and reducing record keeping to ‘tick boxes’ diminishes personal and individualized care (Prideaux, 2011). Additionally, it was recognized that nursing data is absent from information systems (Goossen et al., (1998); it would seem that this continues to remain true for nursing and AH. Although some believe the ability to create a unique taxonomy is unfeasible (Goossen et al., 1998), multiple others call for future work to focus on a multidisciplinary development of a shared, universal taxonomy database (Finkelman, 2013; Matney et al., 2011; Tornvall et al., 2008). Regardless, the use of standardized data language has not reached its full potential in electronic multidisciplinary documentation; there is a gap in interprofessional standardized language. Recognizing the issues with standardized language, the International Standards Organization (ISO), in addition to harmonizing and mapping standardized terminologies, has also set out to map standardized terminology with natural language processing (NLP). This represents an intriguing set of

possible research topics that may positively influence documentation processes and information within interprofessional practice.

Natural language processing: the link between communication and decision support?

Natural language processing (NLP), leverages narrative text and allows efficient data entry, analysis, and interpretation; narrative text is designed to be carried forward to other areas of the electronic record (Johnson et al., 2008). Johnson et al., (2008) sought to develop an EHR that supports rapid capture of detailed narration for integration and reuse through NLP. They believe that NLP transcends the basic function of communication among providers, free text documentation (narration) enabling computers to use the documentation to support and augment decision making and care. Further, NLP aligns with clinical cognitive models, provides an accurate reflection of health, and is an effective source of knowledge for decision making (Johnson et al., 2008). Some researchers note that even though much effort has been concentrated on standardized taxonomies, much nursing documentation is still captured in narrative text (Bakken, Hyun, Friedman, & Johnson, 2005). Unfortunately, without NLP, narrative text is unavailable for decision support, biosurveillance, quality monitoring, and analyses.

In their quest to explore nursing NLP using the MedLee system, Bakken et al., realized that current ISO models of standardized language require additional work. This is invaluable information as NLP is a natural, efficient mode of data input for clinicians, and provides a rich amount of information (Johnson et al., 2008); it can be leveraged to reduce duplication of clinically relevant information throughout the EHR. However, without a basic understanding of which discrete common information is required by all interprofessional team members, NLP would, yet again, be another ICT component that misaligns with clinical work. More effort is

required to understand which patient information can be leveraged. The next theme, another popular concept found through the literature review, focused on the results of electronic documentation, was that information exchange is a flawed two way street.

Information exchange is a two way street with flaws. Although some researchers explored how multidisciplinary teams view patient information once it is entered electronically (Hripcsak et al., 2011), a few articles spoke to the relationship of the exchange of data between the electronic system and health care professionals. Berg (1999) defined this as the difference between writing and reading; technical tools are generative as they receive input, transform it, and produce output. Team members enter comprehensive documentation of an initial assessment, standard baseline charting for routine information, and concise entry of exceptions to patient progress (Tornvall et al., 2008). There is transformative power in the information exchange with constant back and forth traffic; the system mediates retrospective and prospective information and recouples data to produce a story (Berg, 1999). While this somewhat aligns with the two way communication processes created verbally, information provided by the electronic system is often wrought with flaws.

Some literature describes challenges with information exchange. Researchers, despite the sound argument that information should only be entered once, reused, and updated automatically (Collins et al., 2011), discuss how information is often duplicated and replicated (Hyde & Murphy, 2012; Keenan et al., 2013; Tornvall et al., 2008). To further complicate matters, too much information, although helpful to capture the entire patient journey, feeds a rapidly expanding tsunami of data (Collins & Vawdrey, 2011). Indeed, Keenan et al. (2013) believe that systems to improve information management are required to help process and appropriately display information electronically entered. As there is a working relationship with clinicians

entering information and technology transforming and displaying usable data, there remains the missing element of interprofessional care: common patient information of clinical relevance to multiple disciplines. That being said, several of the aforementioned challenges can be overcome with appropriate designs that align with interprofessional processes. The next themes found throughout the electronic multidisciplinary documentation literature relate to design components of an EHR.

Importance of design cannot be underestimated. Unless appropriate assessment of workflows, a sociotechnical component of a healthcare system, are identified and attended to within EHR design, the EHR will not be used as intended (Green & Thomas, 2008). Stevenson et al., (2010) believe that clinical interaction with the system promotes high quality care, yet poorly designed EHRs did not support practice. Systems must be needs led, not supply driven (Stevenson et al., 2010). Keenan et al. (2013) found that there was often an absence of a centralized patient overview that was organized standardized, and easily accessible. This aligns with Parsons et al. (2011) who believe data needs to be easy to use, but it must also be useful. Similarly, others supported displaying brief information that could be interpreted at a glance (Galliers et al., 2011). A well designed system would allow information from one person's perspective and/or workflow, stored, transformed it into smaller data points that can be extracted, reformulated and displayed in a way that is relevant for others (Reddy et al., 2001). A good design would incorporate at all the variables that paint the whole picture of a patient (Stevenson et al., 2010). Conversely, poor design will lead to poor adoption, ongoing use of paper tools, a higher level of interaction among team members, including an elevated amount of oral communication, than is necessary (Ammenworth et al., 2002; Coiera, 2000). This theme aligns very closely with interprofessional care practices as all team members share information in order

to understand and holistically attend to the needs of the patient. Further, found throughout the literature, design also impacts two subthemes: workflow and decision making.

Design impacts decision making. Information needs to be documented and presented in a manner that supports decision making (Stevenson et al., 2010). As it is not enough to acquire and regurgitate data, end users need to rapidly and accurately synthesize information (Unerti et al., 2009). Collins et al., (2011) found that ICU tools were both insufficient in capturing and supporting collaborative decision making and inefficient for information retrieval. As one participant indicated, if too much information is displayed, then interacting with the information is like reading a book instead of viewing concise patient information on a screen; this impacts decision making (Unerti et al., 2009). Within the context of interprofessional care, while decision making is reliant on efficient access to team members documentation, it remains necessary to understand which pieces of patient information influence decisions made by multiple disciplines. Closely integrated with decision making, workflow is also influenced by design.

Design affects workflow. Many articles reflected on how design affects workflow. The information record was only a small component of team processes; this encouraged designers to actively collaborate and integrate technology into the context of workflow (Reddy et al., 2001). Collins and Vawdrey (2012) use the term ‘distributed cognition’ to describe how the technical design is influenced by the description of individual performance (documentation) which informs performance (workflow). Design is not just applying tools, it requires a deep understanding of workflow processes (Kuziemytsky et al., 2009). Building a system without regard of how information will be shared, undermines the complexity of the workplace (Coiera, 2000). Understanding workflow processes is the required step before designing a system (Unerti

et al., 2009) as it won't be used if there is little support for workflow (Keenan et al., 2013). Regrettably, nurses were found to alter their routine to fit the system; this compromised patient care (Stevenson et al., 2010). It was also found that nurses spent 31-37% of their time retrieving, documenting, and communicating information within a poorly designed system (Cioffi et al., 2010). Interestingly, usability testing within normal workflow was strongly advocated as a tool to ensure a design supports workflow (Keenan et al., 2013). The workflow of an interprofessional team, which is based on concepts such as partnered decision-making, acknowledging clear roles and responsibilities, skilled team functioning, and continuous quality improvement, identified through exploration of common ground, are all dependent on a design supportive of each these concepts.

Design is a balance between needs of the team and its unique members. As teams are comprised of different professionals, who operate in complex contexts, and are simultaneously interactive yet temporary (Allen & Rixson, 2008), there is a need for different representations to be balanced by a need for shared information; the EHR allows people with different interests to work together effectively (Reddy et al., 2001). Essentially, the purpose of electronic documentation should be aligned with how it will be used by others; even if there is a division of labour and not all patient information is required by all disciplines (Collins et al., 2011). It is important for the design to incorporate and recognize perspectives of all disciplines (Tornvall et al., 2008). The friction between different sets of needs and the needs of the group as a whole can be found with a range of tailored interfaces for those who perform different activities (Reddy et al., 2001). Finding a balance is a challenge as, although group work is articulated, it must also be kept in check (Berg & Bowker, 1997). At times, different disciplines do work independently and without clearly defined roles in the context of patient care and subsequent documentation,

group work can overlap and or conflict (Cioffi, et al., 2010). According to Reddy et al., (2001), finding a design balance with those who view data retrospectively versus prospectively is a major challenge. For example, the majority of physicians view information retrospectively to understand how interventions worked; nurses view information prospectively to understand the work that needs to be done (Reddy et al., 2001). Similarly, data translates viewpoints of the various disciplines, but must remain robust enough to maintain identity across disciplines (Parsons, et al., 2011). Despite multiple issues, the motto 'collect once, use many times' remains a significant goal (Goossen et al., 1998). The importance of designing a system that will meet the needs of all of those utilizing it is a complex but worthwhile endeavour as the road to electronic interprofessional documentation is established.

The importance of design on decision making, workflow, and meeting the needs of all members of the team cannot be underestimated. The next concept, a framework for managing complex data, although not widely discussed in the literature, contains threads of many thematic components found within the electronic multidisciplinary documentation literature review. Further, it provides a structure for interprofessional practice concepts in relation to patient data and highlights the need to identify which common pieces of patient information will assist team members in providing patient care in the context of a tsunami of electronic information.

A framework for complex interdisciplinary science: the structure linking EHR design, interprofessional practice, and common patient information. In their conceptual framework for managing very diverse data for complex, interdisciplinary science, such as environmental change and its impact, Parsons et al (2011) outline a model that aligns well with the complexities of a healthcare system. Indeed, they posit that modern experts (such as nurses) face a 'data deluge' of an overwhelming amount of disconnected electronic data. In essence, they

maintain data must be associated with other related and supportive data to enable insight-sharing and connection of diverse pieces. This is accomplished within a data ecosystem composed of the technology and people collecting, using, and handling data and the interactions between them.

Mirrored in nature, data ecosystems emerge, survive, and co-evolve dependent on context; they take time to grow in response to different components interacting. Within organizations, there is ecology of infrastructure; there is a delicate balance of shared language and practice between and among different disciplines. Certainly whether teams with diverse disciplinary members exist within the context of ocean sciences, astronomy, climatology, or healthcare, it would appear that the amount of data, unless presented as appropriate, connected information, is both useless and overwhelming. The data deluge can be slowed by incorporating the following design guidelines outlining that data should be:

- *Discoverable.* Through simple, widely available tools, data must be readily located, identified, and generally assessed. This requires adoption of a common metadata format and a controlled vocabulary where each discipline would have a portal that meets their needs. 'Data centers' will then automatically present information in a meaningful way to others in their community. The concept of discoverable data parallels basic EHR design concepts such as interoperability and standardization as well as providing some flexibility for needs of different disciplines. Appropriately identifying which patient data should be discoverable through a common ground lens, would provide interprofessional teams with the common patient data required for care delivery.
- *Open.* Certain data should be openly accessible for it to be reused, replicated, and to advance knowledge. This requires a certain amount of trust and ethical behaviour.

- Within the context of a healthcare system, the protection of individual privacy rights through access control would need to be included. Otherwise, the concept of open data represents the interprofessional concept that all appropriate teammates would share information in order to care for the patient in a concerted manner. The sharing of information would need to include that which can be leveraged by others in order to decrease redundancy; this could be found by identifying common patient data.
- *Linked.* Data needs to be interrelated and connected. A 'semantic web' is created with standardization of the semantics, or description of data keywords, vocabularies, or units. This is difficult to achieve although the creation of a basic, flexible metadata scheme was readily accomplished. The interrelation of data, in the context of an interprofessional practice within a complex healthcare system, is a key benefit of shifting from paper based chronological patient records to a dynamic electronic database. Information such as medications that can be graphed, or linked, to diagnostics; an electronic pain treatment plan can connect an occupational therapist, physiotherapist, pharmacist, and nurse assessments, interventions, and outcomes. Thus, linked data is another concept that is parallel to interprofessional care, as long as the appropriate data that needs to be linked is identified.
 - *Useful.* Data must be useful and usable for practical and advantageous purposes. It must be coherent for diverse user's models and analysis tools and must be related to context and background. Interestingly, the authors maintain that it is not truly data that decision makers need, rather information presented in a readily interpretable, compelling manner. As effective information display encourages data sharing, increases comprehension of complex processes, and enables wiser decisions, useful

data displayed wisely would be a foundational interprofessional practice tool. Indeed, it would be wise to understand which common data would be found useful by members of an interprofessional team.

- *Safe*. Data must be sheltered from corruption, risk, and loss. Safe data is a core component of an EHR build and a healthcare system. Regulations about record storage, confidentiality, and access are key for healthcare systems. Although not directly linked to common patient information, the concept of safe data is espoused by any interprofessional healthcare teams.

The conceptual framework for complex diverse data (Parsons et al., 2007), although neither authored nor published by healthcare professionals, was quickly identified as a phenomenon closely related to interprofessional practice. As demonstrated through a closer analysis of its five guidelines, concepts of complex data aligns with many themes found within electronic multidisciplinary documentation and EHR design components. A significant find through the literature review, this framework would be of major benefit when designing interprofessional electronic documentation. Indeed, it is one more brick in the road to actualizing electronic interprofessional documentation. Similarly, another concept, common ground, which has become the theoretical basis of this research, was another significant discovery in the literature review.

Common ground: the concept that will help shift EHR designers to align with interprofessional concepts. According to Coiera (2000), common ground is the knowledge shared by two communicating agents. As a component of clinical communication, common ground is constructed of common goals, verbal exchanges, and knowledge within a particular workflow (Collins et al., 2011). Recognizing that communication is a challenge in healthcare

systems, Coiera (2000) maintains that common ground must be established. This requires a common language, an exchange of knowledge of shared topics, and a mutual effort in conveying a message and making sure the other understands the message (Coiera, 2000). Similarly, interprofessional practice requires cooperation to gain mutual respect in order to share knowledge/decision making (The McGill Educational Initiative on Interprofessional Collaboration, March 17, 2014). While interprofessional practice also consists of different professionals learning with, from, and about each other, similarly, Coiera (2000) also maintains that, within the context of common ground, the more individuals communicate, the more similar they become. Hence, common language, processes, and knowledge will enhance the cooperation and mutual respect required to provide optimal patient care. While there is evidence found in the literature that common ground supports human-human interactions, there is other evidence that common ground concepts are parallel to EHR design components.

Just as design should enhance verbal human-human interprofessional exchanges, common ground concepts extend into human-computer interactions; each must understand what the other is conveying (Coiera, 2000). In order for computational tools to be useful, they must have a common language and reflect situational workflows (Collins et al., 2011). Components of the human-computer interaction extend beyond the common goals, verbal exchanges, and knowledge shared between humans. It includes the technology and tools that enable standardized, and relevant, documentation and, subsequently, displays information to help inform tasks (Collins et al., 2011). Ultimately, this facilitates shared decision making.

Interestingly, although the basic act of entering and reviewing shared information in the EHR qualifies as a human-computer common ground interaction (Collins et al., (2011), the relationship of situational awareness and a design based on common ground is important to

understand. Simply building an information system without regard to how it will be utilized by users, disregards the complex situational realities of a workplace. A common ground foundation encourages design to reflect workflow. Indeed, as conveyed by Collins et al., (2011), a lack of situational awareness is akin to a lack of common ground. The two are so intertwined that, in some instances, the use of an EHR is not even appropriate. There is evidence that the importance of establishing common ground extends beyond that of human-human interactions; it must be incorporated into design elements to enhance the situational human-computer interaction in order to understand what the other needs to convey.

Literature Review Summary

On the road to incorporating electronic interprofessional documentation into EHR design, a current state literature synthesis of electronic multidisciplinary documentation resulted in several themes reflective of current state sociotechnical influencers. Multidisciplinary team work, patient centered care, verbal communication, communication failure, documentation, care plans, standardized taxonomy, natural language processing, information exchange, design and its impact on decision making, workflow, and the requirement to balance individual versus team needs, all intertwine to provide a snapshot of current knowledge from a multidisciplinary lens. A thorough synthesis of themes represents a robust literature review; a link of themes from a multidisciplinary lens and interprofessional care has been presented. Although there is a lack of interprofessional electronic documentation literature it is helpful to synthesize themes discovered in current academic knowledge of electronic multidisciplinary documentation. While some information aligns with interprofessional practice, sociotechnical gaps have also been identified. In the race to integrate ICTs into healthcare, these gaps have further complicated an already

complex situation within the healthcare arena. Indeed, as the introduction of EHRs have negatively influenced patient care (Ammenworth et al., 2002), building a road to align interprofessional care and electronic documentation is vital. In summary, the literature review, stemming from two key findings, ignited a research topic of interest.

The discovery of the framework of diverse data for interdisciplinary processes and the concern with the ‘tsunami of data’ (Parsons, et al., 2011) sparked an- interest to pursue the manner in which to provide the right patient information to the right clinicians. Although the framework provides five guiding principles of design, a gap remains with what specific patient information would be required by various disciplines. Luckily, the discovery of the theory of common ground and its subsequent comparison to interprofessional practice, provide a foundation to help identify specific patient information of interest to different disciplines. Thus the framework of diverse data and concept of common ground may be the link to shift design from a multidisciplinary to an interprofessional focus. More specifically, in order to identify the discrete shared patient information, the question *What are the common data elements between disciplines?* will help fill the gaps in current academic literature. This will inform future EHR designers on their road to building interprofessional electronic documentation. Vital to any study, a detailed outline of the methodology, including the design, theoretical orientation, sampling, ethics, data collection methods, and analysis, will help answer the research question.

Chapter 3

Creation of the Simulation Using a Case Scenario

Case Scenario

The PI selected to use a videotaped case scenario that could be reviewed by interprofessional team members as a means to study commonalities in documentation practices across disciplines. This chapter presents the rationale for and development of a case scenario.

Qualitative research is often case-oriented (Sandelowski, Barroso, & Voils, 2007) and simulation is often utilized in health education and research (Ladyshevsky, 1999). As the intent of this study was to identify common patient information between multiple disciplines a case-oriented methodology using a single case simulated scenario was selected to highlight intricate patterns of common data elements.

An orthopaedic patient case scenario was chosen as patients with hip fractures are often quite frail with multiple co-morbidities, requiring integrated multidisciplinary care (Auais, Morin, Nadeau, & Mayo, 2013). Further, as it is important to establish a naturalistic experience (Lincoln & Guba, 1985; Rourke, Schidt, & Garga, 2010), the PI conducted a thorough internet search for a single case scenario depicting a realistic patient-clinician interaction. While there were a few simulations, none provided an adequate representation of clinicians interacting with a patient diagnosed with a fractured hip. The primary investigator (PI), a registered nurse, has a clinical background of providing care to patients who have fractured their hips. Drawing from this past experience, the PI created a single case of a simulated scenario of a patient with a fractured (Appendix C).

A subject matter expert (SME), the clinical nurse educator for an orthopaedic program in an acute care facility in B.C., was asked to review the developing case study for accuracy. The

nurse educator had approximately 15 years' experience working with both patients with fractured hips and the clinicians who care for them. Her feedback was incorporated throughout the scenario. Validation of the scenario by a subject matter expert helped determine its accuracy and clarity thus establishing a naturalistic simulation (LoBiondo-Wood, Haber, & Singh, 2013). The resultant case study had two components: 1) a simulated patient interview and assessment provided in a video format and 2) a simulated patient record in a text format.

Creation of the Video

Use of audio-visual recordings within simulations is a well-accepted medium within qualitative research (O'Shea, Pagano, Campbell, & Caso; 2013; Severson, Maxson, Wroblewski, & Dozois, 2014); a video format was selected as the medium for the patient interview on admission. Drawing out key points in the case scenario was the first step in identifying content relevant for the video (McDonald, Courtney, & Frisch, 2017). Based on the fractured hip scenario, the PI created a script which provided background for the scene, lines for the actors, and the use of props (Appendix D). In writing the script, recommendations from the literature regarding development of simulations were followed; those of O'Shea et al. (2013) related illustrating good communication behaviours and those of Lloyd (2007) addressed cues for active listening, developing a professional rapport, avoidance of clinical jargon, and appropriate verbal and non-verbal skills. Funds to support the creation of the video were received through the School of Nursing Dorothy Kergin Endowment Grant.

The PI posted a job for a videographer through the University of Victoria Department of Visual Arts and selected a qualified applicant. The University of Victoria School of Nursing trainer who works with actors in simulation training, assisted in hiring the actors, securing the set location, and film production. Once actors were selected, the script was circulated for pre-

shooting review, and the filming date was arranged. Signatures were obtained from the actors for consent, waiver, indemnity, and release (Appendix E). The case scenario and script were approved through the University of Victoria Human Research and Ethics Board (HREB).

On the day of filming, time was provided for script familiarity and coaching from the SME and the PI. Verbal and visual cues such as tone and inflection of voice, smiles, frowns, or grimaces, were prompted. For example, the SME and PI demonstrated how to appropriately reposition the patient, provide intravenous medications, and take a set of vital signs. The patient actor was instructed on how to hold her hip in pain, pull at her intravenous tube, and try to climb out of bed. Dry runs were completed and the videographer recorded the scene using various camera angles to capture key pieces of information germane to the case study. Wide angles captured group conversation and interactions, while close angles captured information related to the patient's medical condition. For example, the patient's swollen ankles and cough are indicative of congestive heart failure; her externally rotated and shortened leg are classic symptoms of a fractured hip. The video was recorded in flash video format (FLV) to be played via Adobe Flash Player, the most common online video viewing platform used today (Motion elements, 2014). The final video was just over eight minutes long.

Editing was completed by the videographer and the video was uploaded to *YouTube* (Appendix F). The preparation of the case scenario, script development, and film production culminated in a naturalistic interaction and included content commonly found in a patient-clinician interaction during an admission to an orthopaedic unit. To further enhance the simulated experience and align with realistic care settings, the PI created a patient paper record.

Creation of the Textual Patient Record

While the video provided some audio visual details related to the patient's admission, the patient text record was created for written details. In order to outline a previous admission and discharge, a liaison discharge note was created. This note provided information such as a history with congestive heart failure (CHF), renal insufficiency, fall risk, cognitive decline, social concerns, and a referral to Home and Community Care for a Quick Response Team follow up (Appendix G).

In addition, just as with an admission in a real health care situation, an emergency department (ED) note was created (Appendix H). This contained further information regarding the diagnosis of fractured hip, a systems assessment, allergies, histories (medical, surgical, family, social), diagnostic results, orders, medications, and a scanned copy of the patient's medication list from home (Appendix I). To reflect the permanency of a health record and prevent participants from copying information and pasting it into their documentation, the patient record was formatted as a PDF document. Supplementing the video content, the text patient record provided a robust simulation reflective of the case scenario.

Creation of the two combined components of the single case scenario, the video and the paper patient record, provided participants with audio, visual, and textual details. Creation of these were key to the study; they were foundational components to not only help determine what multiple disciplines document, but to help identify components of their shared clinical documentation.

Chapter 4

Methodology

Design

This study used an exploratory, descriptive, qualitative design to describe the common elements recorded in a health care record by health professionals from different disciplines in order to answer the research question “*What are the common data elements found between multiple disciplines*”. The study protocol, survey questions, budget, letter of invitation, consent form, case scenario, and recruitment poster were created and submitted to the Health Research Ethics Board (Appendix J). As this study was undertaken to contribute to the knowledge of how to build electronic documentation that supports interprofessional patient care, it was important to identify commonalities in the way that health care professionals document care. In addition, information was collected about the participants themselves, such as opinions regarding both their work in interprofessional and/or multidisciplinary teams and electronic documentation within an electronic health record. This information would provide a level of understanding about beliefs regarding key components of this study. While it is thought that an interprofessional care delivery model is best practice, it was unknown if participants actually believed that they worked in an interprofessional team. Further, as electronic documentation is not yet widely adopted, it is of interest to understand if participants felt that electronic records will benefit their practice and the patients they care for.

Ethics

Prior to recruitment, Ethics approval was obtained from the University of Victoria and Island Health Joint Health Research and Ethics Board (Protocol # J2015-046) (Appendix K).

Informed Consent for potential participants was provided by ensuring provision for questions and answers, alerting about the ability to withdraw at any time, and the use of a consent form consisting of all ethical review board elements (Appendix L).

The consent process also included informing about the possibility of follow up for clarity with participants. Additionally the consent process outlined the study withdrawal procedure which was to provide a written request through email or mail. This helped create an audit trail for statistics related to completion versus withdrawal rate. Finally, the consent included content about the potential use of partial data

Confidentiality was provided by ensuring that participants were not identifiable. Upon enrollment, the PI recorded participant name, contact information and de-identified code to the study code list. The study code list was stored separately from study data in a locked cabinet. Participants were given their own code number and entered their unique identifier into the relevant field the survey.

With a small pool of potential allied health orthopaedic participants, there was a chance that they could be more readily identified. This risk was outlined in the consent form and participants were discouraged from disclosing their participation. They were encouraged to complete the survey in a location where their confidentiality would be protected.

The study code list will be destroyed through the paper shredder once the thesis has been finalized and released. Confidentiality was also protected as data details are not accessible and protected with enhanced login and survey encryption (QRS Privacy Policy, 2015; Fluid Surveys Security, 2016). The data were stored in the PI's firewalled, encrypted, password protected Island Health Z-drive.

All data will be stored electronically for 7 years and then will be sent to the electronic ‘recycling bin’ which will then be emptied for permanent removal. Finally, confidentiality is further protected as participants are cited using their unique identifiers (OT1, RN1, PT1, etc..) used as pseudonyms in the analysis section of the report. While utmost precautions with consenting, confidentiality, and data storage were taken to meet ethical considerations, similar scrutiny was applied to the sampling and recruitment strategies.

Sampling

A purposive, convenience sampling method was used (Barroso & Cameron, 2013). Sampling included participants from the following disciplines: nursing, occupational therapy, physiotherapy, social work, and medicine. While the initial target sample size was for five participants from each of the five disciplines (N=25), after 8 months of recruitment there was a sufficient sample to complete data analysis. Shared data began to emerge during early analysis of the data submitted by the initial participants. There was representation from all disciplines. While there was only one physician participant, a limitation of the study, early analysis of the documentation from the physician did contain a majority of the shared data elements. Finally, a sample size of fourteen participants aligned with sample sizes ranging between nine and sixteen in other qualitative descriptive studies (Carlsen & Glenton, 2013; Etemadifar, Bahrami, Shahriari, & Farsani, 2014; Kwong, J. et al., 2014; Nting & Maree, 2015; O’Connell & Sheahan 2011; Singla, Jone, Edwards, & Kumar, 2014; Tu & Wand, 2013).

Recruitment

Recruitment targeted three facilities within a large B.C. Health Authority that hosts an acute care orthopaedic program for the fractured hip population and utilizes all disciplines

included in the study. As patients with fractured hips often have complex needs that require interprofessional collaboration from all disciplines listed in the inclusion criteria (presented below) a conscious decision to recruit participants experienced in working with a fractured hip population was made.

Aligning with the operational approval requirements and to avoid any perceived power-over relationships with the PI's role, third party recruiters were identified and contacted with an introductory email (Appendix M). The recruiters forwarded the Letter of Invitation to Participate (Appendix N) onto orthopaedic and allied health distribution groups within a large Health Authority in B.C. The PI posted recruitment posters (Appendix O) on approved site wide communication boards. Study information incorporated participant inclusion criteria for candidates who:

- Are currently practicing in Island Health, in one of the following professions: medicine, nursing, occupational therapy, physiotherapy, and social work
- Have at least 1 year of practice within their discipline
- Provide direct care to patients with fractured hip patients within an acute care setting
- Have an ability to type
- Have access to Island Health email and an ability receive and send messages
- Have the ability to access the study's *FluidSurvey* account
- Have the ability to access and read a pdf file through Adobe Reader
- Be agreeable to participate outside of working hours

Exclusion included:

- Those who cannot understand, read, nor write in the English language
- Medical physicians who are not attending orthopedic surgeons nor hospitalists

- Nurses, other than those who provide direct patient care
- Students of the included disciplines

Once reviewing the invitation to participate email and/or poster, potential participants initiated contact with the PI through email or telephone. A conversation between the researcher and potential participant confirmed inclusion criteria were met. Informed consent steps such as the opportunity for questions and answers, the awareness of study withdrawal at any time, and the provision of an emailed consent form consisting of all ethical review board (ERB) elements, were completed (Appendix P).

Upon receipt of the signed consent form through interdepartmental mail or in person exchange, the participants were provided with a unique identifier to protect their confidentiality. Each physiotherapist received a code starting with the letters PT, each social worker received a code started with SW, occupational therapist received a code starting with OT, nurses received a code starting with RN, and the physician received a code starting with Phys. The study code list was updated. As it is both secure and encrypted when exchanging information, internal email was utilized for participant instructions (Appendix Q). It included the participants' unique identifier and guidelines prompted participants to review the patient record, watch the video, and complete the survey through the email which included the *FluidSurveys* link (<http://viha.fluidsurveys.com/surveys/angeli/common-multidisciplinary-data-elements-1/>).

Data Collection: Upon completion of review of the simulated information (described in Chapter 3), the participants followed instructions for accessing *FluidSurveys* and completed the survey that had three distinct sections. The PI, using a protected password, would regularly access the *FluidSurveys* application and export the narrative data from the first two survey questions and save it to a *Microsoft Word* document. The narrative text was then uploaded into a

qualitative analysis computer software program called *NVivo* (NVivo 11 for Windows Version 11.3.0.773). Data from the third survey question was imported into an *Excel* spreadsheet. Both the *Microsoft Word* documents and *Excel* spreadsheets were stored on the PI's secure drive. This process was repeated regularly as each new participant completed the survey. Recruitment and data collection were completed once there were a few participants from the majority of disciplines.

Data Collection Instrument

The PI created a survey as an instrument that would meet the needs of the study could not be found. The instrument included three-parts, consisting of both open-ended survey questions and completion of single select options. The first two parts consisted of open-ended questions to elicit a broad range of responses and mimic natural free text documentation processes (Sandelowski, M., Barroso, J., Voils, C., 2007). The third and final part of the survey consisted of a series of questions related to participant information and beliefs. Each are presented below in the three sections which include:

1. Survey part 1. In order to identify common data elements between disciplines, this first question provided the guidance and format to best capture typical clinical documentation. The first question prompted documentation of a free text clinical note in an open ended format with unlimited character space:

Document your clinical note

- i. This is a simulated exercise as a part of the research study "Common Multidisciplinary Data Elements". Having reviewed the simulated discharge summary, emergency note, and the video, you are now a part of the patient's care*

team. Document a clinical note using your typical language and formatting in the field below. Examples of documentation methods include but are not limited to:

- 1. Subjective, objective, assessment, plan (SOAP)*
- 2. Subjective, objective, assessment, plan, intervention, evaluation, revision (SOAPIER)*
- 3. Assessment and interventions*
- 4. Narrative charting, unstructured*
- 5. Any other documentation method you utilize*

2. Survey part 2. The second question guides participants to provide additional information that they would typically document. It was a free text documentation of patient information missing from the simulation using an open ended format with unlimited character space:

Answer the question: What missing patient information would you have typically sought out from the patient, family member, other professionals, or other sources and included in your clinical note?

3. Survey Part 3. The third question related to completion of participant information. Using a 5 point Likert scale sampling characteristics such as discipline, age, gender, years worked, level of comfort with computers, years and quality of experience with electronic documentation, years and quality of experience with working in interprofessional teams, and level of education were asked.

Complete information about yourself:

- *What is your discipline?*
 - *Physician*
 - *Nurse*

- Physiotherapist*
- Occupational therapist*
- Social worker*
- *How many years have you been working in your discipline?*
 - 1-5*
 - 6-10*
 - 11-15*
 - 16-20*
 - 21-25*
 - >25 years*
- *How many years have you been working in your current position?*
 - 1-5*
 - 6-10*
 - 11-15*
 - 16-20*
 - 21-25*
 - >25 years*
- *How old are you?*
 - <25*
 - 25-30*
 - 31-35*
 - 36-40*
 - 41-45*

- 46-50
 - 51-55
 - >55
- *What is your gender?*
 - M*
 - F*
- *I believe I work within an interprofessional team*
 - Strongly disagree*
 - Disagree*
 - Neutral*
 - Agree*
 - Strongly agree*
- *I believe I work within a multidisciplinary team*
 - Strongly disagree*
 - Disagree*
 - Neutral*
 - Agree*
 - Strongly agree*
- *I believe patient information is duplicated in the paper health record*
 - Strongly disagree*
 - Disagree*
 - Neutral*
 - Agree*

- *Strongly agree*
- *I believe patient information is duplicated in the electronic health record*
 - *Strongly disagree*
 - *Disagree*
 - *Neutral*
 - *Agree*
 - *Strongly agree*
- *Number of years of experience documenting in an electronic health record*
 - *0*
 - *1-5*
 - *6-10*
 - *11-15*
 - *16-20*
 - *>20 years*
- *I am comfortable documenting in the electronic health record*
 - *Strongly disagree*
 - *Disagree*
 - *Neutral*
 - *Agree*
 - *Strongly agree*
 - *Not applicable*
- *I believe electronic documentation is beneficial for patients*
 - *Strongly disagree*

- *Disagree*
- *Neutral*
- *Agree*
- *Strongly agree*
- *I believe electronic documentation is beneficial for clinicians*
 - *Strongly disagree*
 - *Disagree*
 - *Neutral*
 - *Agree*
 - *Strongly agree*

The survey was created in and accessed from *FluidSurveys*

(<http://viha.fluidsurveys.com/surveys/angeli/common-multidisciplinary-data-elements-1/>). This application provided online survey software, utilized security measures such as passwords and data encryption, is widely used, easily accessible, and offered a wide variety of analytic and reporting tools such as charts, excel, and data extraction (FluidSurveys, 2015).

Data Analysis (Case Scenario)

Coding began immediately upon receipt of the first completed survey. Using the qualitative statistical software *NVivo* an open coding technique was used for analysis where codes were derived from the words documented by participants (Vaismoradi, Turunen, & Bondas, 2013). For example, as each clinical note was reviewed, unique pieces of documentation that contained a singular concept or entity were given a ‘title’ or a code, that was derived from, and/or remained as close to, the actual language used. Each subsequent singular concept was either grouped with existing codes or new codes were created. The same process

was repeated as subsequent surveys were submitted. As new codes emerged, similar codes were grouped together within categories. As patterns of categories emerged, these became subcategories within larger and higher levels of conceptualized categories. This process continued until each piece of raw data was coded and all of the subcategories and categories were adequately organized. The *NVivo* coding content was exported into an Excel spreadsheet; the analysis worksheet was utilized significantly throughout the study (Appendix R).

A data dictionary that explained the intent and/or context of each code, subcategory and category was created within with analysis worksheet. The process of explaining the meaning of the data led to further refinement of how information was defined and grouped and led to the next phase of analysis: aligning the data with each of the disciplines. The data dictionary reflects a vital phase of the analysis process; it provides transparency of the meaning of each data element and can be used to supplement reader understanding. Further, it provides auditability of deep examination of the data.

In order to further analyze patterns of documentation between disciplines, each code, subcategory and category was exported from *NVivo* into an analysis worksheet using *Microsoft Excel*. The worksheet automatically pulled in the codes, subcategories, and categories organized into their respective groupings. The columns automatically included the number of sources, or participants, who provided clinical documentation consistent with each code, subcategory and category and the number of references, or times, data were documented against. As it was important to know which of the participants contributed to each code, subcategory, and category a column titled ‘Participants with documentation represented by each code, subcategory, and category’ was created. Utilizing *NVivo*, each source for each reference was reviewed and the appropriate unique participant identifier was recorded in the worksheet. For example, “with

daughter at bedside” is a code that represents what was documented by five different participants: PT1, SW2, OT4, RN6, and RN7. Each of these participant identifiers was entered into the line of the analysis worksheet titled “with daughter at bedside”. Additionally, in order to track which participants documented data representative of the subcategories and categories, the participant identifiers were also recorded into each respective subcategory and category line item of the analysis worksheet. For example, because PT1, SW2, OT4, RN6, and RN7 documented data represented by “with daughter at bedside”, they were also entered into the line of the subcategories “circumstances of admission_assessment” and “history of present illness”, and into the line of the “History” category. As this phase in primary analysis was repeated for all unique codes, identification of each participating discipline for each code, subcategory, and category occurred. This was a key step to identifying which data element is common between disciplines.

Similarly, patterns regarding the number of different disciplines whose documentation was consistent with codes, subcategories, and categories emerged. While it became immediately clear that data elements were shared between disciplines, there was a vast difference in how many different disciplines documented references for each data element. To understand patterns of shared data elements, further analysis was required.

Strong, moderate, or weak indicators of data elements common between disciplines.

As coding progressed, it became apparent that a grading system for each data element was required. For example, the code ‘Previous Admission’ included references from all five disciplines (OT1, PT1, SW1, Phys3, & RN3). Conversely, the code “Code Status” included references from only two disciplines (Phys3 & RN4). A grading system based on the level of indication that the code represented a common data element across all participating disciplines, or how many different disciplines documented references for each data element, was created

(Table 2). Levels of indication included: strong (4-5 disciplines), moderate (3 disciplines), and weak (1-2 disciplines). Using the analysis worksheet, codes, subcategories, categories were allotted an indicator of common data elements across disciplines. Additionally, within the analysis spreadsheet a colour was assigned for each of the categories. A deeper shade of colour within each category was allotted to the strong indicators; subsequent moderate and weak were allotted lighter shades of the same colour. This visually assisted the PI during data analysis to help track which category each of the strong, moderate, and weak codes and subcategories are organized within.

The PI was then able to sort the excel spreadsheet by the strong, moderate, weak indicators for each of the categories. This ability was a key and final, step in the analysis process. This initial phase of analysis was the primary method in answering the research question “*What are the common data elements found between multiple disciplines*”.

Table 2

Indication of Strength of Common Data Elements

	1 Yellow	2 Blue	3 Red	4 Green	5 Purple	6 Orange
Strong 4-5 disciplines	Dark yellow	Dark blue	Dark red	Dark green	Dark purple	Dark orange
Moderate 3 disciplines	Lighter Yellow	Lighter blue	Lighter red	Lighter green	Lighter purple	Lighter orange
Weak 1-2 disciplines	Lightest Yellow	Lightest blue	Lightest red	Lightest green	Lightest purple	Lightest orange

Additional analysis. In addition to the primary objective, to identify common data elements across disciplines, several secondary analysis patterns also emerged.

Data elements with references unique to a single discipline. Patterns such as those codes, subcategories, and categories unique to disciplines materialized; some codes contained references from a single discipline. For example, the code “Provided Nutrition and Hydration” had references from only the nursing discipline (RN1, RN4, RN6, & RN7). A new column titled “Data unique to a single discipline” was created and terms such as “Only PT”, “Only SW”, and “Only RN” were entered into each appropriate cell.

Data elements with references from all participants of a single discipline. It also became apparent that analysis was revealing another pattern; some codes, subcategories, and categories contained references from all participants of a discipline. For example all participants who were nurses provided documentation that contained references for the code “Use of numeric scale” (RN1, RN3, RN4, RN6, & RN7). A new column titled “Data elements with references from all participants of a single discipline” was created and terms such as “All RNs” and “All OTs”, etc.. were entered into the appropriate corresponding cells.

Data containing no references from a discipline. While patterns of common data elements and data unique to disciplines emerged, conversely, many codes, subcategories, and categories did not include references from all disciplines. For example, all other disciplines but SW documented data consistent with the subcategory “Use of Aides_equipment” (OT1, OT7, PT1, PT5, OT4, Phys3, Rn3, RN6, & RN7). A new column title “Data containing no references from a discipline” was created and terms such as “No SW” and “No Phys” were entered into the appropriate corresponding cells.

Questioned but is found in case study. In some instances, participants reported that they wanted to know about something even though the information was actually contained in the case study and could have been found in either the video or in the ED and/or discharge note. A

subcategory titled “questioned but is found in case study” was created. This includes information documented in the clinical notes in the form of a question yet evidence of the answer existed in other areas of the case study. For example, “?grocery delivery” documented by OT1 was provided by the daughter as stated in the video. PT1 wanted more details about the fall “where, what she was doing, when”. These were all answered by the daughter and within the ED document.

Data reported but no evidence found in case study. Similarly, participants reported something as information but that information was not actually included in any of the case study; it was not found in the video nor the ED and/or discharge notes. This subcategory was titled “data reported but no evidence found in case study”. While neither of these was analyzed for common data elements, there were enough participants who documented data coded within these subcategories to warrant analysis.

This section includes information such as “on room air” (PT1) yet the patient had nasal prongs on throughout the video.

Data elements with more than 40 references. While it was important to note when a data element contained references from multiple disciplines, review of the number of references also afforded an ability to further quantify the significance of the data elements. Automatic capture of each reference through *NVivo*, or the total number of times each singular piece of unique documentation represented a code, subcategory, or category assisted with further analysis. A new column titled “Data elements with more than 40 references” was created and a “yes” was entered into each corresponding cell.

Data Analysis (Participant Characteristics and Opinions)

In addition to understanding common data elements, this study also sought to analyze participant clinical profiles (discipline, number of years working in their discipline, number of years working in current position, age, & gender), opinions regarding both their work in interprofessional and/or multidisciplinary teams, and electronic documentation within an electronic health record (information is duplicated in the paper and/or electronic health record, number of years documenting in an EHR, comfort level documenting electronically, and belief that electronic documentation is beneficial for patients and/or clinicians). Each participant answered the 3rd section of the survey in *FluidSurveys*, (Appendix R). Upon receipt of the final participant response, all data were statistically analyzed using quantitative descriptive statistics.

Chapter 5

Report of Findings

This chapter reports findings of the common data elements found between multiple disciplines based on the case scenario. The research question was “*What are the common data elements found between multiple disciplines*”. The methodology consisted of an exploratory, descriptive, qualitative design. Both a video and a patient record based on a case scenario of a patient with a fractured hip diagnosis were provided to participants. Utilizing a three-part survey, participants documented their clinical notes in the first section, documented missing scenario details in the second section, and their participant sampling characteristics and beliefs in the third section. To answer the research question, analysis consisted of open coding the content provided from both sections one and two. During the analysis process, as other observations were made, additional parallel analysis was conducted. Finally, analysis of participant characteristics and beliefs was conducted. The report of findings, consisting of primary, secondary, and participant characteristics and beliefs results, entails both narrative and visual representation of the data; each will supplement the other to provide a clear understanding of the multiple findings.

Coding of Case Scenario: Analysis

Understanding the results. The first section of the analysis results provides a deeper understanding of the analysis process that led to the results. The second portion will provide narration and visual figures and tables for each category. While both include examples from the data, Appendix S provides all the data coded from all the participant clinical notes. Upon completion of analysis all data were coded resulting in a total of six categories. The categories

were: “1 Living Situation”; “2 Assessments”; “3 Histories”; “4 Interventions”; “5 Organization of clinical note”; and “6 Sources of patient information”. Each category was the highest level of the hierarchy with an assemblage of several subcategories, or groupings of similar unique element. The unique elements were at the lowest point of the hierarchy of the classification; they were singular data elements representative of components derived from participant clinical notes. Careful labeling of the categories, subcategories and distinctive data elements was an important consideration. Terms used for the labels of the codes were either selected from the raw data or chosen as they closely aligned with the words documented by the participants. For example, while the words in the label of the code “daughter’s support with IADLs” were not found in clinical notes, the label closely represented all the data elements related to this subject matter. Conversely, the label of the code “support with meals” contained actual words used within clinical notes. In order for the results of the analysis process to make sense and add to the knowledge of the concept under investigation, the coded labels needed to both provide a wholesome representation of the raw data; this was achieved through using labels that closely represented the documents. With a total of 235 individual data elements, subcategories, and categories each of the labels used provide the ‘story’ of the results. In addition to the language used for the codes, categorization of the data elements led to a classification system; hierarchical relationships within the codes emerged.

Hierarchical relationships of ‘parent’, or higher level categories and subcategories, and lower level ‘child’ subcategories and unique data elements arose during analysis. For example, the category “living situation” was further subdivided into two subcategories of “difficulties at home” and “lives in home_apartment”. One of the subcategories of “difficulties at home” is “challenges with IADLs” which contains a further child subcategory of “daughter’s support with

IADLs”; this subcategory is further delineated into six singular data elements: 1) “support with groceries”, 2) “support with meals_cooking”, 3) “support with transportation”, 4) “support with medications”, 5) “support with bills”, and 6) “support with cleaning”. The singular data elements are the lowest level child codes that cannot be further delineated into any further deeper categorization.

As narrative explanation of hierarchical relationships is ideally supplemented with a visual representation of all coded data, each category was organized into a flowchart. For instance, the while an explanation of relationships of the singular elements found in “daughter’s support with IADLs” was provided, the tiered classification of “living situation” depicted in figure 1 establishes the flow from the highest parent to each child code, ending with the codes that cannot be further delineated. Analysis processes uncovered relationships between the data; the resulting six parent categories consist of multiple levels of child subcategories and singular components that are best depicted using flowcharts. However, in order to answer the research question: “*What are the common data elements found between multiple disciplines*” coding, the use of appropriate labels, and classification of codes were not adequate. Identification of the common data elements between disciplines was required. The next step was to identify what participants contributed to each singular code, subcategory, and category.

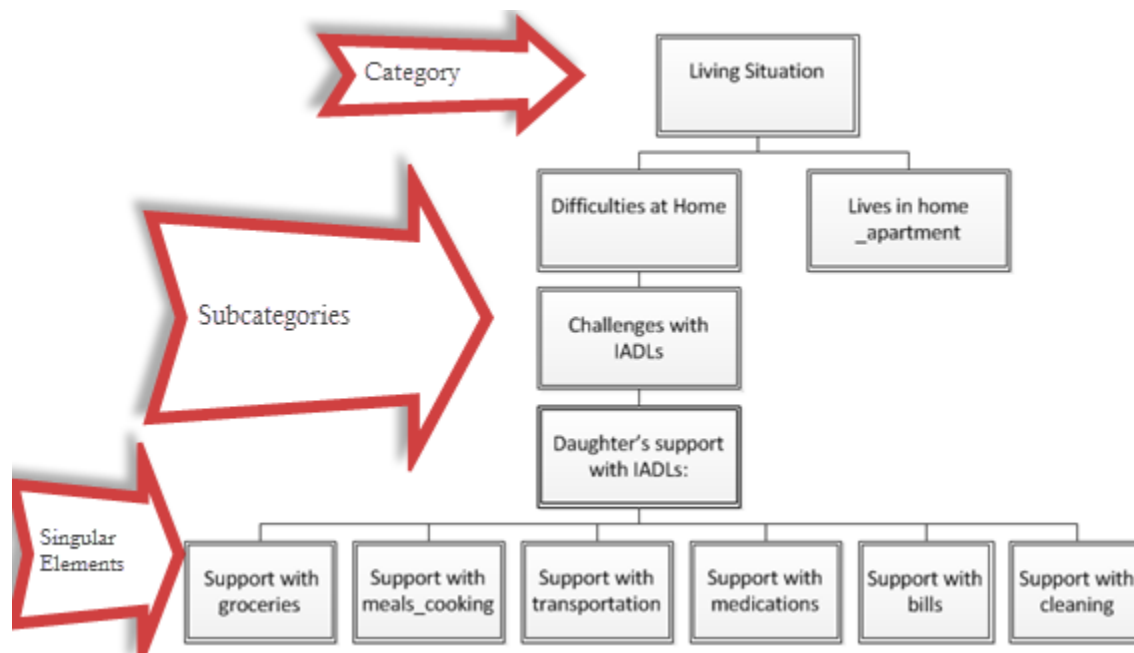


Figure 1. Schematic of hierarchical relationships. Parent categories, child subcategories and child single data elements are depicted using the example of the category living situation.

Once the raw data were coded, labeled, and categorized, participant identifiers of who documented each singular data element, subcategory, and category were entered into the analysis worksheet in the column labelled “Participants with documentation represented by each code”. Disciplines included nursing (RN), occupational therapy (OT), physiotherapy (PT), social work (SW), and physician (Phys). For example, “support with groceries” is a code that represents what was documented by five different participants: OT1, OT7, SW2, & RN3. Each of these participant identifiers was entered into the line of the analysis worksheet titled “support with groceries”. Additionally, in order to track which participants documented data representative of the subcategories and categories, these participant identifiers were also recorded into each respective subcategory and category line item of the analysis worksheet. For example, as OT1, OT7, SW2, & RN3 documented data represented by “support with groceries” they were also entered into the line of the parent subcategories “daughter’s support with IADLs” and

“challenges with IADLs”, “difficulties at home”, and, finally, into the line of the “Living situation” category (table xx). The highest parent, “Living situation” contains representation from 12 participants.

This phase in the analysis process enabled identification of each participating discipline for each code; this was a key first step in identifying which data element is common between disciplines. Interestingly, in the process of identifying the disciplines for each code, it became clear that not all codes had equal representation of the number or varieties of disciplines. Stratification of the codes was the next step in the analysis process in order to answer the question *“What are the common data elements found between multiple disciplines”*.

During analysis of the data, codes representing clinical documentation ranged in contribution from a single discipline to representation from all five disciplines (RN, SW, PT, OT, & Phys). Subsequently, a method to stratify each entity based on the number and discipline types of each participant was required. The stratification established was that if there were four to five different disciplines the code was allotted a “strong” indication, “moderate” if there were three different contributing disciplines, and “weak” if there were one or two disciplines. For example, the code “support with shopping” represented documentation from only two disciplines, PT and RN; it is a weak indicator of a data element common between disciplines. The code “support with groceries” represents documentation from OT, SW, and RN; it is a moderate indicator of common data elements between disciplines. Finally, the subcategory code “daughter’s support with IADLs” represents documentation from OT, SW, RN, & PT; it is a strong indicator of a common data element between disciplines. As each participant that contributed to the subcategories and singular elements were included in each category, all categories were strong indicators of common data elements between disciplines. Conversely,

singular entities and subcategories were a mix of strong, moderate, and weak indicators. While visual representation of the hierarchical relationships of the codes is represented with the use of figures, representation of the stratification of strength of indicators was required. Subsequently, each category was allotted its own colour; the deeper shades of each colour represent the strong indicators, the lighter shade the moderate indicators, and the lightest shades the weakest indicators. As demonstrated in Figure 2, the addition of colours to the hierarchical relationships of the codes provides a robust visualization. Strong, moderate, and weak colour indicators within the context of categories, subcategories, and single data elements facilitate a deeper representation of the results of the analysis of the common data elements between disciplines. The stratification and colour methods were foundational in determining what codes, subcategories, and categories strongly, moderately, or weakly represented data elements common between disciplines. In addition to coding, identification of disciplines for each code, and stratification of each code, a numbering system was also established.

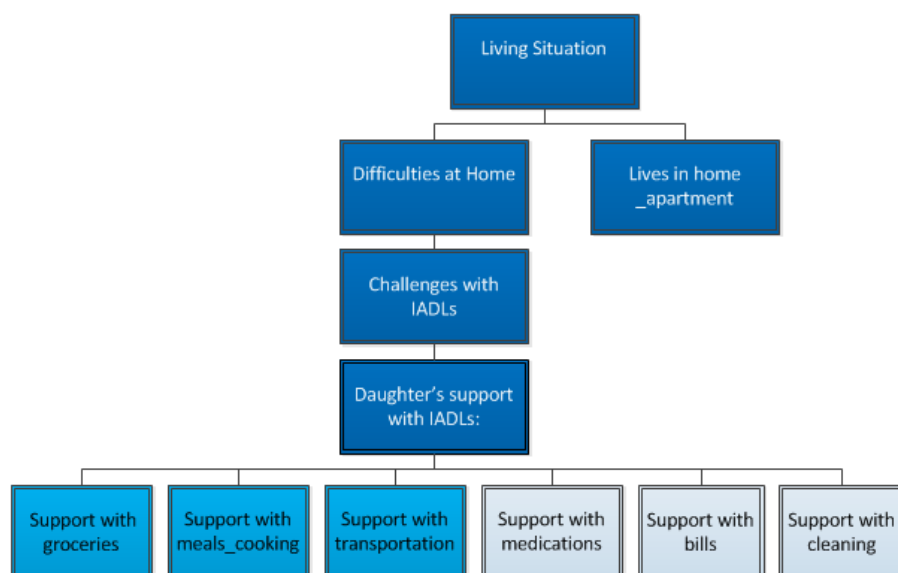


Figure 2. Schematic with colour and parent child classification.

An additional system of portraying the classification of relationships between all the codes a numbering system was utilized. Continuing with the example of the category of “Living Situation”, it was allocated number “1”. Subsequently, its subcategories, “difficulties at home” was allotted “1.1”; “lives in home_apartment” was allotted “1.2”. For each subsequent child classification the numbering system continues with the addition of digits to represent the relationship of each subcategory and singular data element. For example, the farthest left digit identifies the parent level; the far right the unique data element; the numbers in the middle represent the subcategory level(s). Table 3 below displays how the “1.”, which represents “living situation” is carried into the children codes. The farthest right “1.” in “supports with groceries” represents this single data element; all the middle “1.” represent the subcategories.

Table 3

Numeric IDs for Categories, Subcategories, and Single Date Elements

1.	Living Situation
1.1.	Difficulties at home
1.1.1.	Challenges with IADLs
1.1.1.1.	Daughter’s support with IADLs
1.1.1.1.1.	Support with groceries

The provision of code labels that closely represent the data and classification of data into categories, subcategories, and single data elements were foundational steps in categorizing the data; identification of the disciplines attributed to each code and stratification of the strength of the code indicator were key steps in establishing the common data elements between disciplines. The provision of visual guides such as figures, colour coding, and the use of a numbering system facilitate ‘making sense’ of the results. Similarly, as the clinical notes documented by participants contained extensive data elements, the full list of each code and each single data element is provided in Appendix S.

Study Results

The report for each category begins with a brief synopsis and a figure of all the subcategories and singular data elements. Each subsequent section will include a brief explanation of the subcategory, a figure of the subcategory, and will end with a table of examples from the data for each code. The report begins with the category with the highest number of strong and moderate indicators of common data elements and will proceed in the following order:

- “1. Living situation” (strong/moderate subcategories N=36)
- “2. Assessments” (strong/moderate subcategories N=33)
- “3. Histories” (strong/moderate subcategories N=31)
- “4. Interventions” (strong/moderate subcategories N=26)
- “5. Sources of patient information” (strong/moderate subcategories N=5)
- “6. Organization of clinical note” (strong/moderate subcategories N=2)

1. Living Situation. Containing the highest number of strong and moderate indicators (N=36), the category “Living situation” (Figure 3) represents all the clinical documentation related to the patient’s life prior to her hospital admission. According to the coded data, she had many difficulties and challenges related to her IADLs and ADLs. While she did have a support system in place, she mainly relied on her daughter. She was living at risk while managing multiple health issues and utilizing various. Finally, she recently downsized, lived alone in an apartment and participants were wondering if she would consider alternative living arrangements.

Figure 3 depicts the subcategories and single data elements related to “Living situation”; the elements in dark blue are the strong indicators of common data elements, lighter blue are moderate indicators, and lightest blue are weak.

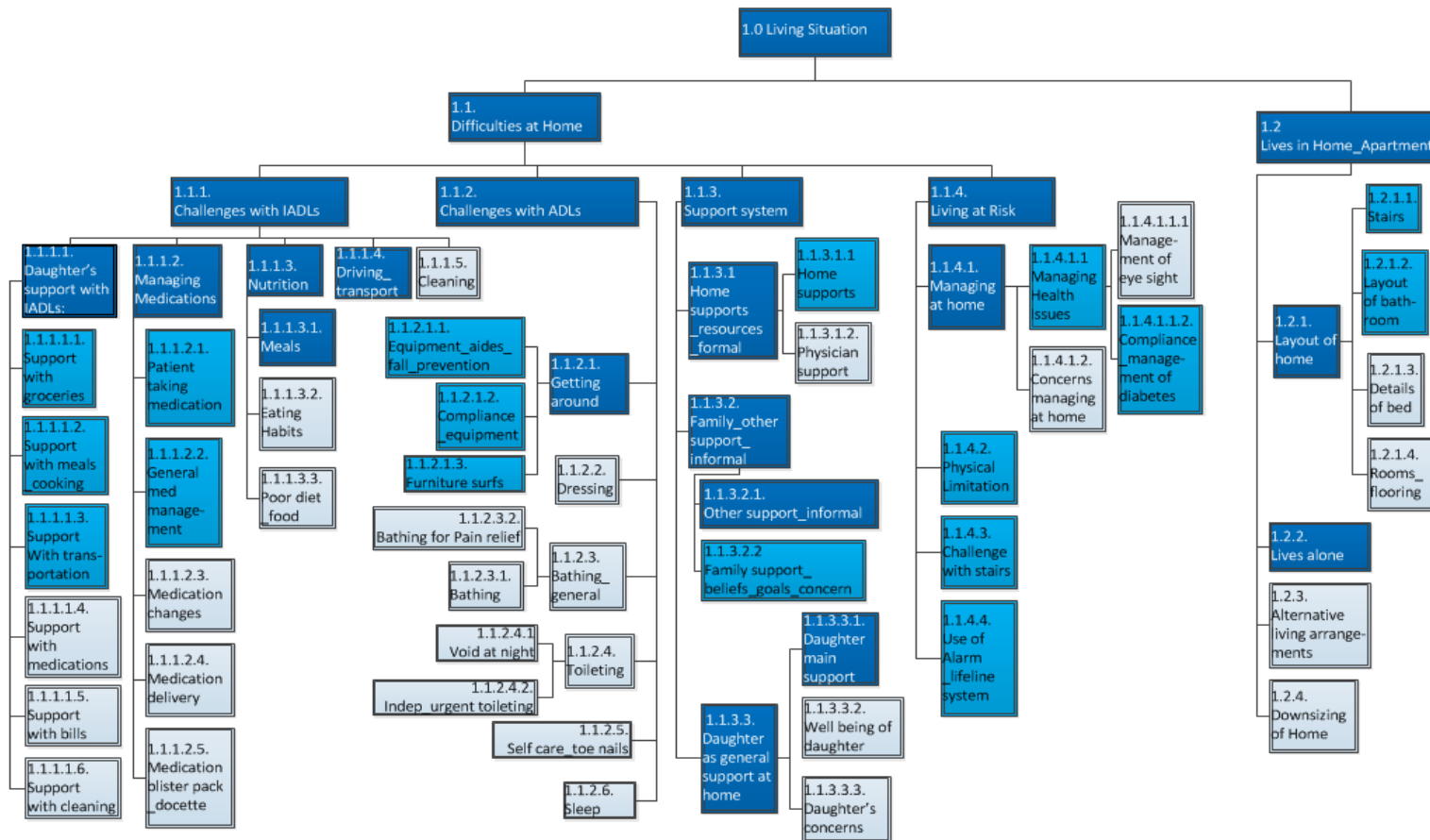


Figure 3. Schematic of the category living situation.

1.1 Difficulties at home. Within “Living situation”, as “difficulties at home” is the subcategory with the highest number of strong and moderate indicators (N=31), it is the first child subcategory in the hierarchy for this category. As it contains four subcategories, challenges with IADLs and ADLs will be reported together. Figure 4 below displays the subcategories and single data elements within ‘difficulties at home; support system and living at risk will be combined and reported subsequently.

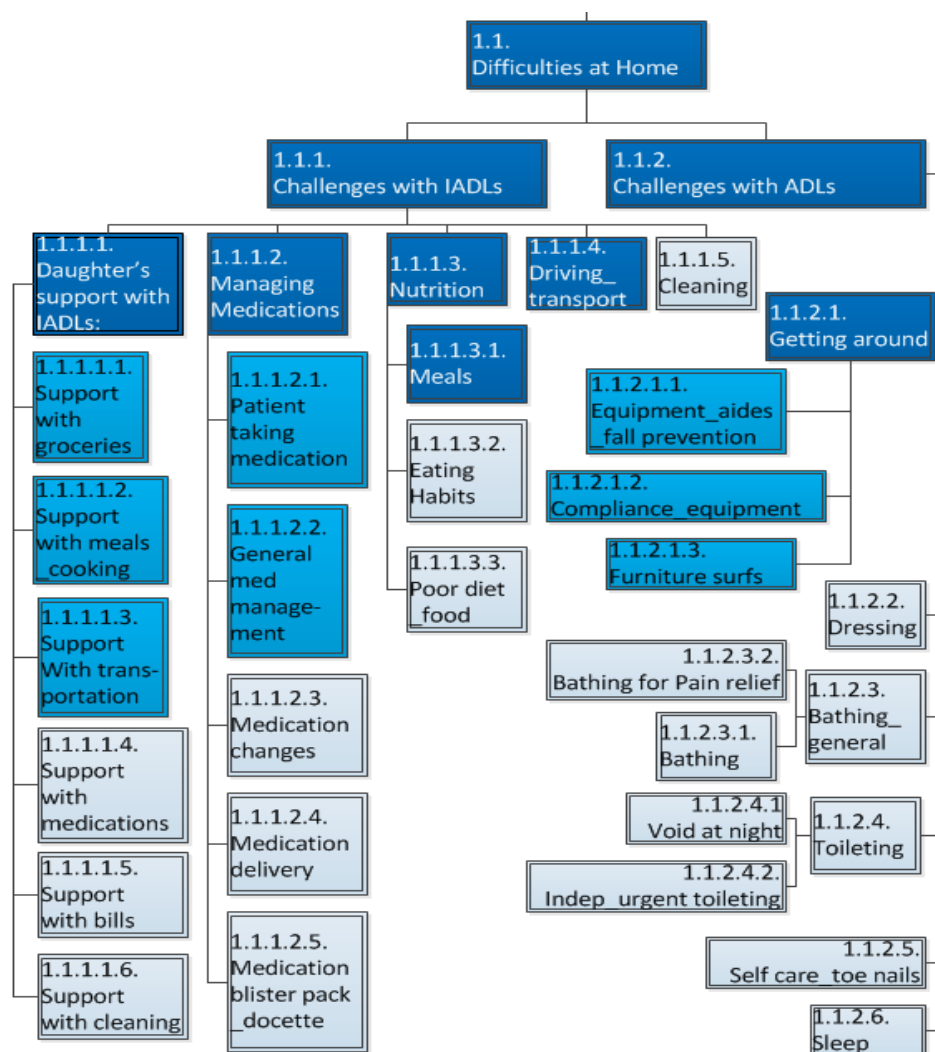


Figure 4. Schematic of difficulties at home. The hierarchical relationships within the subcategory difficulties at home include both challenges with IADLs and challenges with ADLs.

1.1.1. Challenges with IADLs. Beginning with “challenges with IADLs”, Table 4 below provides a summary of each code and its corresponding number, the label used for each code, an example from the data, and the participants whose documentation is represented by the code. The strong (darkest blue) and moderate (lighter blue) indicators, such as “daughter’s support with IADLs”, including groceries, meals/cooking/shopping, and transportation, as well as managing medications, general nutrition and driving_transportation were the common data elements shared between disciplines for “challenges with IADLs”. While most strong indicators were subcategories, “driving_transport” was the only single data elements categorized as strong. Additionally, as “driving_transport” represents documentation from all five disciplines, the results indicate it is the strongest single data element within “challenges with IADLs” for this group of participants. A few weak indicators, such as other ways the daughter supports the patient with her IADLs, medication changes, and cleaning are also found in “challenges with IADLs”. While not represented than more than two disciplines, weak indicators represent common data elements between disciplines.

Table 4

Difficulties at Home: Challenges with IADLs_Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
1.1.	Difficulties at home		
1.1.1.	Challenges with IADLs		
1.1.1.1.	Daughter’s support with IADLs		
1.1.1.1.1	Support with groceries	<ul style="list-style-type: none"> daughter assists with getting meals/groceries 	OT, RN, SW
1.1.1.1.2.	Support with meals_cooking_shopping	<ul style="list-style-type: none"> daughter supports patient with meals/groceries and shopping 	OT, RN, PT
1.1.1.1.3.	Support with transportation	<ul style="list-style-type: none"> provides all transportation for her mother 	OT, SW, PT

1.1.1.1.4	Support with medications	<ul style="list-style-type: none"> dtr gets meds for pt 	PT
1.1.1.1.5.	Support with bills	<ul style="list-style-type: none"> pays her mother's bills at the bank 	SW
1.1.1.1.6	Support with cleaning	<ul style="list-style-type: none"> patient has difficult with cleaning, and writer assumes daughter assists with that as well 	RN
1.1.1.2.	Managing medications		
1.1.1.2.1	Patient taking medications	<ul style="list-style-type: none"> patient not likely compliant with medication regimen 	PT, OT, RN
1.1.1.2.2	General med management	<ul style="list-style-type: none"> patient has been managing at home-meds 	OT, PT, RN
1.1.1.2.3	Medication changes	<ul style="list-style-type: none"> recent med changes 	Phys, RN
1.1.1.2.4	Medication delivery	<ul style="list-style-type: none"> unsure how medications are delivered to household 	RN, OT
1.1.1.2.5	Medication blister packs_docette	<ul style="list-style-type: none"> blister packs and/or dosette used 	RN, OT
1.1.1.3.	Nutrition		
1.1.1.3.1.	Meals	<ul style="list-style-type: none"> community resources for meals 	OT, SW, PT
1.1.1.3.2.	Eating habits	<ul style="list-style-type: none"> eating habits 	RN, OT
1.1.1.3.3.	Poor diet_food	<ul style="list-style-type: none"> fridge full of expired foods 	OT, RN, RN
1.1.1.4.	Driving_transport	<ul style="list-style-type: none"> pt doesn't drive 	PT, SW, RN, Phys,OT
1.1.1.5.	Cleaning	<ul style="list-style-type: none"> patient struggles with heavy cleaning 	SW, RN

1.1.2. Challenges with ADLs. This is the next subcategory within “difficulties at home”; it contains four strong/moderate indicators. “Getting around” is a subcategory that includes “equipment_aides_fall prevention” and “compliance_equipment”, which are strong indicators, and “furniture surfs”, a moderate indicator. This signifies that participant notes include raw data related to the patient’s mobility and use of equipment. Multiple weak indicators such as dressing, bathing, toileting, self-care, and sleep, provide further insight into the shared elements participants documented regarding the patient’s ADLs. Similar to IADLs, the strongest shared data element, “getting around” in ADLs, is indicative of the some of the challenges the patient

was experiencing at home. Table 5 provides some examples from the data and the disciplines represented by the codes included in the subcategory “challenges with ADLs”

Table 5

Difficulties at Home: Challenges with ADLs_ Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
1.1.	Difficulties at home		
1.1.2.	Challenges with ADLs		
1.1.2.1.	Getting around		
1.1.2.1.1.	Equipment_aides _fall prevention	<ul style="list-style-type: none"> Equipment: cane 	OT, PT, RN, Phys
1.1.2.1.2.	Compliance_equipment	<ul style="list-style-type: none"> Mobility:Old chart indicate a 4ww but not currently used 	OT, PT, RN, Phys
1.1.2.1.3.	Furniture surfs	<ul style="list-style-type: none"> furniture surfs 	OT, PT, RN
1.1.1.2.	Dressing	<ul style="list-style-type: none"> ADL function-dressing 	OT, RN
1.1.2.3.	Bathing general		
1.1.2.3.1.	Bathing	<ul style="list-style-type: none"> ADL function-dressing, bathing 	OT
1.1.2.3.2.	Bathing for pain relief	<ul style="list-style-type: none"> hot bath helps to decrease pain 	PT, OT
1.1.2.4	Toileting		
1.1.2.4.1.	Void at night	<ul style="list-style-type: none"> nocturia x2 	OT, RN
1.1.2.4.2.	Indep_urgent toileting	<ul style="list-style-type: none"> Indp, urinary urgency 	OT
1.1.2.5.	Self care_toe nails	<ul style="list-style-type: none"> Self-care 	OT, SW
1.1.2.6.	Sleep	<ul style="list-style-type: none"> indicated she does not sleep well 	OT

1.1.3. Support system and 1.1.4. living at risk. “Support system” and “living at risk” are the next subcategories within “difficulties at home”. Formal supports, including home supports, and family supports, especially the daughter, were reported by participants. Both “other support_informal” and “daughter main support” are strong single data elements within “support system” with documentation from four different disciplines. Similarly, in “living at risk” the patient had challenges “managing at home”; this is the only subcategory which is further delineated into moderate single data elements. Managing her health issues, especially her

diabetes, her limitations physically as well as the use of stairs and an alarm system are all common data elements found in “living at risk”. In addition to the patient’s challenges with IADLs, and ADLS, her support system and the fact that she was living at risk included multiple strong and moderate indications of common data elements representing her “difficulties at home”. The hierarchical relationships and strength of indicators for “support system” and “living at risk” within the subcategory of “difficulties at home” are found in Figure 5. Table 6 includes examples from the raw data and the disciplines whose documentation is represented by “support system” and “living at risk”.

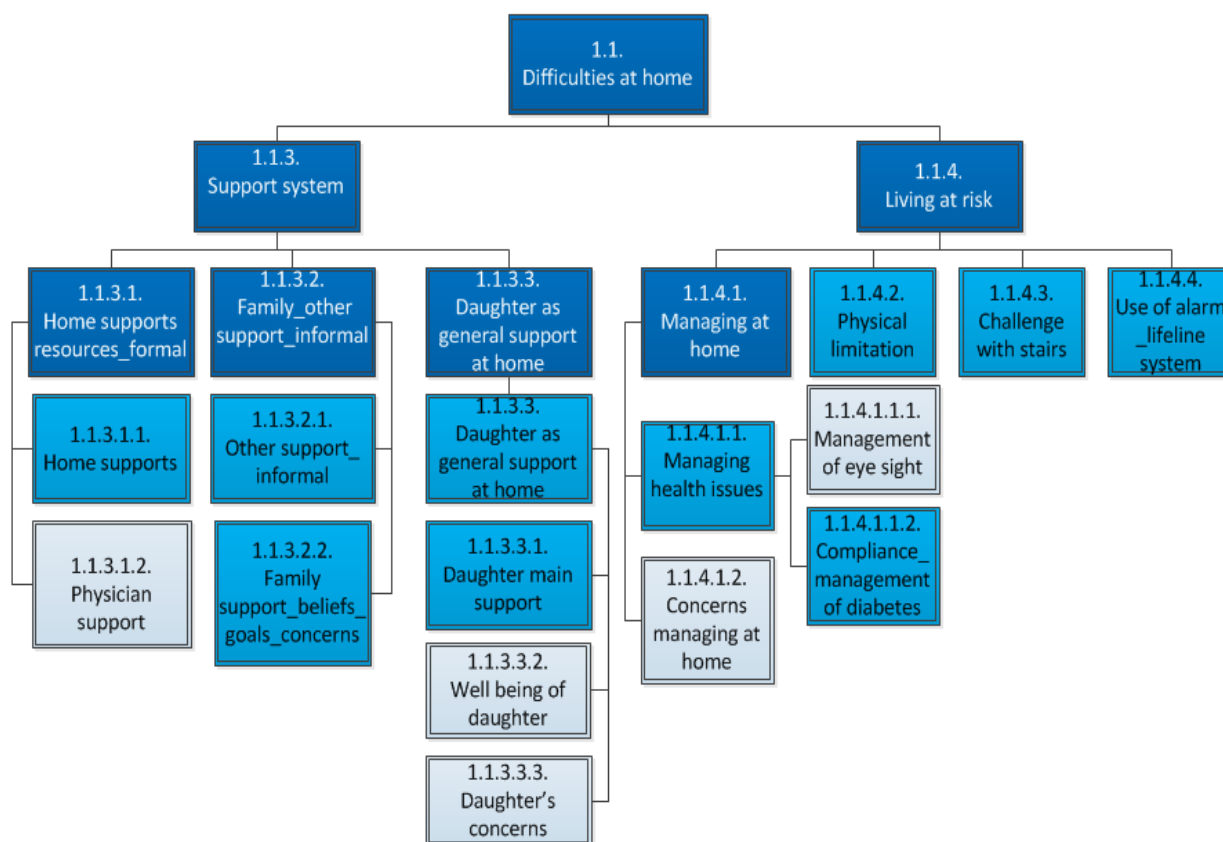


Figure 5. Schematic of difficulties at home. The hierarchical relationships within the subcategory difficulties at home include both support system and living at risk.

Table 6

Support System and Living at Risk_ Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
1.	Living Situation		
1.1.	Difficulties at home		
1.1.3.	Support system		
1.1.3.1.	Home supports_resources_formal		
1.1.3.1.1.	Home supports	<ul style="list-style-type: none"> home supports in the past 	OT, SW, Phys, RN
1.1.3.1.2.	Physician support	<ul style="list-style-type: none"> previous history with geriatrics 	RN, Phys
1.1.3.2.	Family_other support_informal		
1.1.3.2.1.	Other support_informal	<ul style="list-style-type: none"> other supports other than daughter 	PT, SW, Phys, RN
1.1.3.2.2.	Family support_beliefs_goals_concerns	<ul style="list-style-type: none"> what are the families concerns and goals 	OT, SW, Phys
1.1.3.3.	Daughter as general support at home		
1.1.3.3.1	Daughter main support	<ul style="list-style-type: none"> supportive daughter who assists with community management 	OT, SW, Phys, RN
1.1.3.3.2.	Well-being of daughter	<ul style="list-style-type: none"> daughter suffering from care giver burnout 	OT, RN
1.1.3.3.3.	Daughter's concerns	<ul style="list-style-type: none"> daughter concerned about financials 	OT, RN
1.1.4.	Living at risk		
1.1.4.1.	Managing at home		
1.1.4.1.1.	Managing health issues		
1.1.4.1.1.1	Management of eye sight	<ul style="list-style-type: none"> struggling with eye sight 	SW
1.1.4.1.1.2.	Compliance_management of diabetes	<ul style="list-style-type: none"> patient does not check blood sugars 	RN, OT, Phys
1.1.4.1.2.	Concerns managing at home	<ul style="list-style-type: none"> report concerns re: managing prior to admission 	OT
1.1.4.2.	Physical limitation	<ul style="list-style-type: none"> pt c/o feeling weak in legs 	OT, PT, RN
1.1.4.3.	Challenge with stairs	<ul style="list-style-type: none"> nervous on stairs 	OT, PT, SW

1.1.4.4.	Use of alarm_lifeline system	<ul style="list-style-type: none"> • does she have a medical alarm (lifeline) 	OT, PT, RN
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Within the category “Living situation”, the first subcategory “difficulties at home” contained multiple strong and moderate indicators of common data elements. Multiple disciplines documented data related to the patient’s challenges with ADLs such as requiring daughter’s support, managing medications, meals, and driving. Similarly, multiple disciplines documented data related to the patient’s challenges with IADLs such as how she was getting around and her use of equipment. Additionally, multiple disciplines documented the patient requiring a support system, especially her daughter, and challenges living at risk such as managing her health issues, specifically diabetes, and physical limitations including risk of stairs and requiring the use of an alarm system. While most documentation within “Living Situation” related to her challenges at home, many participants also recorded data simply stating that she lived in her apartment and provided a few more details about her accommodations. Therefore, the next subcategory of “Living situation” is “lives in home_apartment”.

1.2. Lives in home_apartment. This second subcategory of “Living Situation” contains two subcategories, “layout of home” and “living alone in apartment”. “Layout of home” includes two moderate indicators, “stairs” and “layout of bathroom”. These components were descriptors of the patient’s home rather than challenges. Similarly, “lives alone” was not documented as a challenge; it was simply an account of her home environment. Of interest, “lives alone” is the one single strong data element within “lives in home_apartment”; it represents documentation from four different disciplines and indicates that this piece of information is a common data element strongly indicative of shared documentation. Containing four weak indicators related to the patient’s bed, rooms/flooring, the potential to live in an

alternative living situation, and the fact that she just downsized round out the report for “lives in home_apartment”. Figure 6 below represents the hierarchical relationships and indicators of strength of common data elements coded in “lives in home_apartment”. Additionally, Table 7 below provides examples from the data and the disciplines who documented data represented by the codes.

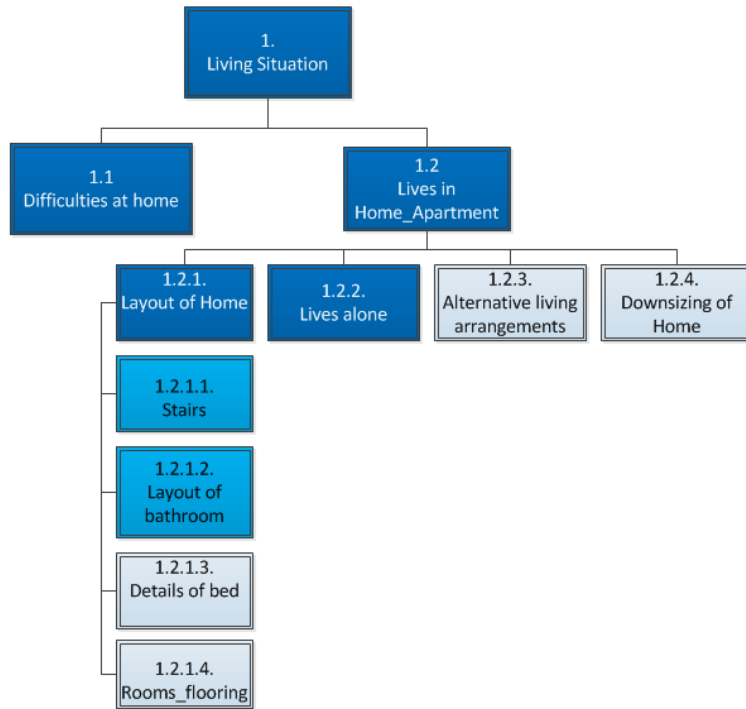


Figure 6. Schematic of lives in home_apartment. The hierarchical relationships within the subcategory lives in home_apartment.

Table 7

Lives in Home_Apartment: Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
1.2	Lives in home_apartment		
1.2.1	Layout of home		
1.2.1.1.	Stairs	<ul style="list-style-type: none"> stairs with rail 	OT, PT, SW
1.2.1.2.	Layout of bathroom	<ul style="list-style-type: none"> layout of bathroom (tub?, height of toilet) 	OT, PT, RN
1.2.1.3.	Details of bed	<ul style="list-style-type: none"> “bar on her bed” (OT4) “height of toilet and bed” (OT4) 	OT
1.2.1.4.	Rooms_flooring	<ul style="list-style-type: none"> how many rooms_flooring 	OT
1.2.2.	Lives alone	<ul style="list-style-type: none"> lives alone in apartment 	OT, PT, Phys, SW
1.2.3.	Alternate living arrangements	<ul style="list-style-type: none"> willingness to relocate to a wheelchair accessible environment 	SW
1.2.4.	Downsizing of home	<ul style="list-style-type: none"> downsizing from her house 	SW, RN

Living situation, the first category to be reported, contains multiple strong and moderate indicators in all subcategories and a few single data elements. It represents all the documentation recorded in participant clinical notes related to the patient’s home circumstances. Between both “difficulties at home” and “living situation” there are a combined total of 36 strong and moderate indicators of common data elements. The remaining 27 weak indicators, while not as indicative in strength, they provide insight into the documentation shared between disciplines related to her “Living Situation”. Of interest, while “Living Situation” included the highest number of strong and moderate indicators, it is also the only category that does not represent all 14 participants; documentation from PT7 and RN1 did not contain data representing the patient’s home life. All other categories represent documentation from all fourteen participants. The next category with a high number of strong and moderate indicators of common data elements was, “Assessments”.

2. Assessments. The second highest category of strong indications of common data elements shared between disciplines, “Assessments”, contained 33 strong and moderate indicators of common data elements between disciplines. Participants extensively documented data related to patient assessments. As portrayed in the case scenario, the patient had challenges with her cognitive status and was showing symptoms of delirium. Additionally, both physical and emotional components were revealed in both the video and paper record. Not surprisingly, “Assessments” includes coded data related to its three subcategories: 1) “physical assessment”, 2) “cognitive_delerium assessment”, and 3) “emotional assessment”. As highlighted in Figure 7 below, the hierarchical relationships are portrayed in the placement of the child classifications in relation to their parent subcategories and category. Additionally, the deepest yellows are the strong indicators, the lighter yellow the moderate, and the lightest yellow are the weak indicators of common data elements. The first subcategory to be reviewed is “physical assessment”.

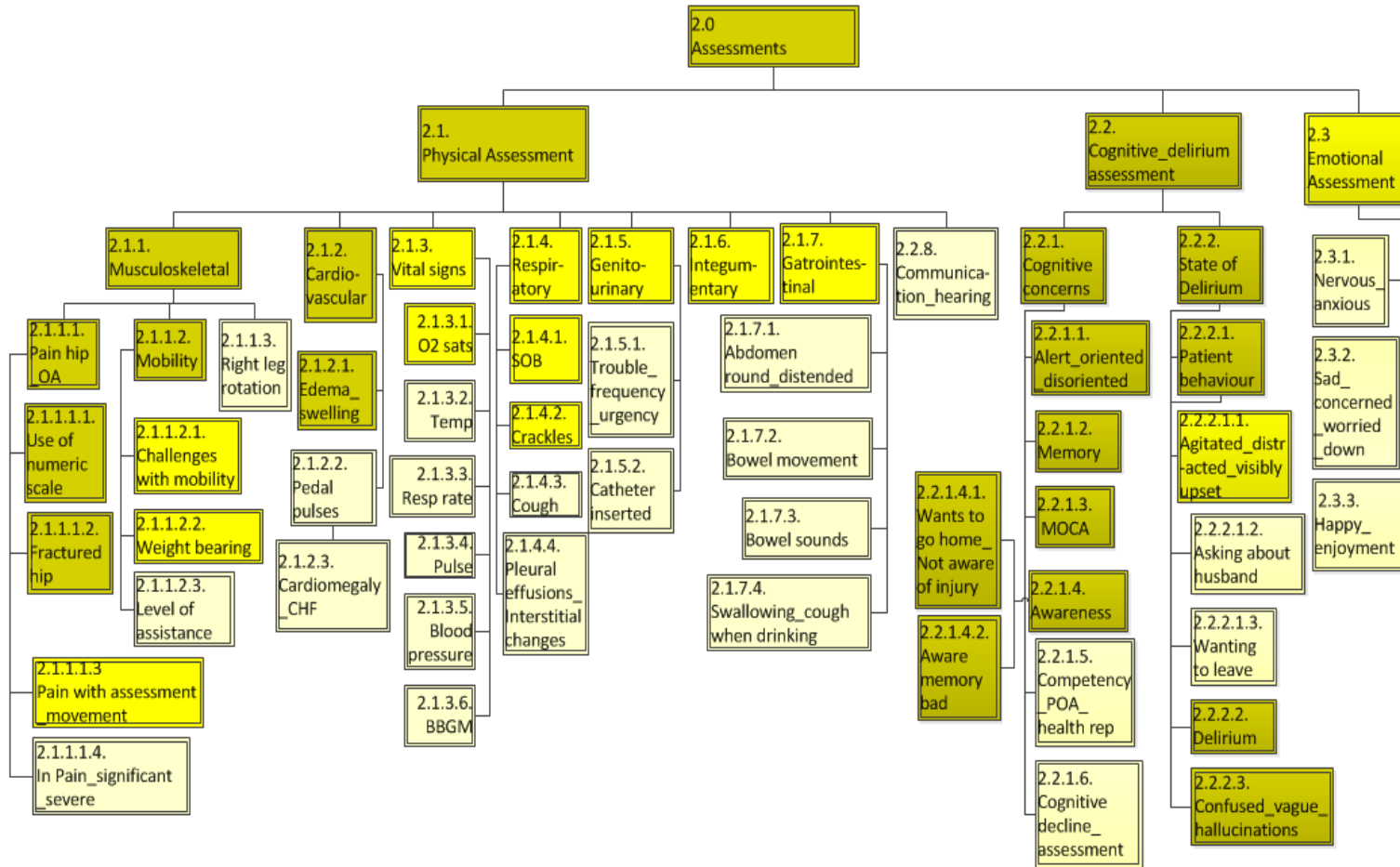


Figure 7. Schematic of the category assessments.

2.1 Physical assessment. The first subcategory of “Assessments”, “physical assessment”, contained 18 strong and moderate indicators of common data elements and 25 weak ones. It represents the extensive documentation recorded by participants in their clinical notes related to the physical assessment as portrayed in both the video and paper portions of the case scenario. Data related to the patient’s anatomical systems as well as pathology related to her conditions are included in this subcategory of “Assessments”. The subcategory with the highest number of strong and moderate common data elements is “musculoskeletal”

2.1.1. Musculoskeletal. “Musculoskeletal” contains many data elements related to the patient’s pain, fractured hip, and mobility concerns. It has two single data elements that both represent documentation from four different disciplines; “use of numeric scale” and “fractured hip” are both strong indicators of common data elements. The data recorded in these elements include information pertaining to the patient’s diagnosis of a broken hip and the pain scale used by the nurse in assessing the patient’s pain level; 10/10 was recorded by several participants. A few moderate indicators, “pain with assessment_movement”, “challenges with mobility”, and “weight bearing” each represented documentation from three different disciplines. These represented data related to how the patient’s movement increased pain, that mobility was challenging, and her weight bearing status is non-weight bearing. There were a few weak indicators that represented that her pain was severe, that she required an increased level of assistance, and that her right leg was rotated. “Musculoskeletal” is the first subcategory within “Physical assessment” as it has the highest incidence of strong and moderate indicators; Figure 8 presents the hierarchical relationships and strength of indicators for “musculoskeletal assessment”. The subcategories with the next highest number of strong and moderate indicators to be presented are “cardiovascular” and “vital signs”.

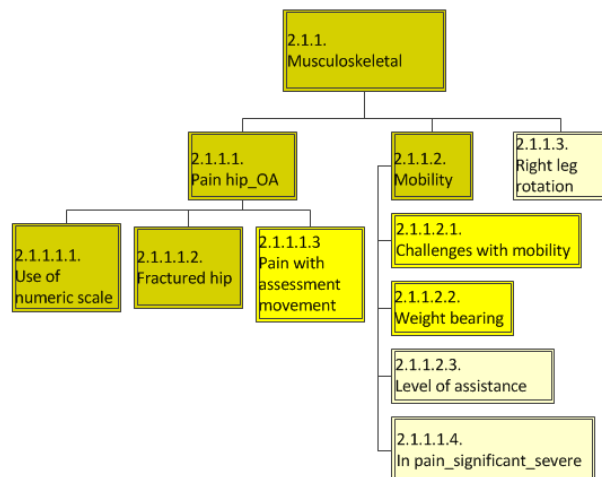


Figure 8. Schematic of musculoskeletal subcategory. The hierarchical relationships within the subcategory musculoskeletal highlights the subcategories of pain hip_OA (osteoarthritis), mobility, and the single data element right leg rotation.

2.1.2. Cardiovascular and vital signs. After “musculoskeletal”, the subcategory of “cardiovascular” contains the last strong indicator within “physical assessment”. All disciplines other than social work documented data represented by the code “edema_swelling”. Almost all examples include language such as pitting, swelling, and edema. Additionally participants also recorded information related to “pedal pulses” and “cardiomegaly_CHF” both of which are weak indicators, but complete the subcategory of “cardiovascular”. Other than SW and OT, the rest of the disciplines documented vital signs within their clinical notes. Within “vital signs”, the only moderate indicator of a common data element was “O2 sats” which represented documentation from three different disciplines. Otherwise, “temp”, “resp rate”, “pulse”, “blood pressure”, and “BBGM” are all weak indicators representing one or two different disciplines. “Cardiovascular” and “vital signs”, both subcategories of “physical assessment” contain strong, moderate, and weak indicators of common data elements. Figure 9 presents the subcategories and single data elements within ‘physical assessment’. The next subcategories consist of the remaining components found in ‘physical assessment’.

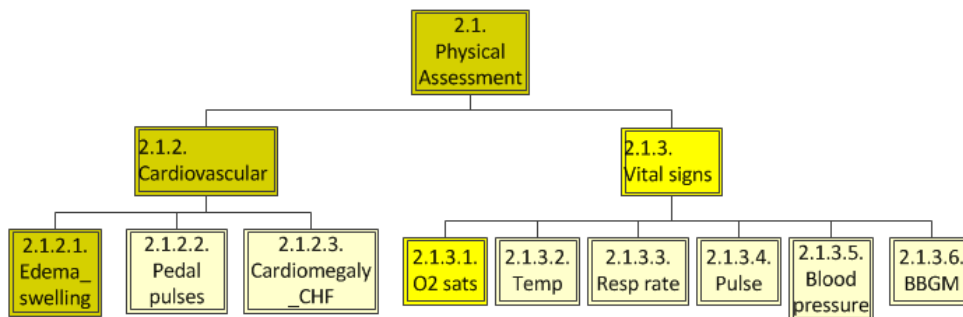


Figure 9. Schematic of physical assessment portion one. The hierarchical relationships within the subcategory physical assessment depict the subcategories of cardiovascular and vital signs.

2.1.4. *Respiratory*, 2.1.5. *genitourinary*, 2.1.6. *integumentary*, 2.1.7. *gastrointestinal*, and 2.1.8. *communication hearing*. The next few subcategories of “physical assessment” include information documented in participant clinical notes related to the patient’s breathing, voiding, skin, abdomen, bowels, swallowing, and communication. The first and only subcategory that contains moderate indicators of common data elements in this grouping is “respiratory”. Three disciplines, PT, Phys, and RN, all documented the patient’s shortness of breath (“SOB”), and that she had “crackles” in her lungs. Participants also documented data represented by “cough” and “pleural effusions_insterstitial changes”. Although weak indicators, they are also included in the subcategory “respiratory”. “Genitourinary” includes information related to participants documentation about her urgency, frequency, and trouble urinating. These are all weak indicators of common data elements. As three different disciplines documented data related to the patient’s reddened buttocks and red area on her back, “integumentary” is a moderate indicator of documentation shared between disciplines. “Gastrointestinal” is the next subcategory of “physical assessment”; it includes four weak indicators of common data elements. Participants noted that the patient had a round/distended abdomen, wondered when her last “bowel movement” was, that they heard “bowel sounds”, and that she coughed when she drank water. All the participants who documented data represented by the weak data elements of

“gastrointestinal”, when combined, shift this subcategory into a moderate one. Finally, one participant recorded that the patient was able to communicate clearly; “communication_hearing” is the final data element found in “physical assessment”. Figure 10 below provides a visual representation of the hierarchical and indicators of strength for the final subcategories and single data elements in “physical assessment”. Table 8 below provides a similar visual representation as well as examples of the codes from the data categorized within ‘physical assessment’.

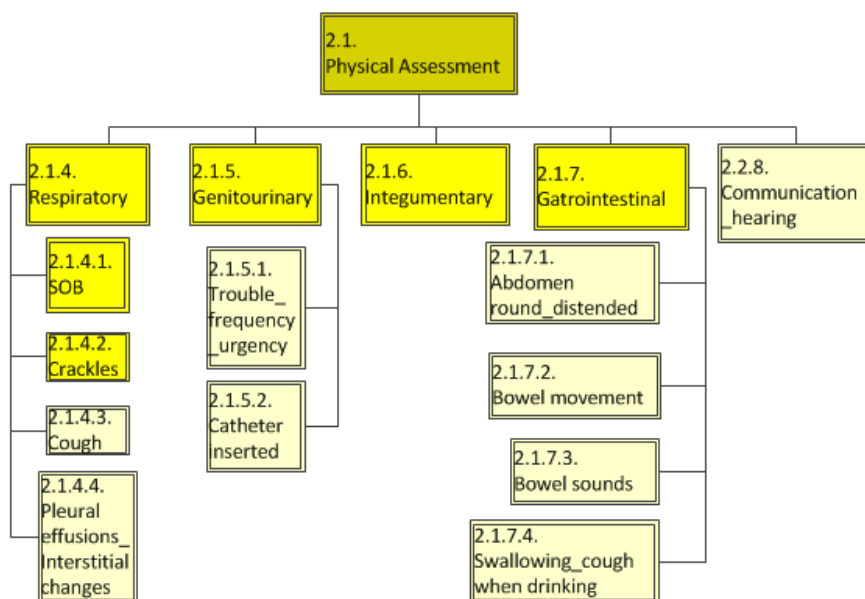


Figure 10. Schematic of physical assessment portion two. The hierarchical relationships within the subcategory physical assessment depict the subcategories of respiratory, genitourinary, integumentary, gastrointestinal, and communication-hearing.

Table 8

Physical Assessment: Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
2.	Assessments		
2.1	Physical assessment		
2.1.1.	Musculoskeletal		
2.1.1.1.	Pain_hip_OA (osteoarthritis)		

2.1.1.1.1.	Use of numeric scale	<ul style="list-style-type: none"> client reports her pain is 10/10 	OT, PT, RN, Phys
2.1.1.1.2.	Fractured hip	<ul style="list-style-type: none"> #hip 	OT, PT, RN, SW, Phys
2.1.1.1.3.	Pain with assessment_movement	<ul style="list-style-type: none"> c/o pain with mov't 	PT, Phys, RN
2.1.1.1.4.	In pain significant_severe	<ul style="list-style-type: none"> severe pain at the moment 	PT
2.1.1.2.	Mobility		
2.1.1.2.1.	Challenges with mobility	<ul style="list-style-type: none"> mobility limited 	PT, OT, RN
2.1.1.2.2.	Weight bearing	<ul style="list-style-type: none"> pt is NWB on R 	OT, PT, SW
2.1.1.2.3.	Level of assistance	<ul style="list-style-type: none"> requiring assist for all care and mobility 	OT, PT
2.1.1.3.	Right leg rotation_shortening	<ul style="list-style-type: none"> R L/E resting in some external rotation and slightly shortened 	PT, RN
2.1.2.	Cardiovascular		
2.1.2.1.	Edema_swelling	<ul style="list-style-type: none"> bilateral L/E edema 	OT, PT, Phys3, RN
2.1.2.2.	Pedal pulses	<ul style="list-style-type: none"> pedal pulses x4 	RN
2.1.2.3.	Cardiomegaly_CF	<ul style="list-style-type: none"> cardiomegaly; CHF 	Phys, RN
2.1.3.	Vital signs		
2.1.3.1.	O2 sats	<ul style="list-style-type: none"> SpO2 94% on 3LNP 	PT, Phys, RN
2.1.3.2.	Temp	<ul style="list-style-type: none"> 38.2 	Phys, RN
2.1.3.3.	Resp rate	<ul style="list-style-type: none"> RR 22 	Phys, RN
2.1.3.4.	Pulse	<ul style="list-style-type: none"> HR 100 peripheral 	Phys, RN
2.1.3.5.	Blood Pressure	<ul style="list-style-type: none"> patient's blood pressure 160/90 	RN, Phys
2.1.3.6.	BBGM	<ul style="list-style-type: none"> her BBGM is 3.9 at this time 	RN
2.1.4.	Respiratory		
2.1.4.1.	SOB	<ul style="list-style-type: none"> SOB 	PT, Phys, RN
2.1.4.2.	Crackles	<ul style="list-style-type: none"> crackles to lungs on auscultation 	PT, Phys, RN
2.1.4.3.	Cough	<ul style="list-style-type: none"> audible wet cough 	RN, Phys
2.1.4.4.	Pleural effusions_interstitial changes	<ul style="list-style-type: none"> bilateral pleural effusions 	RN, Phys
2.1.5.	Genitourinary		
2.1.5.1.	Trouble_frequency_urgency	<ul style="list-style-type: none"> urgency with urination 	PT, RN
2.1.5.2.	Catheter inserted	<ul style="list-style-type: none"> catheter inserted 	RN
2.1.6.	Integumentary	<ul style="list-style-type: none"> patient has redness and a sore on her buttocks 	OT, PT, RN
2.1.7.	Gastrointestinal		

2.1.7.1.	Abdomen round _distended	<ul style="list-style-type: none"> Abd distended and slightly firm 	RN
2.1.7.2.	Bowel movement	<ul style="list-style-type: none"> unable to remember last bowel movement 	RN
2.1.7.3.	Bowel sounds	<ul style="list-style-type: none"> bowel sounds present 	Phys, RN
2.1.7.4.	Swallowing_cough when drinking	<ul style="list-style-type: none"> spontaneous strong cough when drinking water 	PT, RN
2.1.8.	Communication-hearing	<ul style="list-style-type: none"> communication/hearing: patient able to communicate clearly” (RN3) 	RN

“Physical assessment” is the second subcategory of “Assessments”. It includes strong, moderate, and weak indicators of common data elements. Delineated by anatomical systems such as “musculoskeletal”, “cardiovascular”, “vital signs”, “respiratory”, “genitourinary”, “integumentary”, “gastrointestinal”, and “communication_hearing”, participants documented extensive data related to the information provided in the video as well as the paper record. The second subcategory of “Assessments” was “cognitive_delirium assessment”.

2.2. Cognitive_delirium assessment. “Cognitive_delirium assessment” includes data documented related to the patient’s ability to make decisions, her memory, orientation, and behaviour. It contains 12 moderate and strong indicators of common data elements between its two subcategories: 1) “cognitive concerns” and 2) “state of delirium”.

2.2.1. Cognitive concerns. “Cognitive concerns” includes multiple strong single data elements. Four different disciplines recorded data represented by “alert_oriented_disoriented” including that the patient was alert, oriented to person, but disoriented to place and date. Similarly, four disciplines documented about the patient’s “memory”; consistently referring to it being poor or not good. Finally, “MOCA” was a strong data element with representation from four different disciplines. A moderate subcategory, “awareness” is delineated into “wants to go home_not aware of injury” and “aware memory bad”. These include documentation

related to how the patient was asking to return home, indicating she was not readily aware of the extent of her injury. Conversely, she did have some awareness of her poor memory. Some weak indicators included that the participants wondered if the patient was competent and had a power of attorney as well as general statements related to needing an assessment for her cognitive decline. “Cognitive concerns” the first subcategory in “Cognitive_delirium assessment” contains a mix of strong, moderate, and weak indicators of common data elements between disciplines; those related to orientation, memory, MOCA, and wanting to go home are the strongest examples for this subcategory.

2.2. *State of delirium.* The next subcategory of “cognitive_delirium assessment” is “state of delirium”. Participants documented data related to her behaviour, that they believed she was delirious, and reported her general confusion and hallucinations. Both “delirium” and “confused_vague_hallucinations” were single data components which represented documentation from four different disciplines. In addition to these strong common data elements, the only moderate indicator in “cognitive_delirium assessment” is “agitated_distracted_visibly upset”. Three different disciplines documented behaviour that the patient was exhibiting in the video portion of the case scenario; others recorded that the patient was “asking about her husband” and “wanting to leave”—both weak indicators of common data elements. “State of delirium”, the second subcategory of “cognitive_delirium assessment”, consists of strong, moderate and weak indicators of common data elements between several participants. Table 9 below provides an overview of the single data elements and subcategories of “cognitive_delirium assessment”, examples from the data, and the list of participants whose clinical notes are represented by the codes. Figure 11 provides a visual of the hierarchical relationships and indicators of strength for “cognitive_delirium assessment”

Table 9

Cognitive_Delirium Assessment: Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
2.2.	Cognitive_delirium assessment		
2.2.1.	Cognitive concerns		
2.2.1.1.	Alert_oriented_disoriented	<ul style="list-style-type: none"> oriented to person and place but not date 	Phys, OT, PT, RN
2.2.1.2.	Memory	<ul style="list-style-type: none"> memory not good 	OT, RN, PT, Phys3
2.2.1.3.	MOCA	<ul style="list-style-type: none"> previous MOCA 18/30 	OT, SW, Phys, RN
2.2.1.4.	Awareness		
2.2.1.4.1.	Wants to go home_not aware of injury	<ul style="list-style-type: none"> asking to go home 	PT, RN, OT
2.2.1.4.2.	Aware memory bad	<ul style="list-style-type: none"> client reports memory 'very bad' 	OT, RN
2.2.1.5.	Competency_POA_health rep	<ul style="list-style-type: none"> unclear if there is a Power of Attorney in place 	SW, RN
2.2.1.6.	Cognitive decline_assessment	<ul style="list-style-type: none"> further cognitive assessment 	OT, RN
2.2.2.	State of delirium		
2.2.2.1.	Patient behaviour		
2.2.2.1.1.	Agitated_distracted_visibly upset	<ul style="list-style-type: none"> agitated 	OT, PT, RN
2.2.2.1.2.	Asking about husband	<ul style="list-style-type: none"> asking about her husband 	OT, RN
2.2.2.1.3.	Wanting to leave	<ul style="list-style-type: none"> attempts to get out of bed 	RN, PT
2.2.2.2.	Delirium	<ul style="list-style-type: none"> pt appears delirious 	OT, PT, SW,RN
2.2.2.3.	Confused_vague_hallucinations	<ul style="list-style-type: none"> currently confused 	OT, PT, Phys, RN

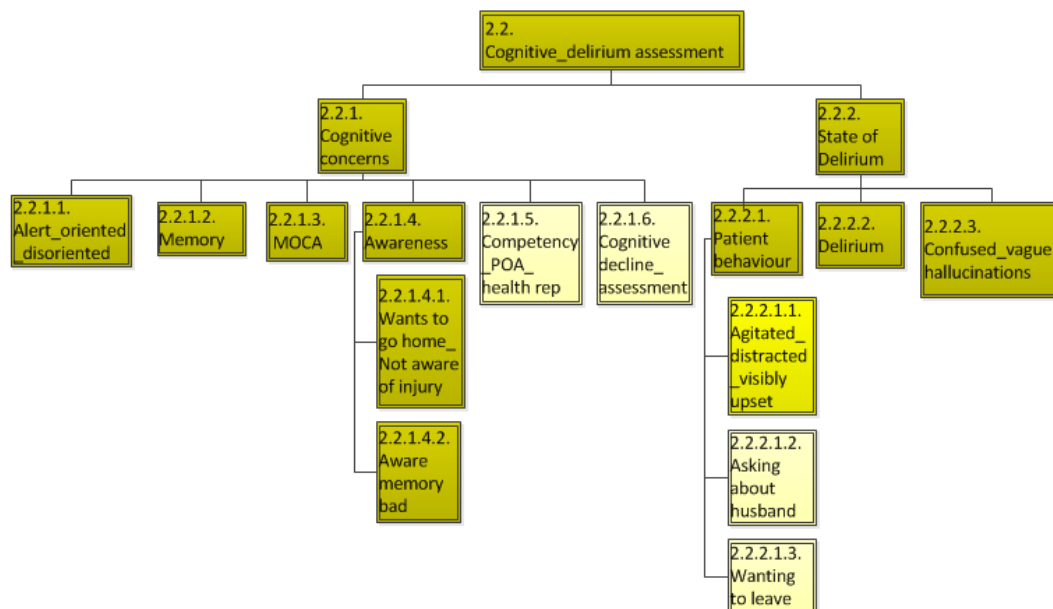


Figure 11. Schematic of cognitive_delirium assessment. The hierarchical relationships within the subcategory cognitive_delirium depict the subcategories of cognitive concerns and state of delirium.

“Cognitive_delirium assessment” is the second subcategory of “Assessments”.

Consisting of data related to “cognitive concerns” and “state of delirium” it represents data from participant clinical notes related to the patient’s orientation, memory, MOCA, awareness of her situation, behaviour, delirium, confusion, and hallucinations. Containing multiple strong indicators of common data elements (N=11), one moderate, and a few weak indicators (N=4), “cognitive_delirium assessment” it is a substantial subcategory of “Assessments”. The next subcategory with strong and moderate indicators is “emotional assessment”.

2.3 Emotional assessment. The final subcategory of “Assessments”, “emotional assessment” is a smaller subcategory compared to “physical assessment” and “cognitive_delirium assessment”. The majority of emotions expressed by the patient and recorded by the participants are within the moderate subcategory of “nervous_anxious_frightened_agitated”. OT, SW, and RN were the three disciplines that

captured cues from the video related to the patient’s nervousness, fear, anxiety, and restlessness. In addition to this grouping of emotions, OT and RN disciplines documented that the patient was concerned, feeling down, in a low mood. Conversely, a couple of participants also documented that the patient also had joy and happiness. While not a large subcategory with extensive raw data related to the patient’s emotions, “emotional assessment” contains some indication of moderate and weak common data elements. Table 10 provides the ID numbers, terms, examples from data and disciplines represented by codes within ‘emotional assessment’.

Table 10

Emotional Assessment: Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
2.3.1.	Nervous_anxious_frightened_agitated	<ul style="list-style-type: none"> • nervous • agitated • fearful • anxious 	OT, SW, RN
2.3.2.	Sad_concerned_upset_down	<ul style="list-style-type: none"> • report concerns • client is down 	OT, RN
2.3.3.	Happy_enjoyment	<ul style="list-style-type: none"> • enjoyed (i.e. reading, bridge) 	OT, RN

“Assessments” is the category with the second highest number of strong and moderate indicators of common data elements. It is delineated out between “physical assessment”, “cognitive_delirium assessment”, and “emotional assessment”. The participants shared a common pattern in documenting data elements such as use of a pain scale, fractured hip, edema and swelling, the patient’s level of orientation, concerns with memory, and state of delirium, as well as some of her emotional condition. As found in “Living situation”, there were many strong moderate and weak indicators of common data elements found in “Assessments”. The next category to be reviewed is “Histories”.

3. Histories. Containing just one less strong and moderate indicators of common data elements as “Assessments”, (N=32), “Histories” represents documentation related to the patient’s history. It is further delineated into three subcategories: “medical history”, “history of present illness”, and “social history”. “Histories” reflects the content that was provided through the case scenario and provides an overview of the content that participants documented in their clinical notes. As provided in Figure 12 the deepest red specifies the strong “Histories” indicators, the lighter red the moderate ones, the lightest red, the weak indicators of common data elements.

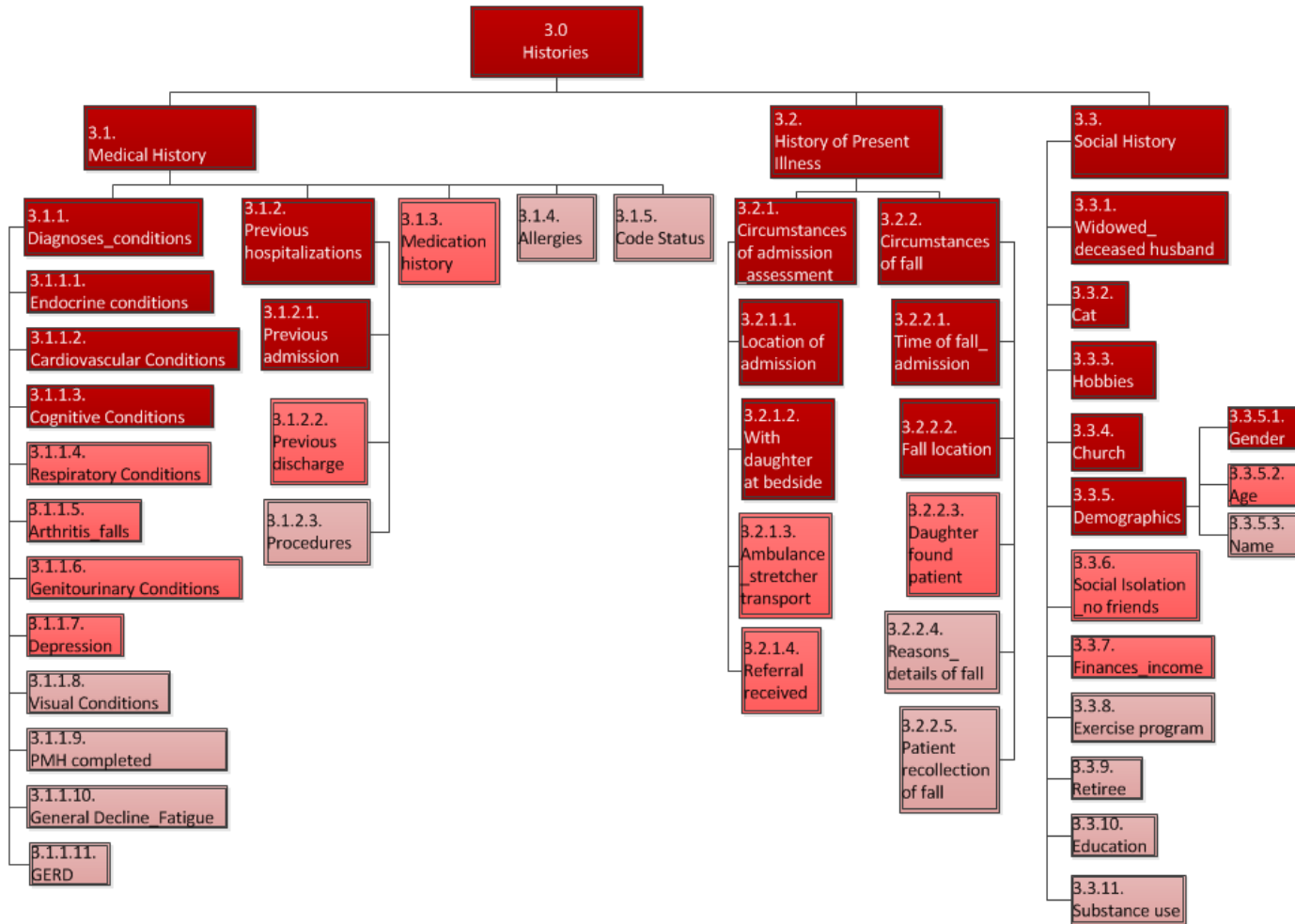


Figure 12. Schematic of the category histories.

3.1. Medical History. “Medical history” is the subcategory within “Histories” that contains the highest number of strong and moderate codes (N=12). Gathered from the video and the patient record, participants documented the complex medical history that often contributes to a patient fall in their clinical notes. “Medical history” contains two subcategories, “diagnoses_conditions”, “previous hospitalizations” and three single data elements, “medication history”, “allergies”, and “code status”. Figure 13 provides a visual of the subcategories and single data elements; the deepest red specifies a strong indication of common data elements, the lighter red a moderate indication, and the lightest red a weak indication. Similarly, Table 11 aligns the coded terms within the codes found within “medical history”, provides examples from the text and lists the disciplines provided the data related to each code.

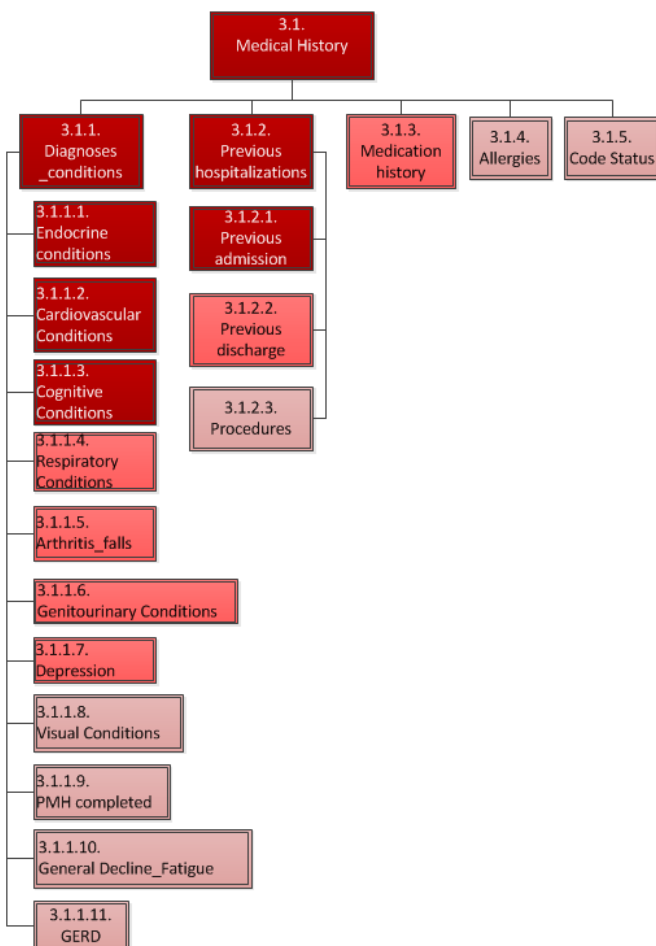


Figure 13. Schematic of medical history. The hierarchical relationships within the subcategory medical history depict the subcategories of diagnoses_conditions and previous hospitalizations and the single data elements medication history, allergies, and code status.

Table 11

Medical History: Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
3.	Histories		
3.1.	Medical History		
3.1.1.	Diagnoses_conditions		
3.1.1.1	Endocrine conditions	<ul style="list-style-type: none"> renal insufficiency 	OT, Phys, SW, RN
3.1.1.2.	Cardiovascular conditions	<ul style="list-style-type: none"> CAD 	SW, OT, Phys, RN

3.1.1.3.	Cognitive conditions	<ul style="list-style-type: none"> early cognitive decline 	OT, PT, RN, Phys
3.1.1.4.	Respiratory conditions	<ul style="list-style-type: none"> COPD 	OT, Phys, RN
3.1.1.5.	Arthritis_falls	<ul style="list-style-type: none"> Arthritis Previous falls 	OT, Phys, RN
3.1.1.6.	Genitourinary conditions	<ul style="list-style-type: none"> urinary urgency and nocturia x2 	OT, Phys, RN
3.1.1.7.	Depression	<ul style="list-style-type: none"> mood:-any history of depression 	OT, Phys, RN
3.1.1.8.	Visual Conditions	<ul style="list-style-type: none"> decreased vision 	OT, SW
3.1.1.9.	PMH completed	<ul style="list-style-type: none"> complex PMHx 	OT
3.1.1.10.	General decline_fatigue	<ul style="list-style-type: none"> fatigue over months 	Phys, RN
3.1.1.11.	GERD	<ul style="list-style-type: none"> GERD 	OT, Phys
3.1.2.	Previous hospitalizations		
3.1.2.1.	Previous admission	<ul style="list-style-type: none"> admissions Nov/14 & June/15) 	OT, PT, SW, Phys, RN
3.1.2.2.	Previous discharge	<ul style="list-style-type: none"> home safety Ax was done on D/C 	PT, SW, RN,
3.1.2.3.	Procedures	<ul style="list-style-type: none"> hx thyroidectomy, hx appy 	Phys
3.1.3.	Medication history	<ul style="list-style-type: none"> chart reviewed for HPI, PMHx, Meds 	Phys, RN, PT
3.1.4.	Allergies	<ul style="list-style-type: none"> Allergies 	Phys
3.1.5.	Code status	<ul style="list-style-type: none"> full code 	Phys, RN

3.2. History of Present Illness. This next subcategory of “Histories” highlights all the data coded that was related to the events leading up to and during the fall incident as well as the events regarding the hospital admission process. It contains 9 strong and moderate codes and has two subcategories, “circumstances of admission_assessment” and “circumstances of fall”.

3.2.1. Circumstances of admission_assessment. Participant documentation included many examples of information about the actual admission to the hospital unit and the assessment that was conducted. For example, “location of admission” is a strong indicator of common data elements as four different disciplines documented information related to the patient being

admitted to the floor, in bed, and on the unit. Similarly, many participants from four disciplines recorded “with daughter at bedside”; this is another single data element representative of a strong indicator of common documentation. A few disciplines included data relating to “referral received”—a moderate indicator. Finally, a weak indicator, SW and RN reported that the patient was transported via “ambulance_stretc.her”. “Circumstances of admission_assessment”, the first subcategory of “history of present illness”, contains data related to the location of admission, with her daughter present, she arrived via stretcher, and that she was being assessed because of referral.

3.2.2. Circumstances of fall. The events leading up to the patient’s admission are included in the subcategory “circumstances of fall”. Both strong indicators of common data elements, “time of fall_admission” which included the date and time of day, and “fall location”, which included that the patient fell at home on her floor or in her garden, are two subcategories of “circumstances of fall”. Participants also recorded that “daughter found patient” (a moderate indicator), and a few more “reasons_details of fall” with speculations about why she fell. “Circumstances of fall” is the second subcategory of “history of present illness”. Representing documentation related to the fall event, it contains a few strong and moderate indicators.

“History of present illness”, a subcategory of “Histories” includes participant documentation regarding the patient’s fall and hospital admission. Codes regarding the fall such as where, when, how, she fell and who found her as well as details related to the admission reveal many examples of common data elements. Table 12 provides the coded terms, examples from the text and the disciplines who documented data represented by the codes. In addition to “medical history” and “history of present illness”, “social history” is the third subcategory of “Histories”.

Table 12

History of Present Illness: Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
3.2.	History of Present Illness		
3.2.1.	Circumstances of admission_assessment		
3.2.1.1.	Location of admission	<ul style="list-style-type: none"> assessment: Pt seen in room 	OT, PT, SW, RN
3.2.1.2.	With daughter at bedside	<ul style="list-style-type: none"> Pt seen with dtr present 	PT, SW, OT, RN
3.2.1.3.	Referral received	<ul style="list-style-type: none"> Referral received 	OT, SW, PT
3.2.1.4.	Ambulance_stretc.her transport	<ul style="list-style-type: none"> before calling an ambulance 	SW, RN
3.2.2.	Circumstances of fall		
3.2.2.1.	Time of fall_ Admission	<ul style="list-style-type: none"> Pt fell June 8 	PT, SW, Phys, RN
3.2.2.2.	Fall location	<ul style="list-style-type: none"> a fall at home 	OT, PT, Phys, RN
3.2.2.3.	Daughter found patient	<ul style="list-style-type: none"> found on the floor by her dtr 	PT, SW, RN
3.2.2.4.	Reasons_details of fall	<ul style="list-style-type: none"> Details about the fall 	PT, Phys, RN
3.2.2.5.	Patient recollection of fall	<ul style="list-style-type: none"> Patient does not remember fall 	RN

3.3. Social History. This next subcategory of “Histories” highlights all the data coded that was related to the patient’s social history. Containing 9 strong and moderate codes, it has one subcategory, “patient demographics” and nine unique codes. “Patient demographics” includes documentation related to the patient’s gender, age, and name; gender is the only strong indicator of common documentation between disciplines. As the patient had a cat and had been recently widowed, all five disciplines documented details represented by the codes “cat” and “widowed_deceased husband”. Two other strong indicators of common data elements include “hobbies”, and “church”, both of which represented documentation from four different disciplines. “Social isolation_no friends” which contains data related to the patient’s increasing seclusion and “finances_income” which includes concerns regarding costs of living and her

sources of revenue are two moderate indicators of common data elements within “social history”. Representing just one participant for each of the final components of “social history”, “exercise program”, “retiree”, “education”, and “substance use”, while all weak indicators of common data elements, they represent more details related to the patient’s “social history”. The patient’s social background was extensively covered by participants; it contains multiple indicators of common data elements. Table 13 provides a sample of all the codes within “social history” their unique numbers, examples from the data, and which disciplines provided documentation that was coded within this subcategory of “Histories”.

Table 13

Social History: Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
3.3.	Social history		
3.3.1	Widowed_deceased husband	<ul style="list-style-type: none"> widowed x2 years 	OT, PT1, SW, RN, Phys
3.3.2.	Cat	<ul style="list-style-type: none"> cat in an apartment 	OT, Phys, RN
3.3.3.	Hobbies	<ul style="list-style-type: none"> activities she once enjoyed (i.e. reading, bridge) 	OT, SW, PT, RN
3.3.4.	Church	<ul style="list-style-type: none"> going to church 	PT, SW, RN, OT
3.3.5.	Demographics		
3.3.5.1.	Gender	<ul style="list-style-type: none"> she 	PT, OT, SW, Phys, RN
3.3.5.2	Age	<ul style="list-style-type: none"> 82 	OT, SW, Phys
3.3.5.3	Name	<ul style="list-style-type: none"> Mrs Jenkins 	SW
3.3.6.	Social isolation_no friends	<ul style="list-style-type: none"> socially isolated 	OT, SW, RN
3.3.7.	Finances_income	<ul style="list-style-type: none"> source of income 	SW, RN, OT
3.3.8.	Exercise program	<ul style="list-style-type: none"> does she do any exercise program 	PT1
3.3.9.	Retiree	<ul style="list-style-type: none"> retired shop clerk 	Phys3
3.3.10.	Education	<ul style="list-style-type: none"> grade 12 education 	OT7
3.3.11.	Substance use	<ul style="list-style-type: none"> no sig EtOH, no smokes 	Phys3

Analysis of the participant clinical notes resulted in identification of the category “Histories”; it emerged as codes related to the patient’s “medical history”, “history of present illness”, and “social history” were identified. Similar to “Living Situation” and “Assessments”, “Histories” contains several strong, moderate, and weak indicators of common data elements between disciplines. The next category that emerged while seeking to answer the question “*what are the common data elements between disciplines?*” is “Interventions”.

4. Interventions. “Interventions” is the next category that contains several subcategories with both strong and moderate common data elements between disciplines (N=26). Broken out into “completed interventions” and “planned interventions”, each contains subcategories and single data elements representative of participant clinical notes. Interventions include documentation related to the planned actions, or the plan of care, for the patient as well as the care provided for the patient. Figure 14 displays the hierarchical relationships and colour coding for the indicators of strength of common data elements. The darkest green are the strong indicators of common data elements, the lighter green are moderate, and the lightest green are the weak indicators.

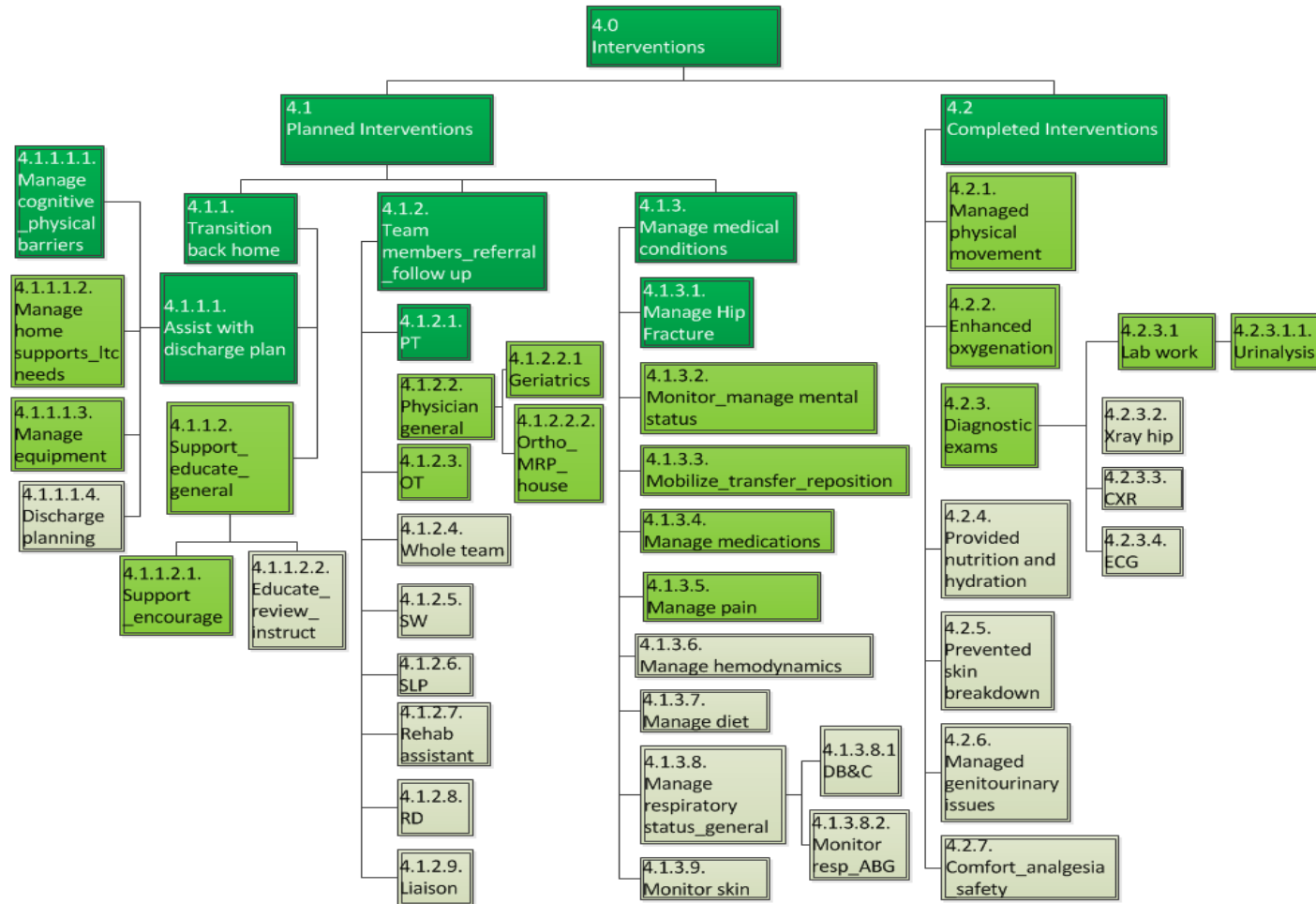


Figure 14. Schematic of the category interventions.

4.1. Planned interventions. “Planned interventions” includes 19 strong and moderate indicators of common data elements divided into three subcategories, “transition back home”, “team members_referral_follow up”, and “manage medical conditions”. It includes documentation such as what would need to occur during the patient’s hospital stay as well as what would be required to prepare her home environment.

4.1.1. Transition back home. Participants recorded that in order to transition the patient back home they would need to “assist with discharge plan”. A significant part of the discharge plan was to “manage cognitive_physical barriers”, a strong data element representing documentation from four different disciplines. This includes data such as managing stairs, pain, costs, cognitive concerns, and medical instability. Both “manage home supports_LTC” and “manage equipment_lifeline needs”, moderate indicators, include information such as the patient requiring increased general support at home and assistance with equipment needs. Other elements related to “transition back home” include the need to “support_encourage” the patient and “educate_review_instruct” to prepare her both mentally and physically as she prepares to return home.

4.1.2. Team members_referral_follow up. Multiple participants recorded that the “PT” would need to follow up with the patient; this is a strong indicator of common data elements. Similarly, “geriatrics” and “ortho_MRP_house” are other single data elements that are moderate indicators of common data elements related to team members participants felt needed to follow up with the patient during her hospital stay. Other team members include “OT”, “SW”, “SLP”, “rehab assist”, “RD”, and “liaison”.

4.1.3. Manage medical conditions. As found in “Assessments”, participant documentation includes the various conditions the patient requires treatment for. “Manage hip

fracture” is a code representing documentation from four different disciplines; not surprisingly, it is as strong common data element. Additionally, a few moderate indicators such as “monitor_manage mental status”, “manage medications”, and “manage pain” represent the patient’s other challenges in her recovery that require “planned interventions”. Other interventions also include managing her hemodynamic status, diet, respiratory issues, and skin; these elements are captured in additional weak indicators of common data elements.

“Planned interventions” is the first subcategory of “Interventions”. It includes data such as transitioning the patient back home, managing barriers, home supports and equipment, educating the patient and referring the patient for follow up. Additionally, management of her medical conditions, especially her fractured hip, mental status, medications and pain are included in “planned interventions”. Figure 15 provides an overview of “planned interventions”, its hierarchical classification of subcategories and single data elements. Similarly, Table 14 includes the number for each code, examples from the data as well as the different disciplines represented by each code.

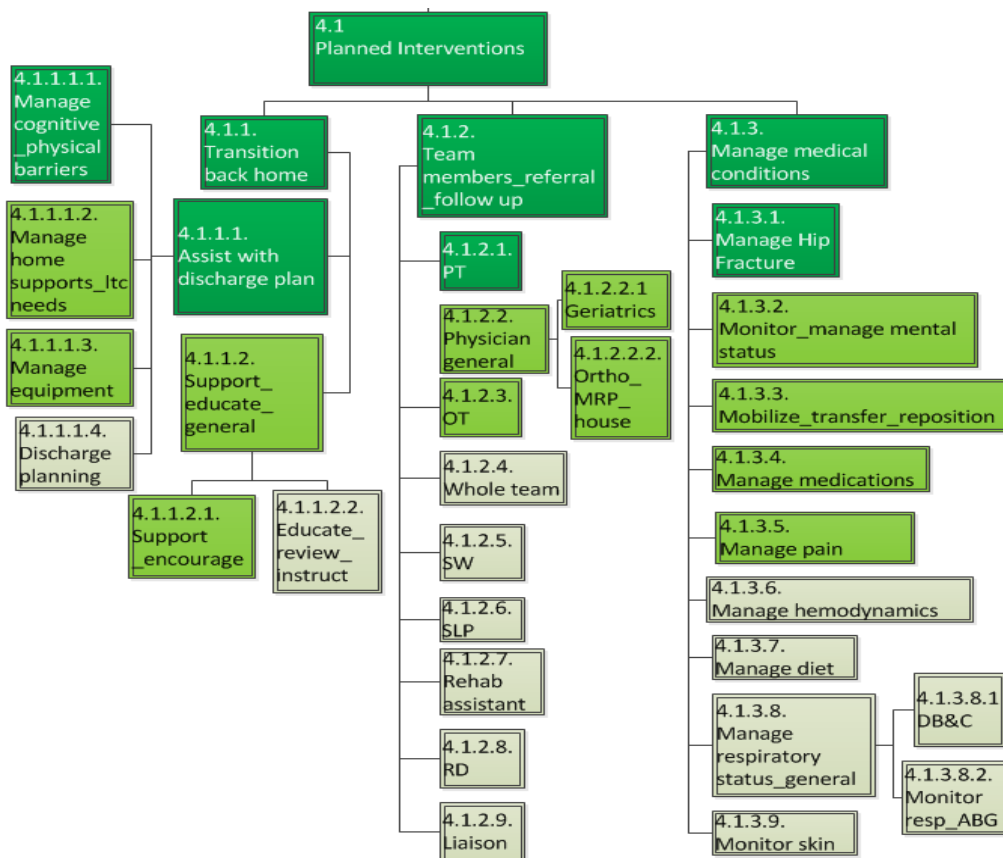


Figure 15. Schematic of planned interventions. The hierarchical relationships within the subcategory planned interventions depict the subcategories of transition back home, team members_referral_follow up and manage medical conditions.

Table 14

Interventions: Planned Interventions Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
4.1	Planned interventions		
4.1.1.	Transition back home		
4.1.1.1.	Assist with discharge plan		
4.1.1.1.1.	Manage cognitive_physical barriers	<ul style="list-style-type: none"> stairs are going to be a barrier 	PT, OT, SW1, RN
4.1.1.1.2.	Manage home supports_LTC	<ul style="list-style-type: none"> needs HS on d/c 	Phys, OT, RN
4.1.1.1.3.	Manage equipment_life line needs	<ul style="list-style-type: none"> provide w/c for pt 	OT, SW, RN

4.1.1.1.4.	Discharge planning	<ul style="list-style-type: none"> assist with discharge planning 	OT, PT
4.1.1.1.5.	Assess home function	<ul style="list-style-type: none"> to assess physical functioning ADLs, IADLs 	RN, OT
4.1.1.2.	Support_educate_general		
4.1.1.2.1.	Support_encourage	<ul style="list-style-type: none"> provide ... support to client 	OT, PT, SW
4.1.1.2.2.	Educate_review_instruct	<ul style="list-style-type: none"> provide education 	OT, PT
4.1.2.	Team members_referral_follow up		
4.1.2.1.	PT	<ul style="list-style-type: none"> Physio to assist with transfers to chair daily 	OT, PT, RN, Phys
4.1.2.2.	Physician general		
4.1.2.2.1.	Geriatrics	<ul style="list-style-type: none"> patient is deferred to Geriatrics for delirium management 	SW, OT, RN
4.1.2.2.2.	Ortho_MRP_house	<ul style="list-style-type: none"> consult with orthopod 	PT, Phys, RN
4.1.2.3.	OT	<ul style="list-style-type: none"> OT to monitor skin, mood 	OT, Phys, RN
4.1.2.4.	Whole team	<ul style="list-style-type: none"> will liaise with team 	OT, RN
4.1.2.5.	SW	<ul style="list-style-type: none"> SW to follow 	SW, RN
4.1.2.6.	SLP	<ul style="list-style-type: none"> query consult to SLP to further investigate 	RN
4.1.2.7.	Rehab assist	<ul style="list-style-type: none"> RA delegated to assist with L/E exercises 	PT
4.1.2.8.	RD	<ul style="list-style-type: none"> RD to assess dietary needs 	RN
4.1.2.9.	Liaison	<ul style="list-style-type: none"> liaison RN 	Phys, RN
4.1.3.	Manage medical conditions		
4.1.3.1.	Manage hip fracture	<ul style="list-style-type: none"> conservative treatment for her # 	PT, OT1, Phys, RN
4.1.3.2.	Monitor_manage mental status	<ul style="list-style-type: none"> to assess patient for cognitive decline 	OT, SW, RN
4.1.3.3.	Mobilize_transfer_reposition	<ul style="list-style-type: none"> progress mobility as tolerated 	OT, PT, Phys
4.1.3.4.	Manage medications	<ul style="list-style-type: none"> may benefit from medication management 	Phys, RN, OT
4.1.3.5.	Manage pain	<ul style="list-style-type: none"> when pain control improved 	OT, PT, Phys
4.1.3.6.	Manage hemodynamics	<ul style="list-style-type: none"> diurese, daily wt, low Na diet-rate control, BB as also CHF-discuss anticoag vs ASA for a fib 	Phys, RN,
4.1.3.7.	Manage diet	<ul style="list-style-type: none"> orders for diet 	RN
4.1.3.8.	Manage respiratory status_general	<ul style="list-style-type: none"> will monitor resp status 	PT, RN
4.1.3.8.1.	DB&C	<ul style="list-style-type: none"> deep breathing and coughing 	PT

4.1.3.8.2.	Monitor resp_ABG	• will monitor resp status	RN, PT
4.1.3.9.	Monitor skin	• to monitor skin	OT, RN

4.2. Completed interventions. While participants recorded their planned interventions for the patient, they also documented interventions that were completed. As presented in the video and described in the paper record, these included moderate and weak indicators of common data elements. “Managed physical movement” is a single data element with three different disciplines recording that the patient was turned to side, completed foot and ankle exercises and elevated her lower leg. Elements such as deep breathing and coughing, delivery of oxygen, and incentive spirometry are included in “enhanced oxygenation”. Participants also recorded “lab work” including blood test results and “urinalysis”. A few weak indicators include x-ray of hip, CXR, ECG and that the patient was provided with a snack and IV. Additionally, skin breakdown was prevented, genitourinary issues were managed, and comfort and safety were provided. “Completed interventions”, the second subcategory of “Interventions” includes information related to the actions completed within the case scenario. Both Figure 16 and Table 15 below display the hierarchical relationships of “completed interventions” and the shades of colour depicting the strong, moderate, and weak indicators of common data elements. Table 15 also includes the examples from the clinical notes and the disciplines represented by the codes.

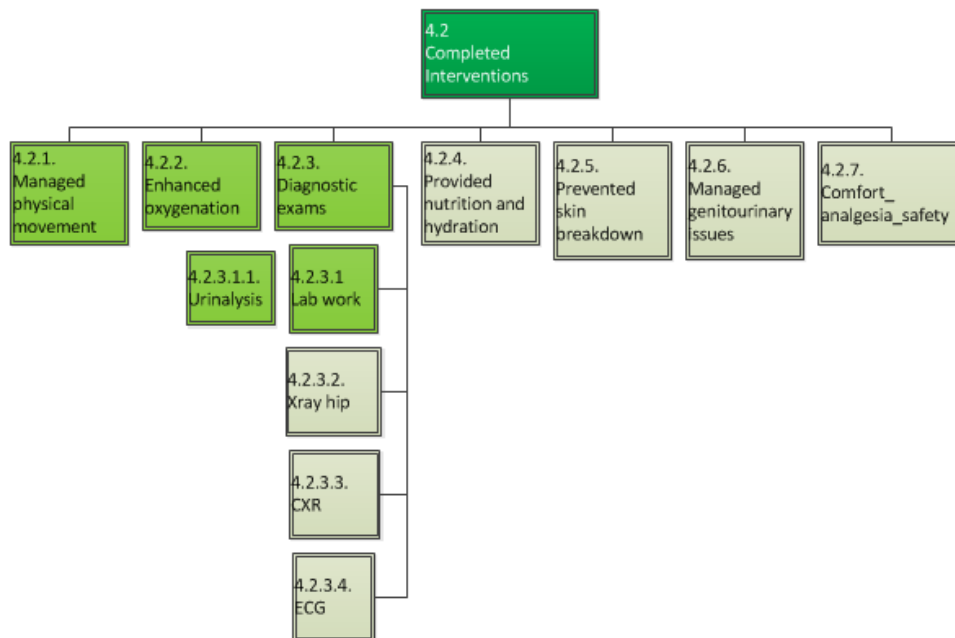


Figure 16. Schematic of completed interventions. The hierarchical relationships within the subcategory completed interventions depict the subcategory diagnostic exams and the single data elements managed physical movement, enhanced oxygenation, provided nutrition and hydration, prevented skin breakdown, managed genitourinary issues, and comfort_analgesia_safety.

Table 15

Interventions: Completed Interventions Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
4.2	Completed interventions		
4.2.1.	Managed physical movement	<ul style="list-style-type: none"> was turned to R side 	PT, OT, RN
4.2.2.	Enhanced oxygenation	<ul style="list-style-type: none"> DB&C practiced 	PT, Phys, RN
4.2.3.	Diagnostic exams		
4.2.3.1.	Lab work	<ul style="list-style-type: none"> patients potassium level is too high 	Phys, RN
4.2.3.1.1.	Urinalysis	<ul style="list-style-type: none"> urinalysis positive for WBC 	RN, Phys
4.2.3.2.	Xray hip	<ul style="list-style-type: none"> Xray results of R L/E 	PT, RN
4.2.3.3.	CXR	<ul style="list-style-type: none"> CXR 	Phys, RN
4.2.3.4.	ECG	<ul style="list-style-type: none"> ECG: 120 bpm 	Phys, RN
4.2.4.	Provided nutrition and hydration	<ul style="list-style-type: none"> IV patent and infusing 	RN

4.2.5.	Prevented skin breakdown	<ul style="list-style-type: none"> turned on her side to prevent further skin breakdown 	RN
4.2.6.	Managed genitourinary issues	<ul style="list-style-type: none"> catheter inserted at this time 	RN
4.2.7.	Comfort_analgesia_safety	<ul style="list-style-type: none"> nsg has provided pain meds 	RN, PT

“Interventions” is the fourth category with a mixture of strong, moderate, and weak indicators of common data elements. While it does not contain as many strong and moderate indicators as “Living situation”, “Assessments”, and “Histories”, it definitely represents patterns in the documentation shared by multiple disciplines. Both planned and completed interventions contain numerous examples to transition the patient home, refer to team members, manage medical conditions, physical movement, oxygenation, diagnostic exams, as well as a few other indicators of common data elements. “Sources of patient information” is the next category that resulted from analysis of the data.

5. Sources of patient information. Containing one strong indicator of common data elements, “Sources of patient information” is the fifth category. It is further subcategorized out into “daughter as source of patient information”, “patient records”, and “patient reported”. As all five disciplines documented that the daughter reported, stated, noted, “daughter as source” is a strong indicator of common documentation. Other elements include that the “current record”, including the doctor note and ED assessment, were reviewed; these are represented by the subcategory “patient records”. Additionally “old chart_last discharge note” reflected documentation such as a previous note created at discharge, and that old charts were requested. “Patient reported” is a moderate indicator of shared documentation by different disciplines. Multiple participants from three different disciplines recorded the patient as a source of information. “Sources of patient information”, while only containing one strong indicator and a

few moderate indicators of strength of common data elements, comprises of coded data representing the patient, daughter, and patient records as sources of information. Table 16 and Figure 17 provide the hierarchical relationships and shades of orange indicating strength of shared documentation. The deepest orange are the strong indicators, the lighter orange the moderate ones, and the lightest orange the weakest indicators of common data elements. The final category to be reviewed is “Organization of clinical note”.

Table 16

Sources of Patient Information Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
5.	Sources of patient information		
5.1	Daughter as source	<ul style="list-style-type: none"> Dtr reports 	OT, PT, SW, Phy, RN
5.2	Patient records		
5.2.1.	Current record	<ul style="list-style-type: none"> history on the chart 	OT, PT, RN
5.2.1.1	Chart reviewed	<ul style="list-style-type: none"> chart reviewed (all sections) 	OT, PT
5.2.1.2.	Other documentation completed	<ul style="list-style-type: none"> usually use pre-admit form 	PT, OT, RN
5.2.2.	Old chart_last Discharge note	<ul style="list-style-type: none"> old charts requested and reviewed 	OT, RN
5.3.	Patient reported	<ul style="list-style-type: none"> pt indicated poor memory 	OT, PT, RN
5.4	Team reports	<ul style="list-style-type: none"> based on team reports 	RN

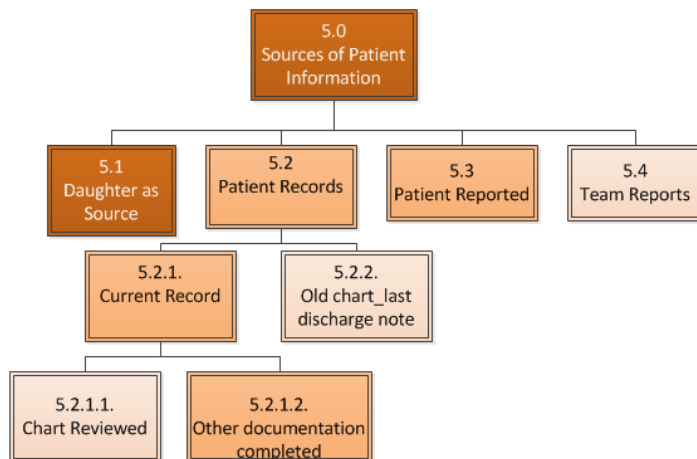


Figure 17. Schematic of the category sources of patient information.

6. Organization of clinical note. The final category titled “Organization of clinical note” evolved during the analysis phase of the study. All participants utilized various terms and letters indicating different breaks in their clinical notes. Delineated by “participant specific”, “non-standardized headers”, “use of SOAP”, and “no use of headers”, each of these singled data elements contains multiple examples from clinical documentation. As each participant had their own unique way of documenting their note, “participant specific” includes all the headers used within each note. With deeper analysis, it was also discovered that most of the headers used were not the same as many of the other ones; use of punctuation, capitalization, symbols, and abbreviations were all unique. This is a strong indicator that, when documenting narratively, participants use their preferred methods of providing their notes. While there are 45 different examples of use of “non-standardized headers”, a couple of participants used components of “SOAP” documentation. While only PT5 included all components of “SOAP” which include subjective, objective, assessment, and plan, all disciplines included two or more components of a SOAP note; this is a strong indicator of shared data elements. A final single data element of “Organization of clinical note”, “no use of headers”, is a weak indicator of common

documentation as RN was the only discipline to not actually use any headers. Figure 18 and Table 17 display the hierarchical relationships and indicators of strength; the deepest purple are strong indicators, and the lightest purple are the weakest. There were no moderate indicators in this category.

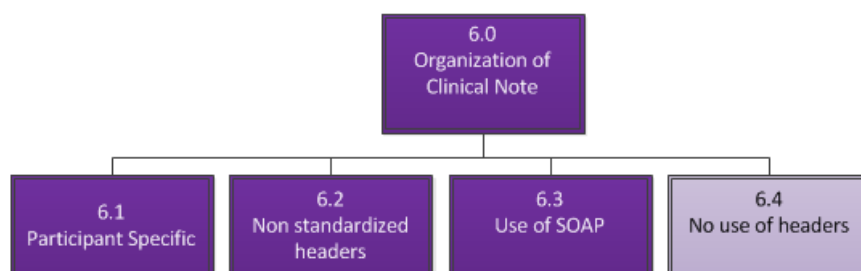


Figure 18. Schematic of the category organization of clinical notes.

Table 17

Organization of Clinical Note Examples and Disciplines

ID number	Term	Examples from Data	Discipline contributors
6.1	Participant specific	<ul style="list-style-type: none"> • “Note:, ID:, HPI:, PMHX:, Meds:, Allergies:, SoHX:, O/E:, Labs:, CXR:, Imp:, Plan:” 	SW, RN, OT, PT, Phys
6.2	Non standardized headers	<ul style="list-style-type: none"> • “-skin:” • “Social Hx” • “Resp:” • “PROCESS” • “MSK:” 	PT, OT, RN, SW, Phys
6.3	Use of SOAP	<ul style="list-style-type: none"> • “S/O” (OT4) • “A” (OT7 & PT1) • “P” (PT7) 	OT, PT, RN, Phys, SW
6.4	No use of headers	<ul style="list-style-type: none"> • not use any headers 	RN

Summary of Common Data Elements: Analysis of Case Scenario Coding

Analysis uncovered numerous examples of strong, moderate, and weak indicators of common data elements between disciplines. Through coding, the PI identified six categories; each category consisted of high level parent data elements and the lower level single data element child elements. The codes were assigned a term that reflected what was documented in the raw data. Disciplines whose data was reflected by the codes were examined and each data element was stratified by the number of different contributory disciplines. Visual indicators such as unique numbers, shades of colour, figures and tables highlighted the hierarchical relationships within each category as well as the stratification of the strength of the data elements. Examples from the raw data were provided. Of the 235 total codes, there were 143 strong and moderate indicators of common data elements and 92 weak indicators. Results of the primary analysis of this particular case scenario of a patient being admitted to a hospital with a fractured hip amounted to approximately 61% of the total data elements having a strong to moderate indication of common data elements between disciplines (Table 18). Of the weak indicators, one-two different disciplines represented by the code, about half of those (N=19%) represented documentation from a single participant.

Table 18

Total Common Data Elements by Indicator of Strength

Strong (4-5 disciplines)	Moderate (3 disciplines)	Weak (1-2 disciplines)
80 (34%)	63 (27%)	92 (39%) ** Note: 24 (10%) from single participant**

In the process of answering the question “*What are the common data elements between disciplines?*” primary analysis indicates that the majority of coded data is shared between nurses,

occupational therapists, physiotherapists, social workers, and physicians. In addition to primary analysis, additional findings provided further understanding of the results.

Coding of Case Scenario: Additional Findings

In the process of uncovering the common data elements between disciplines, additional results were uncovered. Data elements unique to a single discipline, containing references from all but one discipline, questioned but found in case scenario, and reported but no evidence found in case study are all components. The following section contains the results.

Data element patterns unique to disciplines. Patterns such as single data elements, subcategories, and categories unique to disciplines materialized; some codes contained references from a single discipline. For example, the code “Provided Nutrition and Hydration” had references from only the nursing discipline (RN1, RN4, RN6, & RN7). A new column titled “Data unique to a single discipline” was added to the analysis worksheet and terms such as “Only PT”, “Only SW”, and “Only RN” were entered into each appropriate cell. The nurses had the highest number of instances of documentation unique to their discipline especially in both the assessments and interventions category. Further, only nurses had unique data elements within “Sources of patient information” and “Organization of clinical note” All disciplines had unique data elements within the histories category. Similarly, it also became apparent that analysis was revealing another pattern; some codes, subcategories, and categories contained references from all participants of a discipline. A new column titled “Data elements with references from all participants of a single discipline” was created and terms such as “All RNs” and “All OTs”, etc. were entered into the appropriate corresponding cells. For example, all participants who were nurses provided documentation that contained references for the code “Use of numeric scale” (RN1, RN3, RN4, RN6, & RN7). As there was only one physician, while there were three

unique data elements within the “Histories” category, the physician discipline was excluded from analysis of data elements with references from all participants of a single discipline. Appendix T provides an overview of the data elements unique to a discipline; a legend of the colours representing of each category is provided. During secondary data analysis, patterns of documentation unique to each discipline were uncovered including data elements unique to each as well as those that were referenced by all participants of the discipline. In contrast, there were multiple data elements that represented all but one discipline.

Data containing references from all but one discipline. While patterns of common data elements and data unique to disciplines emerged, conversely, many codes, subcategories, and categories did not include references from all disciplines. For example, all other disciplines but SW documented data represented by the subcategory “Use of Aides_equipment” (OT1, OT7, PT1, PT5, OT4, Phys3, Rn3, RN6, & RN7). A new column title “Data containing references from all but one discipline” was created. Terms such as “No SW” and “No Phys” were entered into the appropriate corresponding cells. Data elements that excluded one discipline were analyzed; those that excluded more than one discipline were not analyzed. See Table 19 below for a summary of the data represented by all but one discipline.

Table 19

Data Represented By all but One Discipline

Colour legend	No RN 1 (3%)	No OT 1 (3%)	No PT 6 (19%)	No SW 11 (34%)	No Phys 13 (41%)
Living Situation	<ul style="list-style-type: none"> • Living alone 		<ul style="list-style-type: none"> • Home Supports_Resource_s_Formal 	<ul style="list-style-type: none"> • Use of equipment_aides 	<ul style="list-style-type: none"> • Lives in Home_Apartment • Layout of Home • Managing at home • Meals • Nutrition

					<ul style="list-style-type: none"> • Daughter's support with IADLs
Assessments			<ul style="list-style-type: none"> • MOCA 	<ul style="list-style-type: none"> • Pain_Hip_OA (osteoarthritis) • Use of Numeric Scale • Cardiovascular • Edema_Swelling • Patient Behaviour • Confusion_Hallucinations • Memory 	<ul style="list-style-type: none"> • State of Delirium • Wanting to leave
Histories		Time of Fall_Admission	<ul style="list-style-type: none"> • Endocrine Conditions • Cardiovascular Conditions 	<ul style="list-style-type: none"> • Cognitive Conditions 	<ul style="list-style-type: none"> • Church • Hobbies • Circumstances of Admission_Assessment • With Daughter at bedside
Interventions				<ul style="list-style-type: none"> • Manage Hip Fracture • Completed Interventions 	<ul style="list-style-type: none"> • Manage barriers
Organization of Clinical Note			<ul style="list-style-type: none"> • Social • Plan (not within SOAP note) 		

Questioned but is found in case study. During analysis other findings were discovered, grouped together, and reported. In some instances, participants reported that they wanted to know about something even though the information was actually contained in the case study and could have been found in either the video or in the ED and/or discharge note. A subcategory

titled “questioned but is found in case scenario” was created. This included information documented in the clinical notes in the form of a question yet evidence of the answer existed in other areas of the case study. For example, “?grocery delivery” documented by OT1 was provided by the daughter as stated in the video. OT7 wondered if the patient had “?stairs” and how she managed “bathing”. PT1 wanted more details about the fall “where, what she was doing, when”. These were all answered by the daughter and within the ED document. SW1 wondered about “source of income” although the daughter stated her mom received her father’s pension. RN3 wasn’t “sure if the hip fracture was evident” despite the physician diagnosis on the ED document as well as the physical indication in the video of the leg shortened and externally rotated. RN7 wondered “who found her?” yet the daughter discussed that she was the one who found her mother.

Data reported but no evidence found in case scenario. Similarly, participants reported something as information but that information was not actually included in any of the case study; it was not found in the video or the ED and/or discharge notes. This subcategory was titled “data reported but no evidence found in case study”. While neither of these was analyzed for common data elements, there were enough participants who documented data coded within these subcategories to warrant analysis. This section includes information such as “on room air” (PT1) yet the patient had nasal prongs on throughout the video. RN7 documented that urine was “draining cloudy yellow” yet the urine bag was never visualized nor discussed and that “valuables were sent home with daughter” which did not occur. OT4 stated that the patient had “stage 2 pressure ulcer on her coccyx, about 1 cm in diameter” yet the coccyx was not shown on the video. Interestingly, all OTs and all PTs also documented that the patient consented to treatment yet there was no evidence of this in the video. Finally, one participant documented an

entire section that seemed to extend beyond what was portrayed in the case study. PT5 recorded “R hip flexion to 45 with assist. Difficulty bridging with L L/E only. Lie to sit with 1A. Able to sit unsupported at edge of bed. Sit to stand with 2w/w + 2A but difficulty maintaining NWB to R L/E. Up to chair with Saralift +2A, maintaining NWB” and “Pt set up for lunch with call bell in reach”. While most data documented was found within the case scenario through both the video and the text in the paper record, several participants documented information that was not provided.

Analysis revealed several additional findings while trying to identify common data elements between disciplines. Participants documented data elements in patterns that were unique to their discipline; some data contained reference from all but one discipline; a few participants questioned information even though it was found in either the video or the paper record; a few participants reported data yet no evidence of their documentation was found in case study. While analysis focused on the clinical notes documented in sections one and two of the survey, analysis of participant characteristics and their opinions was accomplished with data from the third section of the survey.

Results of Participant Characteristic and Opinions

The third part of the survey directed participants through a series of questions related to their characteristics and opinions. The following is an overview of the results. Table 20 indicates that there were a total of 14 participants; both OT and PT had three participants each, SW had two participants; there were five RNs and one physician. Table 21 displays that most participants (N=70%) have been working in their discipline for 15 years or less with a range of between 1-25 years, most were new to their current position (N=74%) and most of those (N=79%) with five years or less experience documenting in an electronic health record. Table

22 provides participant age; the majority are 40 years or younger (N=79%). Table 23 provides a breakdown of participant gender; majority are female (N=79%). Overall, while there is a diversity of work experience, most of the participants are new to their current role, have less than five years of experience electronically documenting, are 40 years old or younger, and are female. The following tables provide a detailed breakdown of each participant characteristic.

Table 20

Participant Characteristics: Discipline

	OT	PT	SW	RN	Physician
What is your discipline?	3 (21%)	3 (21%)	2 (14%)	5 (36%)	1 (7%)

Table 21

Participant Characteristics: Years of Experience

	0	1-5	6 -10	11 – 15	16-20	21-25	>20
How many years have you been working in your discipline?		5 (36%)	3 (21%)	2 (14%)	3 (21%)	1 (7%)	
How many years have you been working in your current position?		10 (74%)	1 (7%)	1 (7%)	0	1 (7%)	
Number of years of experience documenting in an electronic health record	3 (21%)	8 (57%)	3 (21%)	0	0		0

Table 22

Participant Characteristics: Age

	< 25 years	25-30	31-35	36-40	41-45	46-50	51-55	> 55 years
How old are you?	1 (7%)	3 (21%)	4 (29%)	3 (21%)	0	1 (7%)	1 (7%)	1 (7%)

Table 23

Participant Characteristics: Gender

	Female	Male
What is your gender?	11 (79%)	3 (21%)

In addition to participant characteristics, Table 24 displays opinions related to their experiences of interprofessional versus multidisciplinary teamwork, duplication of patient information in paper and electronic records, comfort level with electronic documentation and benefits for patients and clinicians were all examined using a Likert scale. The majority of participants (N=86%) all agreed or strongly agreed they work on an interprofessional team; similarly, the majority also believed they work in a multidisciplinary team (N=93%). Beliefs about duplication of patient information in the paper record ranged from neutral (N=14%), agree (N=36%), to strongly agree (N=50%). There was an even wider range of results related to opinions regarding duplication in the electronic health record; ranges included disagree (N=7%), neutral (N=21%), agree (N=36%), and strongly agree (N=36%). In regards to comfort level of electronic documentation answers ranged from disagree (N=14%), neutral (14%), agree (29%), and strongly agree (36%). Interestingly, of all the questions related to participant opinions, the highest number within the disagree category is related to comfort level with electronic documentation (N=14%). Overall, most participants either agreed or strongly agreed that electronic documentation is beneficial for patients (N=86%) and for clinicians (93%).

Table 24
Participant Opinions

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I believe I work within an interprofessional team.	0	0	2 (14%)	5 (36%)	7 (50%)
I believe I work in a multidisciplinary team	0	1 (7%)	0	7 (50%)	6 (43%)
I believe patient information is duplicated in the paper health record	0	0	2 (14%)	5 (36%)	7 (50%)

I believe patient information is duplicated in the electronic health record	0	1 (7%)	3 (21%)	5 (36%)	5 (36%)
I am comfortable documenting in the electronic health record	0	2 (14%)	2 (14%)	4 (29%)	5 (36%)
I believe electronic documentation is beneficial for patients	0	0	2 (14%)	6 (43%)	6 (43%)
I believe electronic documentation is beneficial for clinicians	0	0	1 (7%)	6 (43%)	7 (50%)

In order to answer the question “*What are the common data elements between disciplines?*” analysis of participant clinical notes was conducted. Many strong, moderate, and weak indicators of common data elements were identified. Including examples from the data, these were reported narratively and visually with the use of figures, tables, numbers, and colours. Further analysis identified patterns in documentation unique to each discipline as well as identification of data elements reported but not found in the case scenario and those questioned but actually found in the case scenario. Finally, results from the analysis of participant characteristics and their opinions were provided. Thorough analysis laid the foundation for a wide array of results; discussion of these results will lead to increasing the knowledge about common data elements in the context of electronic documentation.

Chapter 6

Discussion

Due to its complex nature, the design of the electronic health record (EHR) does not fully support clinical practice. A literature review confirmed that design is largely built on the concept of multidisciplinary electronic documentation. This may be directly contributing to the concept ‘drowning in data’ which encapsulates the notion that the deluge of patient information documented in the EHR overwhelms clinicians (Leonardo, Resick, Bingman, & Strotmeyer, 2004); indeed much of the electronic clinical documentation ends up in the ‘data cemetery’ never again to be reviewed, reused, or recycled to actively contribute to the patient’s care plan over their lifetime. Interestingly, the concept of the provision of interprofessional care is what many teams strive for yet there is a large gap in academic literature supporting the concept of interprofessional electronic documentation. The gap in academic literature regarding a build aligned with interprofessional electronic documentation is cause for concern. Thankfully, the concept of common ground (Collins et al., 2011), which emerged from the literature review, inspired a way to address the gap in academic literature. A qualitative descriptive study was designed to answer the research question: *What are the common data elements between disciplines?* Not only did the results identify multiple common data elements, the study substantiated that even with a small sample size of 14 there was an abundance of diverse data. Thankfully, a framework for complex diverse data (Parsons et al., 2007), also found during the literature review, provides design ideas that would support the display of data. Documenting, viewing, and integrating a common care plan are integral in interprofessional practice. First, a brief synopsis of literature attending to interprofessional electronic documentation is provided.

Literature review updates

A more recent search was carried out in the *CINAHL* and *Medline* databases using the same Boolean search used during the initial literature review. Using the terms: "interprofessional care" And "electronic documentation" And "electronic health record" yielded three new results. Among other results, one study found that only essential and minimal necessary information should be documented (Hodgins, Rose, Fifield, & Arnault, (2013). Another study confirmed the importance of physician to physician verbal or written electronic communication when a patient is transferring into or out of an ICU (Ellis, Connolly, Hosseinezhad, & Lilly, 2015). Campbell (2013), who gathered an interprofessional team for an electronic skin care plan, found that while gaps in provision of care and accessing and inputting data are a challenge, computer-accessible data at the bed side can improve interprofessional team work and reduce unnecessary workload. While there have been a few more researchers who have integrated some tenets of common documentation, interprofessional electronic documentation remains an unexplored phenomenon. Findings from this study focus on design ideas related to the framework for complex diverse data and establishing common ground in electronic interprofessional documentation.

Significant Findings

Common data elements. Analysis resulted in the identification of approximately 235 individual data elements, subcategories, and categories. Combined, they portray the patient story of a single case scenario centred on a patient being admitted to an acute care facility for care after she has fractured her hip. Stratification of the data elements, based on the number of different disciplines represented by the code, established common data elements that were either strong, moderate, or weak.

Strong indicators of common data elements. The number of data elements classified as strong with representation from four or five different disciplines was 80 (34%). This indicates that for this study, based on a single simulated case scenario with 14 participants, a third of what participants documented in their clinical notes were very much common between the other disciplines. Strong data elements and their design implications vary depending on the category, subcategory, single data elements and the entry and display of each.

Strong category: sources of patient information. All participants were interested in ‘sources of patient information’. Found throughout most clinical notes and used in multiple different contexts, this finding signifies that clinicians seek many different sources of information during a patient admission. Additionally, as they also document the source, this must be considered in design aligned with common ground. Design would need to include the ability for clinicians to document source of information throughout many areas of the patient record. According the study results, documentation options would include patient, family, current record, previous record, team report, and other. Design considerations would need to include where to then display data related to ‘sources of patient information’. Future studies to further understand where to configure ‘sources of patient information’ documentation and display of data would be of value. In addition to the category ‘sources of information’ three other categories require discussion related to design considerations.

Strong categories: living situation, assessments, and histories. In relation to design implications of documenting and reviewing information, ‘living situation’, ‘assessments’ and ‘histories’ would be initially addressed on admission. Further, according to the framework for complex diverse data, these should be readily displayed with equal access by all team members. A design consideration would include the provision of all three as components on the first screen

the clinician is reviewing while admitting a patient. These would then display their highest level subcategories.

Highest level subcategories and design implications: living situation, assessments, and histories. In order to avoid an overload of information displayed at one time for the end user, limiting display of strong subcategories to only include those at the highest level for each category would need to be considered. For example, at time of admission, on the initial screen, the component 'living situation' would include sections titled 'difficulties at home' and 'lives in home'; 'assessments' would include 'physical', 'cognitive', and 'emotional'; 'histories' would include the subcategories 'medical', 'history of present illness', and 'social'. The clinician would select each of the highest level subcategories to navigate to a secondary screen to review more information related to the patient's unique health experiences. Depending on what had been documented secondary screens would display many of the next level of subcategories and single data elements.

Lower level subcategories and single data elements design implications: living situation, assessments, and histories. Once launching from primary screens that include the highest level of strong subcategories, secondary screens would include information previously documented and organized within each of the next level of subcategories or single data elements. For example, for the case scenario of a patient with fractured hip, cardiovascular and respiratory conditions, once details related to each system were entered, these would then display on the secondary screens related to fractured hip, cardiovascular, and respiratory conditions. However, for a patient with a different set of health conditions, a different display of information would be available. For example, while a patient with an infected incision would still potentially have information related to living situation, assessments, and histories, an entirely different set of

strong moderate and weak indicators of strength would be present on the secondary screens. Therefore, the lower level strong, moderate, and weak subcategories and single data elements identified in the results of the study do not indicate their level of significance in design considerations. Simply, they speak to the level of significance for this specific case scenario.

Design implications of strong, moderate, and weak findings. Many subcategories and single data elements, while they provide an accurate patient story of this study's unique case scenario, stratification results would be very much limited to inform design of an EHR that would support a team consisting of those included in the study and based on this unique scenario. Beyond the inclusion of living situation, assessments, and histories on the primary screens, which certainly could be extrapolated to most patient case scenarios, EHR design would need to include the ability for care team members to document patient data for all different complex care needs for all patients. Regardless of whether a data element was found to be strong, moderate or weak, each of them could be equally vital to a different case scenario; data documented would potentially have the same level of significance. Indeed, current EHRs do provide the ability to document and view previously documented information for every type of patient scenario. Unfortunately, as discussed, clinicians continue to find too much data overwhelming despite of current design strategies. While the stratification efforts during analysis and the results from this study did not shed much light on future design considerations on what common data to include or exclude for all other case scenarios, discussion related to the need to continue to explore common ground within documentation continues with a deeper review of the strong category of 'organization of clinical notes'.

Strong category: organization of clinical notes. During analysis of "organization of clinical note" the primary investigator (PI) discovered that all participants had their own

individual way of organizing the clinical note. The subcategory of “participant specific” represented different documentation patterns from twelve participants; each participant had their own organization of information, used different punctuation, inconsistent grammar and sentence structure, varied capitalization, and different terminology. While reviewing each clinical note, the PI had a hard time discerning the key pieces of information related to the patient. Important information was buried in too many words; the lack of white space was often a challenge to get through, the use of different words that essentially mean the same thing was a cognitive challenge to sort through when reviewing the 14 clinical notes. Similarly, another strong data element, “non-standardized headers” interrupted the flow of information and the subsequent interpretation of what was essential to help formulate a common plan of care. Some participants used one header at the beginning; others used headers throughout the entire clinical note. Some headers were complete words, most were abbreviations. Headers were either found at the beginning of a paragraph or right in the middle of a sentence. Interestingly, two participants did not use headers at all; as the sorting of the information was not readily identified, it was also a challenge to quickly make sense of the clinical information. While the PI did find the use of headers helpful, the lack of standardization increased the complexity of making sense of the clinical notes both within each and when comparing them between each other. The unfortunate fact that the use of headers is a strong data element shared between all disciplines and that the PI found non-standardized use a deterrent from making sense of the clinical information, supports the need for a design based on standardized common ground. Analysis of ‘organization of clinical notes’ reinforced the experience expressed by many end users; without a standardized and formatted display and reduction in duplication of information, it is very challenging to discern a clear and centralized plan of care. Indeed, the inclusion of narrative clinical notes

within design of this study, while intending to provide a wide open format for participants to freely express their thoughts within a clinical note, had an unintended but illuminating result: the PI experienced a ‘deluge of data’. This experience has led to further design considerations regarding the importance of seeking common ground during data entry.

Design implications for documentation and common data elements. Design supporting documentation based on the concept of common ground is still required. As noted with ‘organization of clinical notes’, without standardization and structure during data entry, it was very challenging to understand the full patient story. Even though most data elements were common to all disciplines, it was very challenging for the PI to read and sort through all the redundant information to find unique nuggets of information germane to the patient story; vital pieces of the patient story, such as her allergies, would have been lost in the ‘deluge of data’ through a series of narrative notes. Further, while the common data elements, strong, moderate and weak, have been considered as common ground, they also indicate a high level of points of duplication in the electronic health record. For example, participants documented information about the patient’s daughter as her main support but this was expressed differently by four different participants in six different sentences; each with a very subtle difference in use of words and language (Appendix S). Indeed, when left with unstructured, siloed documentation, team members would continue to consistently repeat what had already been documented. Communal documentation based on common data elements in a structured standardized format is required.

Linked data will decrease duplication and it must attend to all potential patient information. As indicated by the literature review and found in Appendix B there are multiple different standards used by different disciplines. Design considerations supporting

documentation of common data elements during an admission must be linked for ease of navigation, negate the ability to document repetitive data through the use of standardized terminologies, and must include the ability to document all details related to a patient regardless of the strength of indication of commonality. For example, to readily navigate through a link in the patient record as suggested within the framework for complex diverse data, the build component of 'living situation' on the primary screen would include a navigation link titled 'difficulties at home'. When selected, this navigation link would route the clinician to a documentation section with subsections related to 'difficulties at home' with titles such as 'informal supports'. The subsection 'informal supports' contain the following structured and standardized selection of options such as: family, husband, wife, son, daughter, mother, father, sister, brother, other.

The use of standardized terminology would, perhaps, enable duplicate data entry checking to prevent redundant information. A suggestion for design could be inclusion of the ability for each team member to include documentation utilized by a large generic standard such as Snomed CT as well as the ability for each discipline to utilize discipline specific standardized terminology such as the International Classification of Nursing Practice (ICNP) for nurses or the Nutrition Care Process (NCP) for dietitians. A design consideration that has remained a challenge for years is to build a middle layer for interoperability of standards. This linking of codified standards, if configured appropriately, would enable duplicate data entry alerts. information. For example, if another team member selected the response of 'choking' through ICNP with a unique code that is different from the 'choking' unique code found in NCP, then a middle standard would link these two separate entities. A window alerting to duplicate data entry could then appear and control the experience of deluge of data. These documented data

elements would only be completed once and displayed in the ‘living situation’ viewing screen for all other team members to review.

Regardless of whether a data element was found to be strong, moderate or weak, without a communal effort, results such as ‘allergies’ captured once by one participant which are germane to patient safety must be readily documented and viewable by all team members. As team members communally document common data elements, the patient story, inclusive of important aspects, yet without redundant details would continue to build on the appropriate viewing screens in a standardized manner. Linking documentation for navigation and duplicate checking, and inclusion of the ability to document all details related to a patient regardless of the indicator of commonality strength are foundational design considerations when constructing interprofessional electronic documentation. These same design considerations can be generalized to the next strong category ‘interventions’.

Strong category: interventions. As clinicians assess patients and document their findings, they begin to formulate what clinical interventions are required to provide optimal care for the patient. In interprofessional teams, this is a shared care plan that contains optimal outcomes and the interventions required to obtain each outcome as clinicians address patient risks. Addressing interventions on a regular basis by tracking and documenting through a common electronic care plan is required for interprofessional electronic documentation.

Design of diverse data by attending to common ground in regards to ‘interventions’ would include the ability for all care team members to document and view patient interventions in a standard and structured manner through a centralized care plan. Based on the study’s patient case scenario at time of admission, all participants documented both ‘completed interventions’ and added their own ‘planned interventions’. Rather than displaying on a primary and secondary

screen, it would be of interest to design a way to track the completed interventions and their outcomes alongside outstanding interventions. For example, ‘transition back home’, a strong indicator of a common data element, was one of the planned interventions representing documentation from most participants. In order for the patient to transition back home, seven different participants’ clinical notes are represented by the subcategory of ‘manage cognitive_physical barriers’. Based on these findings, design based on common ground would include a section of the patient’s care plan labeled ‘manage physical barriers’ with the following interventions as standardized options: managing stairs, rehabilitation, mobilization, managing pain, and medical stabilization. As the team worked on helping the patient build the physical strength to manage her stairs at home, attend rehabilitation classes, mobilize in the hallway etc., they would update interventions related to ‘manage physical barriers’ to a completed status until all planned interventions collectively indicate that all physical barriers have been attended to. Besides the ability to track outcomes of planned and completed interventions, design implications would also require the ability for interventions to be linked and include all potential interventions and outcomes regardless of the stratification of strong, moderate and weak, found with this study.

Just as with previous discussion of documentation design elements, the ability to navigate thorough links, track duplicate entries, and have the ability to readily document and view all potential interventions and outcomes require multiple design considerations. To allow for team members to readily navigate to care plans that contain interventions, a link from the screens for ‘living situation’, ‘assessments’, and ‘histories’ would be provided. As concerns arise during an admission, team members would document findings and readily navigate to the care plan to build appropriate interventions. Consideration to design links throughout the patient record to readily

navigate to update and track interventions and outcomes throughout the patient's recovery would be required. The ability to add all types of interventions and outcomes beyond those identified in this study would need to be made available. For example, continuing with the case scenario of a patient with an infected incision, the ability to provide antibiotics and wound care would be vital interventions to achieve an outcome of 'optimal wound healing'. While these data elements were not found with this study, they would be germane to an EHR build. Finally, to negate the ability to add redundant data, design considerations would need to include data linked in the back end to enable duplicate checking. Diverse data found within interventions can be organized through building standardized care plans consisting of common data elements between multiple disciplines; design considerations would include the ability to track planned and completed interventions, build navigation links from other areas of the record, the ability to negate duplicate entries, and the ability to enter common standardized interventions and outcomes updated by all team members in a centralized area.

The first portion of significant findings has focused on common data elements, design considerations for 'sources of patient information, 'living situation, assessments, and histories', 'organization of clinical note' and 'interventions'. The levels of indication of strong, moderate, and weak common data elements are simply a reflection of the data relevant to this study. However, it is important to make sure that all data elements are included in configuration of documentation in order to attend to all different case scenarios. While the concept of common ground can be used to view the highest subcategories of 'living situation, assessments, and histories' on primary screens, design attending to lower level subcategories and single data elements is focused on the need for structured entry and use of common data elements. As reinforced through the experience of reviewing 'organization of clinical note', it is vital to

configure a design that would negate duplicate documentation by back end linking of common data elements. Significant findings also extend beyond primary analysis to secondary findings related to patterns of documentation within the disciplines.

Documentation patterns within different teams, disciplines, and participants. As reported in results, secondary findings related to documentation patterns arose. Deeper analysis has resulted in further considerations regarding documentation patterns within a team, documentation within a discipline, and documentation unique to participants. As these impacted the results of the study future design considerations are explored.

Documentation patterns within different teams. Documentation patterns likely form based on members of a local team. For example, as the majority of participants in this study work in a major city typically resourced by many disciplines, they would be accustomed to having access to clinical notes created by diverse disciplines. As those other disciplines would include portions of patient information in their documentation, as participants may be used to relying on other team members to capture information, such as allergies, this may have impacted what each participant documented. In contrast, clinicians who work in smaller sites they need to attend to a wider diversity of patient care planning; they may document quite differently. For example, in areas that do not have access to social work, nurses may need to review financial planning and alternative living arrangements; or occupational therapy may need to attend to documenting a medication list. As no participants were from smaller sites, there is no evidence to explore this phenomenon. While this may have contributed to the number of weak and moderate results of this study, a future study comparing common data elements between participants who work at a smaller site with less diversified teams and those who work at larger sites with access to larger multidisciplinary teams would be an interesting research topic.

Results from this study may impact future design. For example, while an electronic nursing position at a larger site may be able to decrease the number of documentation requirements other team members would otherwise attend to, an electronic nursing position at a smaller site would need to include a broader range of documentation components. While participants in this study were from a larger site, this may have impacted the number of weak and moderate data elements related to the study's case scenario; future studies in smaller sites may influence design configuration of electronic positions.

Discipline specific documentation. During analysis, it became evident that there were discipline specific documentation practices; these would be important to consider in the design of future studies related to an EHR that supports interprofessional care. For example, it was only the discipline of social work that recorded the patient may need to consider alternate living arrangements; knowledge of this would affect the majority of the patient's care plan shared by all disciplines. Similarly, it was only the physiotherapists who questioned her exercise program, only the occupational therapists who noted the patient's habit of interrupted sleep, and only the nurses who recorded that the patient did not recollect her fall and that her blood glucose was elevated. These would be of interest to all members of the team, yet, arguably, not all of them would typically document this information; they would review it and incorporate it into the shared care plan with their discipline specific lens on. It would be vital to design an electronic health record that would support interprofessional care, yet also support the needs of unique disciplines. Further, as discussed, even though many of the data elements unique to a discipline were considered 'weak' in this study, the information remains vital to the patient story; it must be readily documented and viewed by all team members. The integration of a design that allows discipline specific documentation through their unique standardized terminology with the

addition of duplicate checking through a linked middle layer is a foundational design for interprofessional documentation. Further, the display of pulling like concepts together from the different standards may attend to the to the experience of a deluge of data to address on admission. Future studies with more participants for each discipline could further discern if the ability to narrow down what documentation components would be required for each of the different disciplines to attend to during an admission would be achievable. While many key elements that were unique to a discipline and classified as weak indicators of common data, they are no less important to informing the interprofessional team members. While some of the weak indicators were unique to a discipline, the number of participants for each discipline may have influenced the results.

The small number of participants from each of the disciplines represented may have had a direct effect on the number of weak indicators. More specifically, even though the single physician participant cannot represent an entire discipline, the physician clinical note was robust, full of data, and added to the overall results of identifying common data elements. While it was integral to many of the results, if there had been more physicians enrolled in the study, other weak data elements such as “right leg rotation_shortening” or even “swallowing_cough when drinking”, both of which are key pieces of this patient story documented by other disciplines, may have become moderate indicators. Similarly, as there were only two social workers the addition of a few more may have shifted the moderate indicator of “depression” up into the strong indicator category. Drawing from a wider array of clinical notes, could have led to many weak indicators being categorized as moderate or strong ones. While it has been stated that regardless of whether a data element was stratified as weak, moderate, or strong, within this study, future studies with more participants within each discipline may also inform design

decisions related to the strong common data elements within a discipline. Again, this could narrow down the amount and content displayed on admission for each discipline. In addition to documentation recorded that was unique to a discipline, there is a subset of weak indicators that were recorded by a single participant.

Participant specific documentation. While it is important to consider the documentation rituals within a local care team and discipline specific components, it is also important to include individual team member's contributions. For example, if the physician had not documented the patient's allergies including anaphylaxis with peanuts, an unknown reaction to ibuprofen, and stomach pain with NSAIDs the patient could be put at risk during her hospital stay. As discussed, even though 'allergies' was labelled a weak indicator, it is no less vital to provision of safe patient care. Further, with more participants with diverse experiences in working in smaller or larger interprofessional teams for each discipline, this may have been a strong indicator of a common data element. Regardless, while future studies that continue to explore single data elements documented by a single team member and design implications would be of interest, design implications for this study indicates that the ability to document and display even weak data elements are vital.

Significant findings of common data elements and patterns of documentation have been explored. Results may be impacted by teams consisting of a range in the number of different disciplines, patterns can be unique to disciplines, and the importance of attention to unique contributions by participants was identified. Future studies and potential design implications have been explored. To design a system that supports electronic interprofessional documentation further understanding of shared electronic documentation is needed. In addition to significant

findings in common data elements and patterns in documentation multiple points of discussion related to study design and its limitations is explored.

Discussion of the Study Design

The study design was carefully established with constant consideration of answering the research question: *What are the common data elements between disciplines?*. The question was not related to understanding a cause and effect, rather it focused on deeper understanding of the unknown phenomenon of design of an EHR based on interprofessional electronic documentation, the framework of diverse disciplines, and the concept of common ground. Deep interpretation of the data was not warranted, rather, the PI intended to produce findings close to the data and present the results in everyday clinical language (Sandelowski, 2000; Sandelowski, 2010). Based on the intent of the study, a descriptive qualitative study was designed and implemented (Magilvy & Thomas, 2009). A case scenario consisting of a video and a paper patient record was provided. Participants created clinical notes that were then coded. Results were categorized as well as stratified according to level of indication of strength of common data elements between disciplines. While common data elements were identified and implications for design considerations have been proposed, there were multiple limitations in the study design that impacted the results.

Limitations of the study design.

Number of participants for each discipline. After eight months of recruitment, the PI realized the ability to enroll five participants for each discipline was unattainable. Originally, it was felt that five of each would provide a rich base of raw data for coding, analysis, and reporting. The only discipline with five participants was nursing. Nurses may have been easier to recruit as there are more nurses within the workforce than the other disciplines. In contrast,

there are fewer social workers, physiotherapists, occupational therapists, and physicians who directly care for patients with a fractured hip. The number of weak indicators of common data elements likely would have been reduced with enrollment of more participants from each discipline. That being said, even with a limited number of participants for each discipline, the PI was still able to identify many common data elements between disciplines.

Data unique to each discipline also emerged through analysis. Enrollment of more participants from all disciplines likely would have resulted in the chance that many of the data elements deemed unique to a discipline would have no longer been unique. For example, with enrollment of more physiotherapists or physicians, it would have been likely that “pedal pulses” would not be unique to the nursing discipline. Similarly, enrollment of more social workers may have led to “substance use” and “retiree” no longer identified as unique to the physician. Indeed, enrollment of more participants would have impacted the likelihood that data was uniquely represented by a single discipline; the number of weak indicators would have declined.

Data represented by all members of a discipline was one of the documentation patterns. For example, it was found that all social workers contributed to “living alone” and “fractured hip”. Because there were only two social workers, with enrollment of more, there would be a strong likelihood that not all of them would have documented that the patient lived alone and had a fractured hip. Even with the higher representation of five within nursing discipline, enrollment of more nurses could have impacted that all current participants documented the patient’s pain as “10/10”. While physician contribution to primary analysis of common data elements was integral because there was only one physician, this discipline was exempt from analysis of all members’ contribution. Limitations in the number of participants of each discipline may have impacted secondary reporting of data elements representing all members of the discipline.

Disciplines included in the study. The inclusion of the five disciplines was driven by the knowledge that they are ones most commonly participating in caring for patients with a fractured hip. By excluding other disciplines such as pharmacy, respiratory therapy, and dietary, results were likely affected. For example, while “medication history” was a moderate indicator, inclusion of the discipline of pharmacy would have likely increased this data element into the strong indicator category. Similarly, “allergies” was a weak indicator; inclusion of pharmacists might have made this a moderate indicator. While the disciplines included in the study were ones that were most commonly involved in caring for a patient with a fractured hip, a more diverse representation of more disciplines might have resulted in an increase in strength of many data elements.

The exclusion of some disciplines may have resulted in eliminating completely new data elements. For example, inclusion of respiratory therapists, could have led to new codes such as bed position to enhance oxygenation or a family history of COPD. Inclusion of pharmacists could have led to suggestions of more lab tests to follow the patient’s elevated potassium and liver enzymes; dietitians would have been more likely to place the patient on specialized diet to improve blood sugars and risk of malnutrition. It is important to acknowledge that all disciplines have the potential to capture different components. If we only relied on one discipline to complete documentation, would only have one viewpoint; data elements can be missed when there is no synergy of multiple contributors. Establishing a common ground for all disciplines involved in the interprofessional team is a vital component of electronic documentation. Unfortunately, due to the resource limitations of having one investigator who designed, executed, coded, and resulted the common data elements for this study, other knowledge otherwise gleaned from the inclusion of many other disciplines was a limitation of this study.

Purposive sampling. Following the tenets of purposive sampling, the study was designed to obtain a rich data base of raw information between those who share a similar sociocultural environment. Purpose sampling targeted participants who have cared for a patient with a fractured hip in an acute care setting within a local health authority.

Patients with fractured hips are also cared for by disciplines who work in rehabilitation, convalescent units, and in patient homes. While only including clinicians with acute care experience, findings cannot be transferred to those working outside of acute care. As revealed in the exclusion of other disciplines, there is the potential that an entire new category of common data elements and the strength of common data elements would be affected by clinical notes from clinicians working in the community. For example, while elements that could be indicative of the acuity of the patient's fractured hip such as "use of pain scale", "edema_swelling", and "alert_oriented_disoriented" are strong data elements in this acute care setting, they may not even have been identified during the patient's recuperation from her fractured hip. Conversely a whole new set of common data elements such as participating in group activities, balance training, and memory exercises may have been strong data elements captured by clinicians who work outside of an acute care setting.

Focusing solely on the local health authority employees may have also influenced the results of the study. While it is unknown where the participants have worked in the past, there is a chance that if employees from acute care facilities in other geographic locations had been included, other data elements, subcategories, and categories may have arisen. With targeting the local health authority employees, transferability also impacts the application of the findings outside of the health authority. Thus, while purposive sampling enabled a deep dive into the

phenomenon of common data elements, it has limited the transferability of this to knowledge to certain disciplines who work within an acute care setting in a local health authority.

Use of simulation. While use of simulation is an acceptable design component of qualitative studies, there were some limitations despite the effort of providing a naturalistic experience. Results identified two separate groups of data, those questioned, but were available in the case scenario and those reported, but were not actually found in the case scenario. In addition, there were key elements included in the case scenario that the PI was surprised were not included in the clinical notes.

Questioned but is found in case scenario. Found in both the clinical notes and within the answers in the second survey question, some participants questioned what can be clearly found within the simulation. For example, the diagnosis of a fractured hip was unclear to one participant even though this was provided in the ED note, verbally stated in the video, and addressed with the externally rotated and shortened leg. This could have been related to the quality of speakers and the ability to hear some of the video content. While instructions were provided for participants to watch and listen in a quiet space outside of work, their surrounding environment may have interrupted what they were able to hear and see. Some participants may have only read the note and not watched the video, or vice versa; still others may have watched or read them repeatedly. Some participants may simply be more thorough in the creation of a clinical note and are better able to absorb and recall information. In a realistic setting, the clinician would be able to discuss missing or forgotten elements of the patient admission with care team members, the patient, and family. The inability to converse was a limitation of the study. While there are many varied reasons related to why some participants questioned data that was found in the case study, clearer instructions may have helped.

Included in the case scenario but not documented. There were a couple of key items integral to the case study but were not included in any clinical notes. To add to the complexity of the patient's behaviour on admission, the daughter stated that her father, the patient's husband had died of a fractured hip on the same acute care unit. While the PI believed this was an integral part of the patient's history and influenced her expression of anxiety, it was spoken very softly. There is a chance that it was not included in clinical notes as it was hard to hear. Conversely, the patient stated loud and clear that her mother died of dementia, that she was the main caregiver, and there was financial burden. While it was clearly documented that the patient had cognitive concerns, the daughter was the main caregiver, and there were financial concerns within clinical notes, no one documented the historical connection within the family. This could be related to the complexity and level of detail about this information and that it was provided at the moment of admission. While key components were specifically called out in the case scenario, limitations related to the use of a simulated experience may have caused participants to not document them.

Data reported but no evidence found in case study. Some participants documented data that was actually not a part of the simulation-they made items up. For example, one described cloudy urine; another provided an entire section related to the transfer of the patient; every OT and PT documented that consent was obtained. Participants may not have understood the instructions, and, in an attempt to create a typical clinical note, they included information that was not a part of the case scenario. This could also be related to phenomenon of people seeing/reading/hearing different things even when the exact same simulation is in front of them.

While the study design readily answered the question: *What are the common data elements between disciplines?* multiple limitations have been identified that directly influenced

the number and examples of strong, moderate, and weak indicators of common data elements. The limited number of participants for each discipline, the exclusion of different disciplines, use of purposive sampling, selection of admission as a point of time within an acute care facility in a local health authority and finally, the use of a simulation directly impacted the results. While design strategies based on current findings were discussed in relation to significant findings related to both common data elements and documentation patterns, future studies would provide more information that could help inform a design that would support interprofessional electronic documentation.

Future studies

Throughout discussions related to significant findings and limitations. There have been multiple options for future studies to help build deeper understanding of this study's results. The need to further understand configuration of 'sources of patient information', exploring the ability to configure 'documentation unique to a discipline' for each discipline, and exploration of single data elements documented by a single team member and how this may impact design implications have been briefly mentioned.

Indeed, conducting the same study with much higher number of different disciplines and number of participants for each discipline may provide more insight into both the varieties and patterns related to strong, moderate, and weak indicators of common data elements. This may then inform a design that could be configured to meet the needs of each discipline's contribution to data at the time of admission. In addition, the ability for all team members to share the same display of information based on the concept of common ground, and the framework for complex diverse data could be more finely tuned. At least for interprofessional teams who support the care needs of a patient being admitted with a fractured hip within the local health authority the

road to finding the common ground with interprofessional electronic documentation has been initiated. To extend this knowledge, future studies could include multiple different case scenarios at the point of admission and could extend beyond the local health authority.

Stratification of common data elements could lead to understanding further patterns which could inform future design. For example, studies that include numerous different case scenarios based on different sets of diagnoses may shed further light on the strong, moderate, and weak common data elements; provision of discipline specific entry of admission data based on certain diagnoses that flows to a common area would certainly add a significant amount of knowledge in the documentation needs of interprofessional teams caring for a variety of patients. Studies could also branch beyond the point in time of admission to understand documentation patterns that are both common and unique to different disciplines during the patients stay and at discharge. For example, a series of case scenarios based on a large family each member struggling with different diagnoses, transitioning throughout acute and community care areas could be created. Disciplines such as pharmacists, dietitians, speech pathologists, and respiratory therapists could be added to the list of inclusion criteria. Participants from each different care areas could review different vignettes such the family members at home, being admitted and discharged from an acute care facility, and visiting clinics in the community. Participants would then create a clinical note for each vignette for each patient. Multiple researchers, after establishing inter-rater reliability between researchers, would code the clinical notes. An even more robust set of common data elements between disciplines would be created; these would inform the design in an EHR that would attend to the needs of many disciplines, working with many patients with different diagnoses, within various care areas of the health system. Certainly, while this limited study shed some light on common data elements between disciplines based on

a unique case scenario, there is much more room for future studies to build and add to the knowledge required to build an electronic health record that would support interprofessional electronic documentation.

In addition to future studies with more participants, diagnoses, and researchers etc., the PI strongly believes there is another concept that requires further exploration. In particular, the concept of linked data and the ability to configure an EHR that would alert for duplicate data entry is where the PI believes may be a key component limiting the next phase of configuring a truly interprofessional electronic health record.

As introduced in significant findings, linked data, if configured appropriately, would enable duplicate data entry checking and prevent redundant information. Simply put, the experience of having to review all the clinical notes confirmed that clinicians are likely to duplicate documentation and that the provision of unstructured documentation greatly impacts the ability to discern the important care needs that require further action. The key to shift away from multidisciplinary electronic documentation and into interprofessional electronic documentation needs to include the use of standardized discrete data. Without incorporating standardized discrete data into documentation design, there is a very high likelihood that redundant data will continue to clog the cognitive capabilities of clinicians. Combined with the knowledge regarding common data elements mentioned in the aforementioned future studies, effort also needs to be focused on the continued lack of an interprofessional standardized terminology. Beyond continuing to understand the use of words and language that construct common ground between disciplines such as those found in this study, future studies cross referencing results of common ground with gaps of the standards currently available would be of

great importance. This may lead to an interprofessional standardized terminology; the missing component required to fully realize interprofessional electronic documentation.

In Summary

Common data elements do exist; many were discovered with this study. While it is a challenge to extrapolate findings to an EHR design beyond those related to a small team caring for a patient with a fractured hip on admission, numerous points of discussion have been provided. Discussions about significant findings related strong, moderate, and weak indicators of common data elements and patterns of documentation have provided the foundation for many more future studies. Undeniably, the ability to decrease the deluge of data and the risk of documentation forever lost in the data cemetery is closely linked. Ultimately, a shared clinical standard may be the nirvana of the common ground required for interprofessional electronic documentation; future efforts to obtain this nirvana will improve a care team's ability to meet the patient's needs in a coordinated, effective, and efficient manner.

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Appendix A

Articles Allied Health, Groups of Disciplines and Individuals

Boolean terms	Number of Articles	Allied Health Articles	Numbers of Groups of Disciplines (Statistics Canada, 2013)
'Nurs* and electronic health record and multidisciplinary documentation'	184 (40%)	N/A	584 (21%)
'Physicians or doctors or medicine and electronic health record and multidisciplinary documentation'	177 (38%)		134 (4.8%)
'Social workers and electronic health record and multidisciplinary documentation'	40 (8.7%)	98 (21%)	134 (4.8%)
'Occupational therapists and electronic health record and multidisciplinary documentation'	26 (5.7%)		'Others' 1956 (67%)
'Physiotherapists and electronic health record and multidisciplinary documentation'	11 (2.4%)		
'Respiratory therapists and electronic health record and multidisciplinary documentation'	13 (2.8%)		
'Dieticians and electronic health record and multidisciplinary documentation'	5 (1.0%)		
'Pharm* and electronic health record and multidisciplinary documentation'	3 (0.6%)		
*Others- unknown disciplines	N/A		
Total	459		2808
'Allied health and electronic health record and multidisciplinary documentation'	45		

Appendix B

Summary of Standardized Taxonomies Created by Multiple Disciplines

Name	Acronym	Created by:	Intent	Reference
Clinical Care Classification	CCC	Nursing	Focuses on home care and includes diagnoses, interventions, and outcomes	Finkelman (2013)
Omaha System	Not applicable	Nursing	Used in homecare and public, community, and school health. Consists of problems, interventions, and outcomes	Finkelman (2013)
Perioperative Nursing Data Set	Not applicable	Perioperative Nurses	For surgical nursing and includes diagnoses, interventions, and outcomes	Finkelman (2013)
The International Classification of Nursing Practice	ICNP	Nurses	Nursing diagnoses and interventions - useful for communication and documentiaon among nurses but not intended for interdisciplinary use	Finkelman (2013)
Systematized Nomenclature of human and Veterinary Medicine	Snomed CT	Multidisciplinary	A reference terminology used by all disciplines in all settings to map interface terminology	Klehr, et al., (2009)
North American Nursing Diagnosis Association	NANDA	Nurses	Consists of terms that relate to nursing diagnoses.	Finkelman (2013)
The Nursing Outcome Classifications	NOC	Nurses	Used to describe nursing outcomes.	Finkelman (2013)
The Nursing Intervention Classifications	NIC	Nurses	Used to describe nursing interventions.	Finkelman (2013)
The International Classification of Functioning, Disability, and Health	ICF	All clinicians-esp those working in Rehabilitation	Multipurpose classification belonging to World Health Organization (WHO) intended to facilitate multidisciplinary communication.	Klehr, et al., (2009)
Spinal Cord Injury Rehabilitation	SCIREhab	Occupational Therapists	Language for occupational therapists (OT) working with spinal cord injuries	Ozelie et al., (2009)
Nutrition Care Process,	NCP	Dietitians	Language used to represent the systematic,	Jenkins,

			method that dieticians used to critically think and make decisions related to quality nutritive care	Myers, Charney, & Escott-Stump, (2006)
Residential Assessment Instrument	RAI	Multidisciplinary	Contains nursing care data about patients and clients in nursing home	Goossen et al., (1998)

Appendix C

Case Scenario

The goal of this simulation is to create a video-taped interaction of a clinical assessment of a patient with a fractured hip. This, in combination of a textual patient record from a previous encounter, will provide information that will be used by participants of a research study to document their clinical note.

Scene

The patient has just been transferred from the emergency department to the acute care ward. She has fractured her hip and is accompanied by her daughter. She is being examined by a clinician who, through the standard ward procedure, is completing a health history and other admission processes.

Length of interaction

The interaction should take no more than 8 mins

The Patient

History of the Present Problem: Ivy Jenkins is an 82 yr old woman who fell while watering her plants, which were located on the top of her kitchen cabinets, yesterday at 3 pm. She has been feeling tired, short of breath, and has noticed her ankle swelling has not decreased since a recent hospitalization and change in medications. As she lives alone, was unable to weight bear, and her phone was out of reach, she was found by her daughter Jean who had brought turkey dinner over 3 hours later. Jean called the ambulance and Ivy was in the emergency department 30 mins later. She was examined by the ED physician who confirmed an intertrochanteric hip fracture upon review of the xray.

Patient Presentation

Physical: Ivy is quite uncomfortable; she moans when her right limb is examined, reaches out to swat the arm of the clinician, and holds her hip through her bed covers. Her foot is externally rotated and her leg is shortened. She licks her lips often and complains of feeling dehydrated. Her hair is messy and her nails are dirty. She has a dry cough throughout the assessment.

Allergies: NSAIDS, peanuts

Cognitive: Although she is able to answer most questions appropriately, she forgets a few details such as what time she fell and how she got to the hospital, and that she was diagnosed with congestive heart failure (CHF) last month. She doesn't know the date nor time, but does know her daughter's name and where she is.

Emotional: Ivy calls out for her husband Jim during the assessment and is nervous about being on the ward as this was where her husband died from complications of a broken hip a couple of years ago. She is teary when she talks about her husband and is very nervous when anyone touches her leg. She asks her daughter a few times if her grandson can check on her cat, 'Fluffy', as he hasn't been fed his evening meal. She makes good eye contact, smiles once when she first meets the clinician, and holds her daughters hand throughout most of the interaction.

Physical Findings with Head-To-Toe Assessment:

Skin is warm and dry, but patient is pale. Her lips and tongue are dry and she is thirsty but denies hunger. Her chest has fine crackles in both lower lobes and is SOB. Her pulse is a bit irregular but strong. Her abdomen soft and round with bowel sounds x4 quads. LBM was two days ago, patient states usually needs to eat prunes a few times a week. Patient has urgency with nocturia 2-3 times per night; last voided on bedpan an hour ago in ED. Ankles are slightly swollen, feet cool to touch.

Code status: Ivy is a full code, she does not have advanced directives although has meant to get this done for the past few years.

History: Ivy is able to answer most questions about her health history but her daughter provides some collateral information such as her code status and finances.

Past Procedures: Appendectomy age 22, thyroidectomy age 58

Past Medical History: Verbally reported by Jean as Ivy remains uncomfortable and complains that she can't really remember it all. She reports that she takes pills for all of these, but sometimes forgets when she gets busy.

- Asthma (triggered by cold weather and dust),
- GERD (worse after meals and bedtime),
- Diabetes (past 5 years, tries to eat less sugar but indulges in a chocolate bar a few times a week).
- Osteoarthritis hands and back

- Congested heart failure. Jean points out her mom's swollen ankles and SOB and explains that Ivy was on the medical unit downstairs last month because these symptoms, combined with a notable increase in fatigue, had lead to a trip to the ED and subsequent 3 day hospital stay. She explains that her mom's medications were adjusted, her ankles and breathing improved and she went home to be followed by her GP who they had seen last week.

Medications: Handwritten list and pill container with various pills found in Ivy's purse. Jean reads list out loud and gives the container to the clinician

“Blue puffer when I need it

Heart burn pill that says ‘P40’ in the morning

Blood sugar pill before breakfast and dinner

Heart pills one each with breakfast

Tylenol 2 pills when I get sore, usually morning and before bed

Thyroid pill with breakfast”

Personal Devices: Ivy uses a cane when she goes shopping and occasionally has to hold onto her couch when she is making her way to her kitchen. She recently had bars installed near her shower and toilet. She wears glasses, but left them at home and uses upper and lower dentures-both are in her mouth.

Social History:

Employment status. Ivy worked part time in local department store for 35 years.

Marital status. Ivy was married for 50 years, her husband was a school teacher. He passed away 2 years ago and she explains that she feels like her right arm is missing; she misses him every day and sometimes wakes up at night in the middle of a conversation with him.

Dependents. Ivy had bought her ‘Fluffy’ the cat to keep her company; Fluffy sleeps in her bed with her and is a constant source of amusement.

Activities. Ivy used to play bridge every week until about 8 weeks ago when she believes her heart started to ‘misbehave’ and she lost all her energy. She used to love to garden until around the time her husband passed on. She used to quilt until her vision worsened a few years ago. She likes to read mystery novels.

Social Supports. Ivy has 2 close friends, one of whom is in hospice. Jean visits her a couple times a week; she has another son, Jeff who lives out of town. She talks to him every Friday night. She has 4 grandchildren and 6 great grandchildren who visit her sporadically.

Cultural/Spiritual Beliefs. Ivy was raised Anglican and attends church weekly

Family Medical History. Her father passed on at age 57 of heart attack related to complications of diabetes. Her mother passed on at the age of 88 related to complications of Alzheimer's. She has granddaughter, Jean's daughter who has Hodgkin's lymphoma and is currently receiving chemotherapy.

Nutrition. Ivy states she eats enough but isn't really interested in food the way she used to be. Jean reports that her mom used to love to cook and has always enjoyed eating balanced meals but has lost about 15 lbs in the last couple of months. Jean bought Ivy some boost a few weeks ago, but Ivy states they were too sweet. Ivy states that food just doesn't taste the way it used to. She eats two pieces of toast with honey and tea for breakfast. She would normally have soup and crackers and tea for lunch. Recently, supper has been frozen meals that she has only partially consumed.

Finances. Ivy is on a fixed income. She receives her husband's pension which covers her monthly rent. Her pension and CPP cover her utilities, phone, cable, internet and groceries. Jean has just recently started to pay her mom's bills. Ivy has enough left over to cover gifts for family and friends and her weekly lunch dates with her friend. She has a small amount of money invested in RRSPs that she hopes to leave to her family. Jean does not have power of attorney for financial nor medical decisions.

- **ADLs:** Ivy has a bath every night but is very nervous getting in and out of the bathtub. She is independent getting dressed and toileting. She gets her hair done weekly. She can climb stairs, but is nervous and needs to have a railing to hold onto. She can get in and out of bed and chairs, but finds it harder when the surfaces are lower than she is used to. She chooses the handicapped washroom when she is out for this reason.
- **IADLs:** Jean pays her bills in person at Ivy's bank after she has sat beside her mom to help her fill in the appropriate amounts on the cheques. She needs to make several corrections throughout this process. Jean has recently had to take over Ivy's grocery

shopping; she does this weekly combined with her own household shopping. Ivy drives a few blocks to church weekly; she stopped driving at night a few years ago.

Medications:

- Salbutamol 100mcg, 2 inhalations QID prn
- Pantoloc 40 mg PO OD
- Metformin 500 PO AC breakfast and dinner
- Vasotec 20 mg PO OD
- Furosemide 20 mg PO OD
- Metoprolol 25 mg PO OD
- Synthroid 25 mcg PO OD

Substance Use: denies

Appendix D

Script for Recorded Patient Simulation

Background

The goal of this simulation is to create a video-taped interaction of a clinical assessment of a patient with a fractured hip. This, in combination of a textual patient record from a previous encounter, will provide information that will be used by participants of a research study to document their clinical note.

Scene

The patient has just been transferred from the emergency department to the acute care ward. She is awaiting a repair of her fractured right hip that is scheduled as an add-on for the next available operative opening. She is accompanied by her daughter. She is being examined by a clinician who, through the standard ward procedure, is completing a health history and other admission processes.

Length of interaction: the interaction should take no more than 8 mins

The Patient

History of the Present Problem: Ivy Jenkins is an 82 yr old woman who fell while watering her plants, which were located on the top of her kitchen cabinets, yesterday at 3 pm. She has been feeling tired, short of breath, and has noticed her ankle swelling has not decreased since a recent hospitalization and change in medications. As she lives alone, was unable to weight bear, and her phone was out of reach, she was found by her daughter Jean who had brought turkey dinner over 3 hours later. Jean called the ambulance and Ivy was in the emergency department 30 mins later. She was examined by the ED physician who confirmed an intertrochanteric hip fracture upon review of the xray.

Video

Location: Patient room setting-3 people (Patient & Daughter & RN)
[patient is lying on a stretcher with her daughter sitting beside her holding her hand. She has an oxygen tube, intravenous in left arm hooked up to a 1 liter bag of 2/3 1/3, it is almost empty. She is grimacing, and holding her right hip through the bed sheets. Her hair is messy. She smiles a bit as the RN who has a stethoscope around her neck is listening to her lungs. There is a

clipboard with forms, and a syringe, on the bedside table. There is a vital sign machine at the bedside and a side table with a tissue box. There is a catheter bag with yellow liquid hanging from the bed. There is a chair with a purse and jacket on it, All 4 side rails are up, 3 pillows are on counter call bell is pinned to her gown]

Script:

CL: *Entering the room,* Hi Mrs Jenkins. My name is Sam and I am a member of your healthcare team. How are you doing?

PT: *Moaning, holding her right hip through the sheets, looking towards daughter* It really hurts. Why does it hurt?

DTR: *Glancing at clinician worriedly and back at PT with a slight smile* It's ok mom. You fell yesterday afternoon while watering your plants. I found you a few hours later when I brought you your dinner. The ambulance brought you to the emergency room last night. Don't you remember?

[RN listens to bowel sounds]

[CL takes clipboard and reads the documents-they are the ED note and discharge record]

PT: *Looking back and forth between DTR and CL* But who is taking care of Fluffy? She will be missing me. And she will be hungry.

DTR: That's her cat. Peter is taking care of her. He fed her last night and this morning

RN: *looking at IV bag and O2 level on wall, then at IV in hand* Your lungs sound like they have a few crackles. You are going to have to remember to do lots of deep breathing. I am sorry your hip is hurting. Out of a scale of 0-10, what number is your pain?

PT: 10!

RN: Do you have any allergies? RN *checks wrist band*

DTR: Peanuts make her lips tingle and the doctor told her to stop taking ibuprofen. I don't really know why.

RN: *injects into IV.* This will help with the pain.

CL: Do you know what day it is and where you are?

PT: *Turning to daughter* I think I am in a hospital. Is it Thursday?

DTR: No mom it's Friday. I think you may have lost a day.

CL: I am going to write some things on this board to help you remember.

[CL writes patient's name Ivy Jenkins on board, adds "Ivy" beside "What I like to be called", adds RNs name (Marian) and today's date.]

PT: *Licking her lips and coughing* I am so thirsty. Can I have something to drink?

DTR: *Standing up and holding glass of water with straw to PTs mouth. Pt coughs after taking a sip*

RN: Have you been coughing like this for a while?

DTR: She has had this cough off and on for about a year now. She was in the hospital in the fall and was ok until a couple of months ago. Her ankles swell and she is always tired.

[CL and RN make eye contact, RN leaves room]

PT: Where are we? Why am I here? I just want to go home. *[Agitated, trying to pull covers off and starts to put feet over side of bed].*

DTR: Mom, you need to stay in bed. You are in the hospital because you have broken your hip. You fell last night at home.

[DTR and CL gently shifting PTs legs back into bed. Pulling the covers back and sitting down to hold her hand]

PT: *PT states tearfully with voice slowly rising* Ohhhhhh Jim. Are you here? Where is your father? Jim, where are you? Why isn't he here?

[RN walking back into room with warm blanket, IV bag, and inspirometer. Opens the inspirometer package, assembles it and puts it on the side table. Puts the warm blanket on the side of the bed. Hangs the new IV, throws the empty bag in the garbage]

CL Who is Jim?

[Hands PT and DTR tissues]

DTR: *Tearing up* That's my dad. Mom, remember dad died 2 years ago of pneumonia after he broke his hip. He was actually on this ward.

PT: *Tearing up* Ohhhhhh I forgot dad died. Of course he did.

CL: You must miss your husband very much.

[RN listens to bowel sounds while conversation continues]

DTR: They were married for 50 years. Dad taught high school, mom worked part time in a corner store for 35 years. She misses him so much and is lonely when I am not with her.

PT: It's been a terrible few years. And Jean has to do so much for me. I am too tired to clean and cook; I can't even drive to church anymore.

DTR: We had to sell my parents place and find a smaller apartment for mom. She has been a bit down. She used to read all the time and she won't even do that anymore

[PT reaching for DTRs hand, nodding her head and gently smiling]

CL: Are there other things in your life you need help with?

DTR: I have been bringing some of her dinners to her, taking her to appointments, and shopping for her groceries

[RN puts finger probe on finger, takes temperature, and feels pulse during the subsequent conversation until

CL: Do you use any walking equipment?

PT: My cane helps when I go outside, and I hold onto my couch and kitchen counter when I am inside.

CL: How is your memory?

PT: It is so bad, just like my mother. She stopped recognizing me for the last 10 years of her life. We had to pay \$3000 dollars a month for her to be taken care of. I would never be able to afford that. I am on a fixed income don't you know.

DTR: [Turning to CL] Mom collects dad's pension. I pay her bills at the bank. She doesn't have a lot of extra money and I think it worries her. Hey mom?

PT: With the cost of groceries these days. It is highway robbery and I end up throwing half of it away. It goes rotten; it just doesn't taste the same anymore.

DTR: All she really eats these days are tea and toast. Can she have a snack now?

RN: *turning to CL* She can have some crackers and cheese, can you grab those for her?

[CL finishes taking notes, nods, puts clipboard down and walks out of room]

RN: *picks up clipboard* Your heart rate is a bit irregular. What medications do you take?

[DTR takes folded paper out of moms purse and hands it to RN, RN reads it]

DTR: She has been getting dizzy. Her doctor changed her pills last week but I can't remember if we actually picked up her new prescriptions.....[looking worried, handing list of meds over to RN]

RN: *Putting the medication list on clipboard and filling in one of the documents.* It looks like you have asthma, and heart burn. Are you diabetic as well?

DTR: She forgets to take her sugar level and I know she sneaks chocolate.

PT: I am fine, chocolate makes me happy.

RN: Do you normally have any problems passing your urine?

[CL comes back into room with a snack and places it on counter beside patient]

PT: No, but when I have to go, I have to go. And I have to get up to go pee a couple of times every night. I don't sleep very well at the best of times. My arthritis keeps me awake. I don't think my pain pills are helping

DTR: Mom's hands and knees get pretty sore.

CL: What else are you doing to help with your arthritis pain?

PT: I used to take a hot bath at night. Now I am afraid I am going to fall even though I had those bars installed.

RN: I would like to take a peek at your legs and feet.

[Lifts bed sheet to the side to expose left leg, then lifts covers off both feet. Gently feels right hip; PT moans. CL shifts her examination to PT's feet. Feels pulses, PT's right foot is shorter than the left, externally rotated. Both feet are pale]

RN: It's ok, I know it hurts. I am almost done. Your ankles are quite swollen. I noticed your toe nails are a bit long. Do you cut them yourself?

DTR: (*glancing at toes*) I didn't notice how bad they had gotten. Mom doesn't really like to leave the house, even to get her nails done.

[CL retrieves the pillows As the subsequent dialogue continues she places each pillow horizontally underneath PT's left leg, remains on left side of bed, where the camera is. RN walks over to the right side of bed]

DTR: Come to think of it, you aren't really leaving the house very much at all.

PT: Those outside stairs make me nervous. And that railing feels loose. You know, I sometimes feel like my legs are going to give way. I'm such a burden.

RN: We are just going to roll you over to take a look at your skin

[PT rolls onto right side with the two pillows between her knees. She groans a little bit. CL examines her back and backside for about 5 seconds]

RN: Your buttocks are a bit red and you have a bit of a sore starting. I think we will need to keep you on your side for a bit otherwise this could turn into a bedsore

DTR: Dad had a bedsore....

[CL places third pillow at PT's back. DTR walks over to sit in the chair and places her head in her hands]

CL: I have put a pillow behind you, relax back into it.

[PT gently shifts into pillow, CL puts warm blanket on patient and makes sure call bell is still pinned to gown]

CL: How does that feel?

PT: *coughing a bit* Not too bad.

[CL walks over to daughter and puts her hand on her shoulder]

CL: We have a whole team of people who will be looking after your mom. We will work with her and your family, to come up with a plan to get her back home safely. She is in good hands. [Camera fades out]

Appendix E
Actor Consent Form

Photographs and Video Consent, Waiver, Indemnity and Release Photographs, Videos and
Recordings

I hereby grant permission to Kristie McDonald (VIDEO PRODUCER) to take photographs or videos of me and to make recordings of my voice at the event or location noted below.

First and Last Name (Printed):

E-mail

Phone

Production/Location UVIC Medical Program Building Date April 25th, 2015

I further grant to the producers and their representatives the right to reproduce, use, exhibit, display, broadcast and distribute and create derivative works of these images and recordings in any media now known or later Developed. I acknowledge that Kristie McDonald owns all rights to the images and recordings.

Waiver, Indemnity and Release

I hereby waive any right to inspect or approve the use of the images or recordings or of any written copy. I further waive all moral rights. I also waive any right to royalties or other compensation arising from or related to the use of the images, recordings, or materials. I hereby release, defend, indemnify and hold harmless the producers from and against any claims, damages or liability arising from or related to the use of the images, recordings or materials, including but not limited to claims of defamation, invasion of privacy, or rights of publicity or copyright infringement, or any misuse, distortion, blurring, alteration, optical illusion or use in composite form that may occur or be produced in taking, processing, reduction or production of the finished product, its publication or distribution. I am 18 years of age or older and I am competent to contract in my own name. I have read this document before signing below, and I fully understand the contents, meaning and impact of this consent, waiver, indemnity and

release. This consent, waiver, indemnity and release is binding on me, my heirs, executors, administrators and assigns.

Signature (if age 18 or older)

Date

Signature of Witness

Date

Appendix F

Videotaped Patient Scenario

[Patient Admitted with a Fractured Hip](#)

Appendix G

Patient Paper Record: Liaison Discharge Note

Patient: Ivy Jenkins MRN: 807 Encounter #: 1386

Discharge Summary: Congestive Heart Failure

Chief Complaint: SOB

Author: Fox, Jason (RN: Liaison)

Date: November 8, 2014

Hospital Course

Patient has recovered from CHR, renal insufficiency. Treated with IV Lasix 48 hours and home meds adjusted. No longer SOB. Bilateral pitting edema has improved. Will need home safety assessment for the following concerns:

1. Fall risk. Due to loss of energy related to cardiac issues, unsteady gait at times with progressive weakness over the past several months. Uses a cane while out, uses furniture and counters inside home; has scatter rugs. Patient mobilized well with physiotherapy. Over course of 3 day hospital stay progressed from bed to washroom with 4WW to walking 2 lengths of the hallway (approximately 200 meters) with 2WW. 1 flight of stairs to get into home; requires installation of railing. Patient to practice stairs with physiotherapy prior to discharge. Feels unsafe in bathtub; feels dizzy and is difficult to get in and out. Will need handle bars and possible bathing stool
2. Cognitive decline. Occupational therapy noted some early cognitive decline with a MOCA score of 18.
3. Social issues. Lives alone and struggles with heavy cleaning and meal makings. May have worsening social isolation due to loss of energy and potential depression. Unable to read and play bridge due to vision issues. Attends church although unable to find a ride at times. Stopped driving about 6 months ago. Daughter main support.

Plan

Referral made to Quick Response Team. Patient and daughter aware to follow up with GP in 1 week. Given requisition for repeat CBC/lytes. Daughter to drive home, aware Home and Community Care will call for an initial visit and assessment.

Appendix H

Patient Paper Record: ED Note

ED Note: Hip Injury

Chief Complaint: Pain in Hip

Author: Paige, Sean (ED Physician)

Date: November 8, 2014

Diagnosis: Fractured Superior Pubic Ramus

History of Present Illness

Hip Injury-Pain The patient presents with Right hip pain. The onset was 5 hours ago. The course/duration of symptoms is constant and worsening. Type of injury: fall. The character of symptoms is pain, swelling and loss of mobility. • The degree at onset was severe, 10/10. • The degree at present is severe. 10/10. The exacerbating factor is movement. There are relieving factors including analgesics and immobilization. The incident occurred at home. Risk factors consist of diabetes mellitus, coronary artery disease, hypertension, immobility and age. Associated symptoms: dizziness and palpitations.

Review of Systems

Skin symptoms: Pale, warm, slightly moist.

Respiratory symptoms: Shortness of breath, cough, wheezing, CHF in fall 2014.

Cardiovascular symptoms: Palpitations, tachycardia peripheral edema.

Gastrointestinal symptoms: Constipation, Abdomen round and distended.

Genitourinary symptoms: Catheterization for urinary frequency and incontinence.

Musculoskeletal symptoms: Joint pain, Arthritic pain in hands.

Neurologic symptoms: Dizziness. Not oriented to person, place nor time. Daughter provided most of past medical history.

Endocrine symptoms: Hyperglycemia.

Hematologic/Lymphatic symptoms: Bruising tendency.

Allergies:

Peanuts: Anaphylaxis

Ibuprofen: Unknown reaction

NSAIDs: Stomach pain

Medical History:

COPD (chronic obstructive pulmonary disease)

CHF (congestive heart failure)

Diabetes

GERD (gastro esophageal reflux disease)

Hip pain, right

HTN (hypertension)

Surgical history: Appendectomy, Thyroidectomy

Family history: Mother: Dementia

Father: Died of complications related to diabetes

Social History:

Retired: Local grocery store. Grade 12 or equivalent

Home/Environment

Lives alone, Apartment, Own Home. Patient cares for cat, plays bridge and reads

Home equipment: Walker/Cane.

Alcohol abuse in household: No.

Substance abuse in household: No.

Smoker in household: No

Widowed 2 yrs, -husband died of pneumonia related to fractured hip repair complications

Sexual: Number of lifetime partners 1.

Physical Examination:

- Heart Rate Monitored 88bpm
- Peripheral Pulse Rate 100bpm
- Respiratory Rate 22br/min (HI)

- Systolic Blood Pressure 160mmHg (HI)
- Diastolic Blood Pressure 90mmHg (HI)
- Mean Arterial Pressure, Cuff 110mmHg
- Temperature Tympanic 38.2 Deg C (HI)
- Height 182 cm
- Weight 71 kg
- Basic Oxygen information 1747
- Oxygen Therapy Room air
- SpO2 88%
- Basic Oxygen information 1802
- Oxygen Therapy Nasal cannula
- SpO2 94%
- Oxygen Flow rate 3L/min
- Bilateral pitting edema +3 lower legs.
- ECG rate 120, atrial fibrillation with ST-T changes.
- CXR shows bilateral pleural effusions with increased interstitial changes and cardiomegaly consistent with CHF.

Lab Results

Routine Hematology: WBC 12.8; RBC 3.02; Hemoglobin 85; HCT .33

Anemia Profile: Iron binding capacity 48; Iron saturation .17; Ferritin level 132

Electrolytes: Sodium 129; Potassium 5.8; Chloride 10; Carbon Dioxide total 32;

Renal Function: Urea level 10; eGFR 40; Creatinine 150; Anion Gap 9

ABGs: pH arterial 7.3; PCO2 84; PO2 138; Bicarb calculated 41; Excess Base 12; O2 Sats 93%;

Flow rate 3 LNP

Urinalysis positive for WBC >100

Inpatient Orders

- Resuscitation: Full Code
- Admit to Inpatient:
- Non Weight Bearing right leg up to chair for meals
- Urinary Catheter Insertion

- Consult to Geriatric Medicine or house physician for delirium management
- Refer to OT for early cognitive decline, equipment needs, discharge planning
- Refer to PT for bed exercises, discharge planning
- Incentive Spirometry:
- Neurovascular Assessment Lower Extremity:
- Pulse Oximetry: sats > 92%
- Vital Signs routine
- BBGM AC and HS
- 2/3 Dextrose 1/3 NS KCl 20 mmol/L 1,000 ml: 75 ml/h, IV

Medications:

Dilaudid inj: 2 mg, SUBCUT, Q4H, PRN:

Dilaudid: 4 mg, oral, Q4H, PRN:

Imovane: 7.5 mg, oral, QHS, PRN: sleep

Maxeran inj: 10 mg, IV, Q6H, PRN: gastric stasis or *NN* opioid-induced

Neurontin: 100 mg, oral, BID

Synthroid: 0.25 mg, oral, AC BKFT

Tylenol: 1,000 mg, oral, QID

Vasotec: 20 mg, oral, Q12H

Ventolin inhalation solution: 5 mg, inhale, Q6H, PRN: bronchospasm

Dalteparin: 5,000 IU, SUBCUT, Q24H

MetFORMIN: 500 mg, oral, AM & SUPPER

Metoprolol: 25 mg, oral, AC BKFT

Pantoprazole: 40 mg,

Impression and Plan: To be admitted to Orthopaedics for conservative treatment.

Appendix I

Patient Medication List

- Blue puffer when I need it
- Heart burn pill that says "P40"
- in the morning.
- Blood sugar pill before breakfast
and dinner.
- Heart pills - one each with breakfast.
- TYLENOL - 2 pills when I get sore.
(usually in morning and
before bed)
- Thyroid pill with breakfast.

IVY.

Appendix J

Health Research Ethics Board Application



Research and Capacity Building
 Memorial Pavilion – Kenning Wing – Royal Jubilee Hospital – 1952 Bay Street
 Victoria, BC V8R 1J8

Health Research Ethics Board (HREB) Application Form

Please review and refer to the **HREB Submission Form Guidance** available online at: www.viha.ca/rnd/research_ethics/forms to ensure your submission to the Research Ethics office is complete.

This application must be accompanied by a protocol.

Please see: <http://www.viha.ca/NR/rdonlyres/79297B70-6D95-4031-B115-02D3972DB2B7/0/HREBProtocolTemplate01MAY2013FINAL.doc>

Incomplete submissions will not be accepted.

<p>1) Principal Investigator Contact Information</p> <p>Title: <u>Mrs</u> Last Name: <u>McDonald</u> First Name: <u>Kristie</u></p> <p>Organization: <u>University of Victoria</u></p> <p>Address: <u>#3 134 Ontario St</u> City: <u>Victoria</u> Province: <u>BC</u> Postal Code: <u>V8V 1M9</u></p> <p>Phone: <u>250-889-0902</u> Fax: <u></u> Email: <u>Kristina.mcdonald@viha.ca</u></p>																							
<p>2) Primary Contact</p> <p><input checked="" type="checkbox"/> Principal Investigator is the Primary Contact (skip to next question)</p> <p>Title: <u></u> Last Name: <u></u> First Name: <u></u></p> <p>Organization: <u></u></p> <p>Address: <u></u> City: <u></u> Province: <u></u> Postal Code: <u></u></p> <p>Phone: <u></u> Fax: <u></u> Email: <u></u></p>																							
<p>3) Other Study Team Personnel</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Research Role</th> </tr> </thead> <tbody> <tr> <td>Marian Chalifoux</td> <td>Subject Matter Expert</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Name	Research Role	Marian Chalifoux	Subject Matter Expert																		
Name	Research Role																						
Marian Chalifoux	Subject Matter Expert																						

10) Principal Investigator Research Experience	
a) Have you taken the Tri-Council Policy Statement – Second Edition (TCPS2) online tutorial? If yes , please attach a copy of your Certificate of Completion (unless already submitted).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
b) Due to the nature of the proposed research and the characteristics of the participants, are there special training requirements or qualifications required of the PI and/or study team? If Yes selected, please describe: _____	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
11) Other REB Approvals	
a) Has this study been reviewed and approved by an REB at an external site? If yes , name of the REB: _____	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
b) To your knowledge, has this research been reviewed by another REB and not approved? If Yes , name of the REB: _____	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
c) Are other approvals required <u>eg.</u> school board approval, community agency approval? To your knowledge, has this research been approved by other bodies, such as community groups, <u>school</u> districts, etc. as relevant to the research proposed? If Yes , please provide details (e.g. enclose letters of support): _____	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<i>The Island Health HREB reserves the right to contact an external REB (e.g., another BC Health Authority's REB) for consultation pertaining to the review if required.</i>	
12) Peer Review	
Has this research undergone scientific peer review? If yes , name of organization(s) (attach a copy of all reports): UVIC supervisors Noreen Frisch and Karen Courtney If no , please describe why this research has not undergone scientific/methodological peer review: _____	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Please refer to the guidance for more information at www.viha.ca/rnd/research_ethics/forms	
13) Conflict of Interest	
Are you or any of the research team members in a perceived, actual or potential conflict of interest in regard to this research project (e.g., in relation to participants, partners in research, private interests, research funders or potential commercialization of the output of the research)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes selected, please identify how this conflict of interest will be mitigated: _____	
14) Power Over or Undue Influence	
Is the PI or any of the research team members in a perceived, actual or potential power over relationship essential for the conduct of this research project (e.g., the PI or research team member is the supervisor of any potential participants)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes selected, please describe how this situation will be mitigated: Power over will be mitigated as the principal investigator will submit a request to the departmental directors for assistance with using administration assistance as a third party delegate. It is hoped that the 3rd party will contact potential participants on behalf of the principal investigator during the recruitment phase.	
15) Recruitment of Research Participants	
How many participants do you plan to recruit locally (or for retrospective research applications, how many participant records do you plan to review)? <u>25</u>	
a) Study's total recruitment (if multicentre)? <u>25</u> or <input type="checkbox"/> n/a	

b) Please describe the target study population: Clinicians who provide direct patient care for a patient with a fractured hip and who are typical members of an interprofessional team. Although not all members of an interprofessional team will be included, Orthopaedic Surgeons or hospitalists (n=5), nurses from orthopaedic unit (n=5), social workers (n=5), physiotherapists (n=5), occupational therapists (n=5), are the specific targeted population. The total participants is 25.

c) Indicate how recruitment will be performed (check all that apply):

in-person telephone letter email

advertisement posters//flyers Island Health's Permission to Contact Program

other (describe): NA (retrospective research)

d) Are you planning to use social media or a study website to recruit participants or raise awareness for this study? Yes No

If Yes selected, please provide more detail and ensure proposed text and/or copies of all online content are attached:

e) Describe who will make the initial contact with potential participants:

The 3rd party delegate from departmental administration support will send the request for participation through email.

f) Provide a detailed, sequential description of the recruitment procedure and ensure that initial letters of contact and other recruitment materials are attached:

The principal investigator (PI) will create the recruitment material and will forward onto the 3rd party designate. The designate will forward the invitation to participate and PI contact information (email and phone number) onto potential participants through an email. Upon initial contact, the PI will screen potential participants for inclusion/exclusion criteria, conduct informed consent processes such providing time for questions and answers, letting them know they can withdraw at any time,, ongoing consent for potential member check, and explain confidentiality processes. The consent form consisting of all ERB elements will be sent via Island Health email, in person, or via mail accompanied with a stamped envelop with Pls address. Upon receipt of signed consent form, returned by email, in person, or via mail, participant will be given their code and will be added to the study code list. Once the study code list contains all 25 participants, recruitment will end.

g) Are you planning to recruit from any vulnerable populations (e.g., children, cognitively impaired people, prisoners, socioeconomically disadvantaged, individuals unable to provide consent, etc.)? Yes No

Please provide more detail:

h) Are you planning to recruit from any First Nations, Inuit or Metis populations? Yes No

If Yes selected, please provide more detail below: (please refer to guidance for more information)

1. Will the research be conducted on (an) Aboriginal – First Nations, Inuit and Métis lands? Yes No

If Yes selected, please provide details:

2. Do any of the criteria for participation include membership in an Aboriginal community, group of communities, or organization, including urban Aboriginal populations? Yes No

If Yes selected, please provide details:

3. Will Aboriginal identity or membership in an Aboriginal community be used as a variable for the purposes of analysis? Yes No

If Yes selected for any of questions 1 – 3 above, have you initiated or do you intend to initiate an engagement process with the Aboriginal collective, community or communities for this study? Yes No

If Yes selected please describe the process that you have followed or will follow with respect to community engagement. Include any documentation of consultations (*i.e. formal research agreement, letter of approval, email communications, etc.*) and the role or position of those consulted, including their names if appropriate:

If No selected, briefly describe why community engagement will not be sought and how you can conduct a study that respects Aboriginal communities and participants in the absence of community engagement.

16) Interviews / Surveys / Groups

Will information be collected through an interview, survey or group activity (e.g., focus group, world café, staff meeting, etc.)?

- Interview Survey Group Activity Other (please describe):
- NA (e.g. chart review)

If **Interview, Survey or Group Activity** selected, please describe the location, length and frequency of the encounters: **There will be 2 possible encounters once the participant has completed the informed consent process:**

1. For approximately 30 mins the participants will complete 2 open ended questions and 1 participant characteristics section. Using the link found in their email to the study survey stored in Fluid Surveys, they will remotely complete answer the survey questions on their own time.
2. If, during the analysis phase, clarification of documentation is required, there may be a follow up verbal conversation. Ongoing consent, or permission for the follow up conversation, will be captured in the consent process. Follow up member check will be done over the telephone for a length of time ranging from 5-30 minutes.

17) Risks and Potential Impact of Participation

a) Identify any ways in which taking part in this research may be an inconvenience to participants, including the demands on their time, travel and child care costs, etc.: Participants will be requested to complete on their own time. They will be required to locate a device with sound. They will need to find an area that will be quiet enough for them to listen and watch an 8 1/2 minute video, read a pdf file or a paper copy of a simulated patient record, and focus on documentation of a clinical note. The total time required will be approximately 45-75 minutes. The potential follow up conversation may be a challenge if the participant is unable to recall specific information that may help clarify documentation. Further, if they choose to participate on their own time but while at work, they may be pressured, distracted, or inconvenienced; they will be encouraged to participate in an area where they will not be disturbed. Cognitively, it may be a challenge for participants to watch a video and review a patient record and then create a clinical note. As they are used to in person interactions with their patients, it may be hard for them to create a realistic clinical note. Confidentiality may be a risk for disciplines with a small pool of individuals. For example, as there are only a few social workers who have worked with orthopaedic patients, it may be easy to deduce who provided which information. They will be encouraged to participate in an area where their confidentiality will remain protected and to refrain from disclosing their participation. Overall participation may be an inconvenience with a minor demand on their time, either at home or work.

b) Indicate if this research could pose any of the following risks of harm for participants:

Real or Potential Risks of Harm	Likely	Possibly	Very Unlikely
i. Embarrassment during participation in the research	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii. Fatigue or stress	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Other emotional or psychological discomfort	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Social risks, such as stigmatization, loss of status, privacy and/or reputation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v. Physical risks, such as falls	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
vi. Economic risk (e.g., job security, job loss)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
vii. Any other harms (e.g., risk to community, family or the participant, incidental findings)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

c) In consideration of the potential risks and vulnerability of participants and based on the TCPS2 definition of minimal risk, do you believe this study to be a minimal risk study? Yes No

If **Yes** selected, please provide rationale. **This study is a minimal risk as the probability and magnitude of possible harm for participants is no greater than what they experience everyday in their current work life. They read historical patient records, assess and come up with an action plan for patient care, and document their clinical notes narratively.**

d) Explain how you plan on to mitigate these risks: I will ensure the video is readily and easily viewable, that the patient record information is not overly complicated, yet remains realistic, and will encourage participants to write their narrative as they typically would. Using this naturalistic approach will provide a comfortable sense of the familiar. I will encourage participants to reach out to me for any assistance and will make myself available during the day and evenings through email and telephone. I will ensure their coded identifiers are stored in a locked cabinet in my locked office in Island Health kept and separately from their survey results to protect their confidentiality. I will destroy the study code list, that will link participant names and contact information and their decoded identifiers, upon study completion. I will be realistic and open about the inconveniences and will help them problem solve any predicted or unpredicted challenges. I will be as thorough as possible in my instructions and will be encouraging and knowledgeable about every aspect of this study.

e) Are there any potential risks to researchers and their study team members (e.g., injury, emotional distress, etc.)?

Yes No

If Yes selected, please explain how you will mitigate this risk: [REDACTED]

18) Describe any potential or known benefits related to participating in this research (check all that apply)

Benefit to the participants (please explain): As participants will have the option of reviewing the study outcome(s), they will recognize how their discipline specific common data elements are shared between other disciplines. As an early version of Island Health's electronic health record is going live imminently, participants will benefit from knowing that their contribution to the identification of shared data can be leveraged electronically, reused throughout the record and will, ultimately, save them time in documenting and reading through redundant information. Participants will have an early glimpse into the potential for leveraging common data electronically as they practice within interprofessional teams.

Benefit to society (please explain): The need to repeat historical information is a burden for patients and family members. Not only does this occur across encounters and different care situations, but often within one episode of care. Multiple team members ask the same information over and over again. This is a strain cognitively and emotionally when people are often at their most vulnerable. Further, each member of the team searches through the chart for unique information, and, as it is often buried among the redundant information, time is wasted. If the shared data elements can be asked once and leveraged among multiple members, time and effort for patients and their care team will be spared. More effort can be focused on providing and fulfilling optimal healing conditions.

Benefit to the state of knowledge (please explain): Although the two concepts of interprofessional care and electronic documentation are well known throughout the healthcare arena, there is a gap in knowledge about interprofessional electronic documentation. All academic literature centers on multidisciplinary electronic documentation. A deeper understanding of this concept will build the knowledge designers require to know what data should be reused among and between disciplines. This study will contribute to the body of knowledge encompassing the requirements of an integrated, wholesome electronic patient record.

19) Will participants be compensated for taking part in this research (i.e., out of pocket reimbursement, gifts of money or items, etc.)?

Yes No

If Yes selected, please explain: _____

If Yes selected, please ensure this is described in the Informed Consent Form (if applicable).

20) Obtaining Informed Consent

a) Participants to be consented (check all that apply):

- Adults with the capacity to consent
- Adults lacking the capacity to consent (*please complete number 21 a*)
- A protected or vulnerable adult population (e.g., inmates, patients)
- Children with the capacity to consent/assent (*please complete number 21 b*)
- Children lacking the capacity to consent/assent (*please complete number 21 c*)
- No one will be consented as a waiver is requested (*please complete c below*)

b) Consent Process (check all that apply and attach copies of all consent materials):
Consent will be obtained by:

Initial verbal explanation of study information and signed consent form.
 Letter of information and signed consent form.
 Letter of information and verbal consent. Explain why written consent is not possible and how verbal consent will be documented: [REDACTED]
 Implied consent (e.g., through anonymous, mail back or web-based questionnaires or surveys).
 Other means (please describe): [REDACTED]

c) Will a waiver be requested in accordance with TCPS2 Article 3.7 for minimal risk research? Yes No
If Yes selected, please provide rationale: [REDACTED]

d) Describe the sequential steps that will be followed in the process of obtaining informed consent and who will perform each step:
Once the potential participant initiates contact, the principal investigator (PI) will confirm that they meet inclusion/exclusion criteria, will provide details about the study intent and process, will provide time for questions and answers, and will explain that the potential participant has the right to withdraw at any time without the provision of a reason nor penalty. If the potential participant remains dedicated to the next steps, the consent form, which contains all elements of ethical review board requirements, will be sent by the PI. Ongoing consent to contact the participant, if they approve, for clarity of survey data will also be included. Upon receipt of the signed consent form, the PI will provide the participant with their code, will add the participant's information to the study code list. The participant will enter their participant code in their survey; PI will refer to the study code list for participant contact information for follow up.

e) Does this study require ongoing consent of participants? Yes No
If Yes selected, please describe in d above.

f) What provisions are planned for participants, or those consenting on their behalf, to have special assistance during the consent process (e.g., languages other than English)?
 Special assistance is not required
or
 Describe: [REDACTED]

g) Deception involves the use of limited or partial disclosure in the consent process. It is used when full disclosure would render the research impossible.
Will participants be fully informed of everything that will be required of them prior to the start of the research? Yes No
If No selected, please provide a justification and describe your plans to debrief participants at the end of the study: [REDACTED]

b) Does your research team/site have a written procedure for administering informed consent? Yes No
If Yes selected, please attach a copy (unless already submitted).

21) Participants Lacking Capacity to Consent: Additional Considerations

a) Adults lacking capacity to consent (check all that apply):

Legal authorized representative consent will be obtained
 Participant assent will be obtained
 Participant assent will not be obtained. Explain why not: [REDACTED]
 Consent will be obtained if capacity is regained

b) Children or youth with the capacity to consent or assent (check all that apply):

- Children under 14: parent/guardian consent will be obtained
- Children under 14: child consent/assent will be obtained
- Children under 14: child consent/assent will not be obtained. Explain why not: [REDACTED]
- Youth 14 to 18: youth consent will be obtained, and parental consent will be obtained
- Youth 14 to 18: youth consent will be obtained, parents will be informed
- Youth 17 to 18: youth consent will be obtained, parents will not be informed
- Other, explain: [REDACTED]

c) Children or youth lacking the capacity to consent (check all that apply):

- Consent of parent/guardian will be obtained
- Participant assent will be obtained
- Participant assent will not be obtained. Explain why not: [REDACTED]
- Consent or assent will be obtained if capacity is regained

22) Participants Right to Withdraw from Study

a) Describe what participants will be told about their right to withdraw: Participation must be free and voluntary. They are free to withdraw at any time; this will not impact ongoing relations with the investigator in regular work duties. They have the option of contacting the principal investigator, faculty supervisors, or the Island Health Research department if you have questions or concerns about being free to withdraw or about the potential impact on ongoing relations with the investigator

b) Use of data upon withdrawal:

- It will not be used in the analysis
- It is logistically impossible to remove participant data
- It will be used in the analysis if the participant agrees

c) Describe how agreement to use participant data will be obtained if they withdraw:

This is described in the Informed Consent Form

Or

other, please describe: [REDACTED]

d) If participants withdraw prematurely, will their compensation (if any) be prorated to the time that they withdraw? Yes No

If No selected, please explain: Compensation is not applicable

23) Confidentiality of Participants

a) Are there any limits to protecting the confidentiality of participants?

- No, confidentiality of participants and their data will be completely protected
 Yes, there are some limits to the researcher's ability to protect the confidentiality of participants

(Check relevant boxes below.)

- Limits due to the nature of group activities (e.g., focus groups)
 Limits due to context: The nature or size of the sample from which participants are drawn makes it possible to identify individual participants (e.g., rare medical conditions)
 Limits due to participation: (e.g., a workplace study involves study activities that will occur where employees are working)
 Limits due to legal or professional requirements for reporting (e.g., suspected child abuse)
 Limits due to legislation (e.g., the US Patriot Act when there will be data storage in the United States).
 Other: _____

b) If there are limits to confidentiality, describe how you will address them (e.g., use of pseudonyms, conduct research away from the workplace, describe limits in the consent form etc.) All participants will be de-identified and recorded in the Study Code list. This will be used to help track participants to their appropriate data for analysis and discussion. All participants will be encouraged to complete the study steps outside of work hours, but they may choose to use Island Health devices. If they are doing so, there is the risk that their coworkers will know they had participated. This will be mitigated by encouraging study participation outside of the proximity of their work environment, such as the library in a private room where their confidentiality will be protected. Due to a small pool of potential OT, PT, SW, and orthopaedic surgeon or hospitalist participants there is a higher chance that others may deduce who participated. To address this limit of confidentiality, a statement encouraging participants from disclosing participation will be included in the consent form.

24) Privacy, Confidentiality and Security of Study Data**A) Data Sources**

i) Will information be collected directly from study participants (e.g., pre-screening questions, focus group activities or interviews/surveys)? Yes No

If Yes, please select who will collect it (select all that apply):

- A member of the Study Team (who is not a Island Health employee, physician or fellow)
 A Island Health Employee (who is also a member of the Study Team)
 A Island Health Employee (who is not a member of the Study Team)
 Other (please describe): _____

ii) Are you collecting information from study participants' Island Health record(s)? Yes No

If Yes, please select who will collect it from the study participants' Island Health record(s) (select all that apply):

- A member of the Study Team (who is not a Island Health employee)
 A Island Health Employee (who is also a member of the Study Team)
 A Island Health Employee (who is not a member of the Study Team)
 Other (please describe): _____

iii) Will the research activity be recorded? Yes No

If Yes, please select how:

- Video
 Audio
 Photographs

If Yes, please explain how confidential participant information will be protected: _____

B) Linkage of the Study Data with Other Data

Will study participants' information be linked with any other non-Island Health sources of data about the same participant (e.g., government or other health authority records, private physician records, registries, etc.)? Yes No

C) How Study Participants are Identified

i) What type of data will be collected? (select all that apply):

Please refer to the [guidance online](#) for definitions:

- Directly Identifiable¹ (please provide rationale): [redacted]
- Indirectly-Identifiable² (please provide rationale): [redacted]
- De-Identified (Coded)
- Anonymized
- Anonymous
- Aggregate

If the study is using **de-identified (coded)** or **anonymized data**, at what point and by whom is it de-identified or anonymized? (select all that apply):

- n/a, data is fully or indirectly identifiable
- Prior to leaving Island Health, by a Island Health employee, physician or fellow (who is also a member of the study team employee)
- Prior to leaving Island Health, by a Island Health employee (who is not a member of the study team)
- After leaving Island Health by a member of the Study Team
- Prior to or after leaving Island Health by a third party (such as a vendor or service provider), please describe:

Other (please describe): Once potential participants have been recruited and consent has been obtained, the principal investigator will record participant name, contact information and their assigned code on the Study Code list; PI will let participants know their code that will be used at the time of survey completion. Participants will add their code to the survey, the PI will then, using the study code list, link the survey with the appropriate participant.

If the study is using **de-identified** or **anonymized data**, is a Study Code List that links the study participant to a study code/ID being kept?

Yes No

If **yes**, please answer the following:

- Who is keeping the list? **Principal Investigator**
- Where is the list being kept? **Locked drawer in a locked office at Island Health**
- How long is the list being kept? **Upon completion of Oral Defense**
- What safeguards are in place to protect the list? **In a locked cabinet; the key will be non identifiable and hidden**

**D) Data Security, Storage and Transmission**

j) Will electronic or paper study data be stored or managed at Island Health (e.g., in a database, on a Island Health computer, in a paper file, file share, SharePoint site, etc.)? Yes No

If **yes**, please describe: **In principal investigator's password protected, encrypted, firewalled Island Health hard drive.**

¹ & ²: When possible, the REB prefers that you use de-identified or coded information only.

ii) Will data be entered into an external (non-Island Health controlled) system (e.g., into an electronic data capture system, into a web form etc.)? Yes No
 If yes, provide the following:

- A description of the system (including trade name if available): FluidSurveys is an application that provides online survey software, utilizes security measures such as passwords and data encryption, is widely used, easily accessible, and offers a wide variety of analytic and reporting tools such as charts, excel, and data extraction. It is an American-owned survey instrument, the following is included in the consent form: "There is a possibility that information about you that is gathered from this survey may be accessed without your knowledge or consent by the U.S. government in compliance with the U.S. Patriot Act"
- Who will be entering data into it: participants
- The contact information (name, email and phone number) of a contact who can answer technical questions: (if necessary): Karen Clifford

iii) Will any of the tools used to collect or transmit data in this study be linked to a Island Health information system to extract information? Yes No
 If yes, please explain: _____

ix) Will you be transmitting or transporting paper data? Yes No
 If yes, please describe how security will be maintained: _____

E) Use of Electronic / Mobile Devices

i) Will this study require that any non-standard/non-Island Health issued devices be connected to Island Health's network? Yes No
 If yes, please describe: Participants who choose to use their own devices from home to access their email which will contain the scanned paper ED record and discharge note, the link to the video, and the link to FluidSurveys. Also the principal investigator will use her remote.viha.ca capability to remotely access the FluidSurvey study account for transfer of information into NVivo analysis software.
 If yes, who will be using the device?

- The study participant
- A member of the Study Team (who is not a Island Health employee)
- A Island Health Employee (who is also a member of the Study Team)
- A Island Health Employee (who is not a member of the study team)
- Other (please explain): _____

ii) Will this study require that any software be installed on a Island Health computer (e.g., a program that is installed on a Island Health computer to manipulate data)? Yes No
 If yes, please name the software and explain its purpose? _____

iii) Will any information from Island Health's records be stored or transported on any removable storage (e.g., CD/DVD, USB Drive, etc.) or mobile devices (e.g., tablet, iPad, laptop, smart phone, camera, etc.)? Yes No
 If yes, please describe: _____
 If yes, will the removable storage or mobile device be encrypted to the advanced encryption 256 Bit standard? Yes No
 If no, please explain why not: _____
 (please contact 250-370-8111 x 11346 for assistance)

F) Transmission, Access or Storage of Data Outside of Canada

i) Will any information be sent to, accessed from or stored outside of Canada?

 Yes NoIf **Yes**, please answer the following:

- What Information will be sent to, accessed from or stored outside of Canada? Participant survey information within FluidSurveys such as their clinical note based on simulated patient information, their demographic data and their opinions about electronic documentation and integrated care teams.
- For what purpose will it be sent to, accessed from or stored outside of Canada? FluidSurveys, the survey application of choice, provides online survey software, utilizes security measures such as passwords and data encryption, is widely used, easily accessible, and offers a wide variety of analytic and reporting tools such as charts, excel, and data extraction. It is the application chosen by IslandHealth. As it is an American-owned survey instrument, the following is included in the consent form: "There is a possibility that information about you that is gathered from this survey may be accessed without your knowledge or consent by the U.S. government in compliance with the U.S. Patriot Act"
- How will it be sent to or accessed from outside of Canada? Through secure socket layer encryption (SSL) that encrypts communications between FluidSurveys server and users' browsers. This information is included in the consent form and can be accessed through a link within the invitation to participate email
- Where will it be sent to or accessed from? FluidSurvey's servers stored in data centers that provide biometric access controls, constant surveillance, generated power, fire suppression, and climate controls.
- Are you obtaining consent in a manner that complies with this section in the guidance (click here to view) for data being sent to, accessed from or stored outside of Canada?

 Yes NoIf **No**, why not? **G) Destruction and Disposal of Data**

i) How long will you retain the data after the study is closed? Seven Years

ii) How will the data be destroyed at the end of the retention period? It will be sent to the electronic trash can; the electronic trash can will then be emptied

H) Future Use of Data

i) Will any study data be used for future research related to this project?

 Yes NoIf **Yes**, is this explained in the consent form? Yes NoIf **No**, please describe how you will obtain participant permission: If **Yes**, will the data be anonymized? Yes NoIf **No**, please explain:

ii) Will any study data be used for future research unrelated to this project?

 Yes NoIf **Yes**, is this explained in the consent form? Yes NoIf **No**, please describe how you will obtain participant permission: If **Yes**, will the data be anonymized? Yes NoIf **No**, please explain:

25) Dissemination of Results

Please provide initial indication of how you plan to disseminate results. Please select all that apply:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Journal publication | <input checked="" type="checkbox"/> Other type of publication/ educational materials |
| <input checked="" type="checkbox"/> Presentation | <input type="checkbox"/> Book development |
| <input type="checkbox"/> Clinical practice guidelines | <input type="checkbox"/> Educational outreach and strategies |
| <input type="checkbox"/> Educational materials | <input type="checkbox"/> Computerized decision support tools |
| <input type="checkbox"/> Media campaign/social media | <input type="checkbox"/> Infographics and data visualization |
| <input type="checkbox"/> Policy brief | <input type="checkbox"/> Audit and feedback |
| <input checked="" type="checkbox"/> Community of practice/networks | <input type="checkbox"/> Interactive workshops |

Other (Please provide description):

Are there any plans to provide a report of the results back to participants? Yes No

If Yes selected, please describe: At completion of thesis work, an email will be sent to participants asking if they would like a copy of the findings. If yes, then a copy of the analysis and discussion will be sent to them

Signatures of Attestation

Principal Investigator Signature

By signing below you:

- Attest that you are the Principal Investigator who is accountable for the conduct of this study.
- Attest that the information provided in this form is accurate and up to date.
- Agree to abide by:
 - The Tri-Council Policy Statement Ethical Conduct for Research Involving Humans 2nd Edition (TCPS2)
 - The study protocol
 - The informed consent form
 - Island Health policies and procedures pertaining to the conduct research
 - The decisions, conduct guidelines and reporting requirements of Island Health's Clinical Research Ethics Board (CREB)
- Acknowledge that Island Health's HREB may conduct an audit of this study.

Signature

Date (DD/MMM/YYYY)

As a research-focused organization, Island Health provides periodic reports on research conducted under the jurisdiction of its Research Ethics Boards. Please advise whether you consent to the external release of high level study information, including but not limited to your name, the title of the study, and the location. Island Health will not release any confidential or sensitive information pertaining to your research.

YES NO

Academic Supervisor Signature (If YES selected in Question 5.)

By signing below you are:

- ~~Attesting that you are the Academic Supervisor for the Principal Investigator of this study (as listed on page 1).~~
- ~~Attesting that you have reviewed and support this submission as part of the Principal Investigator's course of study.~~

Name	Position	Signature	Date Signed (DD/MMM/YYYY)
█			█

Co-investigator(s) Signature(s)

By signing below you:

- Agree to abide by:
 - The Tri-Council Policy Statement Ethical Conduct for Research Involving Humans 2nd Edition (TCPS2)
 - The study protocol
 - The informed consent form
 - Island Health policies and procedures pertaining to the conduct research
 - The decisions, conduct guidelines and reporting requirements of Island Health's Clinical Research Ethics Board (CREB)

Name	Signature	Date (DD/MMM/YYYY)
█		█
█		█
█		█
█		█
█		█
█		█

If additional space for Co-investigator's signatures is required, please attach a separate page.

Attachment 1 HREB Protocol Tracked Changes



HREBProtocol_tracked
changes.docx



Protocol tracked
changes.pdf

**Finding Common Ground:
The Road to Electronic Interprofessional Documentation**

Principal Investigator: *Kristie McDonald, BScN, Masters Student*

Institutions: *University of Victoria*

Protocol version number/version date: V9 May 16, 2015

1. Protocol Synopsis

Using a qualitative descriptive research approach this study will identify and report common data elements among and between disciplines. Participants will watch a video of a simulated admission of a patient with a fractured hip and will review the same patient's emergency department paper record for this admission. Based on the simulated information and using *FluidSurveys* participants will:

1. Answer the first open ended survey question with a narrative clinical note of their assessment and potential interventions (*Appendix*)
2. Answer a second open ended survey question asking for them to provide the missing topics of patient information required for them to provide care
3. Answer the third part of the survey asking a series of questions related to participant sampling characteristics such as demographic and background information.

Through *NVivo* software, the narrative clinical notes and the topics missing from the simulated information will be analyzed using a cumulative approach within each discipline and a summative approach once all data across all disciplines is obtained. Common data elements within each discipline and among the disciplines will be coded. The data that emerges represents core patient information of importance to all members of the interprofessional teams; it is this data that will be interpreted and reported.

2. Background & Rationale:

The research question is: **What are the common data elements found within electronic narrative text between multiple disciplines?** Evidenced by the lack of academic literature on the concept 'interprofessional electronic documentation', there is gap in knowledge required to inform EHR design that aligns with interprofessional care. Interprofessional care is a strategic priority of Canadian governing healthcare bodies at both a national and provincial level (Health Canada, 2012; British Columbia Ministry of Health, 2014(a)). Indeed, some research suggests that interprofessional care may reduce error rates, improve health and quality of life, increase patient satisfaction (Ash & Miller, 2013), improve communication (Keenan et al., 2012), and improve sharing of information (Demiris et al., 2008). Although interprofessional care delivery is a well-supported model, the concept of 'multidisciplinary electronic documentation' is proliferative throughout current literature. EHR design based on this body of knowledge has been wrought with challenges. Reports describe that the 'deluge of data' often found in EHRs leads to an inability to appropriately display and process vital

patient information (Collins & Vawdrey, 2011; & Keenan et al., 2012). Disciplines can't agree on what is considered pertinent data (Green & Thomas, 2008). Electronic documentation is often left unread, despite the time and effort invested by multiple disciplines (Hripcsak, Vawdrey, Fred, & Botswick, 2010). To avoid similar pitfalls, research must focus on identifying common data. Once designers know the common data elements, they can build an EHR that leverages single data collection. Research focused on closing the gap between interprofessional care and electronic clinical documentation is required.

3. Study Objectives(s)/Purpose:

The purpose of the study is to identify the common data elements shared between different disciplines within the interprofessional team in order to leverage electronic capabilities such as decreased repetition, duplication, and ease of locating patient information. Patients, clinicians, and governing bodies will reap the benefit as time documenting can shift back into delivering direct patient care.

- The primary objective is to find and report the common data elements within electronic narrative text between multiple disciplines.
- Secondary Objectives:
 - To find and report common data elements within a discipline
 - To find and report data elements unique to a discipline
 - To include patient data not captured within the simulation that participants would have found helpful in their clinical note creation

4. Study Population

- As the goal is to recruit participants who will provide rich information, a purposive sampling method will be used. The study population consists of participants from the disciplines of medicine, nursing, occupational therapy, physiotherapy, and social work.

Inclusion Criteria

- Are currently practicing in Island Health, in one of the following professions: medicine, nursing, occupational therapy, physiotherapy, and social work
- Have at least 1 year of practice within their discipline
- Provide direct care to patients with fractured hip patients within an acute care setting
- Have an ability to type
- Have access to Island Health email and an ability receive and send messages
- Have the ability to access the study's *FluidSurvey* account
- Have the ability to access and read a pdf file through *Adobe Reader*
- Be agreeable to participate outside of working hours

Exclusion Criteria

- Those who cannot understand, read, nor write in the English language
- Medical physicians who are not attending orthopedic surgeons nor hospitalists
- Nurses, other than those who provide direct patient care
- Students of the included disciplines

5. Study Design & Procedures

- Undertaking exploratory work using naturalistic qualitative inquiry, and using the framework of 'common ground', common data elements between multiple disciplines will be identified through a descriptive research approach. Participant narrative clinical notes will be based on patient information presented in a simulation. A patient having fallen at home and fractured her hip, will have been admitted to the emergency department and transferred to an acute care orthopaedic unit.

Participants will 1) review her discharge note from a previous admission and her emergency department documentation and 2) watch a videotaped clinician/patient/family member interaction upon admission to the acute care unit. Sources will provide contextual patient information for participants to write a narrative note reflecting their observations, assessment, and proposed interventions.

- The study includes consultation with a Subject Matter Expert (SME) who is considered an experienced staff member with a minimum of 3 years experience.
- The study consists of two phases:
 1. Phase one: The Creation of Patient Simulation
 - I. SME consultant from the RJH orthopaedic unit (outside of working hours), and recruited with permission from the director upon receipt of the signed operational application is:
 - An RN who will validate and/or modify:
 - A case scenario of the patient admitted with a fractured hip
 - The script for the re-enactment of the patient's admission with her fractured hip
 - The script will be further validated by the UVIC School of Nursing clinical trainer for formatting, continuity, and other components required by the actors. The clinician, patient, and patient family member actors will be prepped by reviewing the fractured hip case scenario, studying the script, and through a verbal question and answer period prior to recording. The simulation will be recorded in the University of Victoria's Island Medical Program simulation lab. It will be edited by the principal investigator.
 - A clinician considered experienced who has knowledge of providing direct patient care. While informing the simulation for the study, the SME is not considered a research participants and will be excluded from phase two. Approximately five hours of her own time outside of working hours is requested.
 2. Phase two: Participation in the Study
 - I. Participants from the orthopaedic units from the larger centers (RJH, VGH, NRGH) will be watching a video of the patient's admission with her fractured hip and will read her ED paper record. Orthopaedic surgeons or hospitalists (n=5), bedside nurses, (n=5), occupational therapists (n=5), physiotherapists (n=5), and social workers (n=5) will write a narrative note reflecting their observations, assessment, and proposed interventions through an online survey. Approximately 45-75 mins of their own time outside of working hours is requested.
- Data, initially stored within the *FluidSurveys*, will be extracted from the survey into an excel format. It will then be uploaded and stored into *NVivo* qualitative software for the analysis phase. Once the data is analyzed, the interpretation and discussion portions of the report will be stored in principal investigator's password protected, encrypted, firewalled Island Health hard drive. The principal investigator will access her hard drive by using 'remote.viha.ca' through non VIHA devices. She will also access her hard drive directly through Island Health devices outside of working hours. All data will be stored electronically for 7 years and then will be sent to the electronic 'recycling bin' which will then be emptied for permanent removal.
- Similarly, the principal investigator will use Island Health's email service as it is both secure and encrypted to communicate with other Island Health employees. For example, it will be used to:
 1. Communicate with Island Health Research Department
 1. To submit documents such as Operational Review Application, HREB Protocol, HREB application form, and email content for recruitment
 - In order to prevent power over issues with participant recruitment and potential subsequent breach of participant right to refuse, third party utilization would be ideal. Power over will be mitigated as the principal investigator will submit a

request to departmental directors to utilize administration assistant for 3rd party delegation. The 3rd party will contact potential participants on behalf of the principal investigator during the recruitment phase

- The email body will contain the invitation to participate and the principal investigator's and supervisors' email and telephone contact information
 - Once potential participants contacted the principal investigator and expressed interest, inclusion and exclusion screening and informed consent processes would be completed.
 - Potential participants would be listed as participants
 - Their names, de-identified (coded), and contact information will be recorded and stored on the study code list in the principal investigator's Island Health locked storage cabinet in her locked office. This study code list will be shredded upon successful thesis oral defense and report submission.
2. Communicate directly with participants
 1. Participant instructions, the pdf paper discharge note and ED record, the video, and the link to the study's *FluidSurvey* research questions, and participant questions and answers will be through email
 3. Communicate with operational directors regarding the potential for both subject matter expert consultants and study participants to use their own time for study processes :
 1. Subject matter expert consultant for review of the case scenarios, paper record, and script
 2. Participants' review of paper discharge note and ED record and video and recording their clinical note.
- Participants, according to the email describing study steps, will review the patient ED record and discharge note, watch the video and access the study's *FluidSurvey* account. Utilizing the 'open ended question' concept, participants will attend to the three sets of survey questions
 - Upon submission of the second clinical note from a member of the same discipline, cumulative analysis will begin; summative analysis will begin once all participants have submitted.
 - **The study schedule is:**
 1. Early April submission of Operational Review Application and HREB Protocol,
 2. Early April submission of HREB application form
 3. Early April -late April modifications of HREB Operational Review Application, Protocol, application form
 4. Early April-late April creation of simulated patient record and video
 5. Early May-mid June- Participant recruitment
 6. Late April-Late June- Participant completion of clinical notes in Fluid Surveys
 7. Late April- Late July- Analysis of clinical notes through NVivo
 8. Late September- completion of analysis
 9. Early October-Late November-completion of written thesis report

6. Statistical Considerations

- The sample size for participants was determined by reviewing typical participation in other qualitative studies. As the scope is somewhat narrow (select disciplines', working on an inpatient unit, narrative notes) and the nature of the topic is obvious and clear (common data elements shared across disciplines) fewer participants per discipline are needed to reach an understanding of their shared data elements (Morse, 2000). Phenomenological studies, which usually contain a large amount of in depth data, should contain six participants according to (Morse, 1994). A metadata study found that focus groups had a mean of 8.4 with a median of 5 participants (Carlsen & Glenton, 2013). While other studies seek saturation through analysis techniques, this descriptive study seeks to identify common data elements. The intent is not to discover and report an exhaustive list of all common data elements for all disciplines within all patient contexts. Rather, the intent is to identify

common data elements within a controlled context of a few participants from select disciplines using a single patient and provide a snapshot of common data elements. While limited in generalizability, this study marks a starting point for future broader initiatives; it is easily reproducible.

- Each participant group including orthopedic surgeons or hospitalists, bedside orthopedic nurses, occupational therapists, physiotherapists, and social workers will have 5 members from RJH, and/or VGH, and/or NRGH. The regional total will be 25.
- Once the second clinical note is submitted from within the same discipline group, constant comparative analysis will begin. Common data elements such as nouns and concepts will be grouped together and coded using the *NVivo* qualitative analysis software. The results of this analysis will identify the common data elements within a discipline. Once all participant groups have submitted their notes, a summative analysis will begin until all data elements from all disciplines have been analyzed.
- *Missing or incomplete information will be managed in the analysis phase through participant check in either by email, in person, or by telephone. Ongoing consent for clarification of data will be obtained during the consent phase and will be captured in the consent form.*

7. Data Collection and Data Management

- The clinical narrative notes based on simulated patient information are the research data.
- The time points for collection will be upon submission of participant clinical notes through *FluidSurvey*, and for validation of missing or incomplete information on an as needed basis during analysis.
- Informed Consent for potential participants will be provided by ensuring provision for questions and answers, alerting about the awareness of study withdrawal at any time, and the use of a consent form consisting of all ethical review board elements. Study withdrawal, outlined in the consent form, will be requested through a written format and submitted by either email or mail. This will assist in tracking and transparency in partial data and will allow for clear statistics on completion vs withdrawal rate. Participants will be made aware that if partial data is obtained, it may be included in the study with their permission.
- Confidentiality will be provided by ensuring that participants are not identifiable. Upon enrollment, the principal investigator will record participant name, contact information and de-identified code to the study code list. The study code list will be stored in a locked cabinet along with the signed paper consent forms in the principal investigator's locked office. This information that would otherwise potentially link participants' confidential information will be kept separate from study data. Study data will be stored on the principal investigator's Island Health hard drive. While the principal investigator will know which participant documented which data, participants will be cited using their identifiers (OT1, RN1, PT1, etc) in the analysis section of the report. For the researcher to link the participants to their surveys, the participants will record their code on their survey. The study code list will be destroyed through the paper shredder once the study report has been released finalized. Further, while the nursing participants have a large pool of potential recruits, the other disciplines do not. With only a handful of potential participants, such as social workers who have worked within the orthopaedic unit, there is a chance that co-participants could more readily identify information within the report. This risk will be outlined in the consent form as the protection of identity and confidentiality will be made clear in the consent form as participant protection is of utmost concern to the principal investigator. Participants will be discouraged from disclosing their participation and to complete the survey where their confidentiality will be protected.
- The life cycle of the data including collection, storage and transmission will occur approximately over a 4-5 month period
- Data will be examined for quality assurance or verification when clinical notes are unclear to the principal investigator. Follow up for clarity with participants will occur; this possibility will be made clear in the consent form.

- Once collection and analysis is completed, interpretation of the data through examination, exploring significance of findings, forming conclusions, generalization, and consideration of future studies, will begin (Tymkow, 2013).
- During the consent process, participants will be asked to contact the principal investigator if they would like to obtain the study results. Upon request, a copy of the abstract and link to the UVIC published thesis will be sent to them upon completion of research.

8. Publication of Results

The principal investigator will take the lead in publication(s) and presentations of the results. This will include but may not be limited to, UVICs online repository of published research.

9. References

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10. Appendix

Appendix – Survey Questions V3

By beginning/clicking/starting this survey, I:

- Am providing my consent
- Understand that my data is linked to my participant code
 - I will enter this code; the principal investigator will use this code to link my survey information to my personal information
- Authorize the principal investigator, Kristie McDonald, to use my information to for the study titled “Common Multidisciplinary Data Elements” but not for any future research
- Do not permit access to my information by anyone other than the principal investigator
- Am indicating I have read the *FluidSurveys*’ security information by clicking the link below:
 - [FluidSurveys enterprise grade security](#)
- My participant Code is _____

1. Document your clinical note

- i. This is a simulated exercise as a part of the research study “Common Multidisciplinary Data Elements”. Having reviewed the simulated discharge summary, emergency note, and the video, you are now a part of the patient’s care team. Document a clinical note using your typical language and formatting in the field below. Examples of documentation methods include but are not limited to:

1. Subjective, objective, assessment, plan (SOAP)
2. Subjective, objective, assessment, plan, intervention, evaluation, revision (SOAPIER)
3. Assessment and interventions
4. Narrative charting, unstructured
5. Any other documentation method you utilize

- b. Answer the question: What missing patient information would you have typically sought out from the patient, family member, other professionals, or other sources and included in your clinical note?

c. Complete information about yourself:

- What is your discipline?
 - Physician
 - Nurse
 - Physiotherapist
 - Occupational therapist
 - Social worker

- How many years have you been working in your discipline?
 - 1-5
 - 6-10
 - 11-15
 - 16-20
 - 21-25
 - >25 years
- How many years have you been working in your current position?
 - 1-5
 - 6-10
 - 11-15
 - 16-20
 - 21-25
 - >25 years
- How old are you?
 - <25
 - 25-30
 - 31-35
 - 36-40
 - 41-45
 - 46-50
 - 51-55
 - >55
- What is your gender?
 - M
 - F

- I believe I work within an interprofessional team
 - Strongly disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly agree
- I believe I work within a multidisciplinary team
 - Strongly disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly agree
- I believe patient information is duplicated in the paper health record
 - Strongly disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly agree
- I believe patient information is duplicated in the electronic health record
 - Strongly disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly agree

- Number of years of experience documenting in an electronic health record
 - 0
 - 1-5
 - 6-10
 - 11-15
 - 16-20
 - >20 years
- I am comfortable documenting in the electronic health record
 - Strongly disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly agree
 - Not applicable
- I believe electronic documentation is beneficial for patients
 - Strongly disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly agree
 -
- I believe electronic documentation is beneficial for clinicians
 - Strongly disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly agree

Attachment 4 Survey Questions Tracked



Survey Questions_tracked.docx



Survey questions tracked changes.pdf

Attachment 5 Budget V1

The budget (Table 1) outlines potential fees related to the administration of consent forms, purchase of statistical software, payment of actors and editing. These costs will be covered by the Dorothy J Kergin Endowment grant awarded to the principal investigator. There will be negative balance of approximately \$190 which will be covered by the principal investigator.

Table 1 Budget

Costs	Envelopes x 50	\$5
	Stamps x 50	\$30
	NVivo Software	\$120
	4 Actors (N=4 hours each at \$25)	\$400
	1 Videographer (N=6 hours at \$20)	\$120
	1 Production expert (N=6 hours at \$30)	\$180
Grant money	Dorothy J Kergin Endowment	\$665
	Total	-\$190

Attachment 5 Letter of Invitation Tracked Changes



Letter of
InvitationV2.doc



Letter of
Invitation_track chan

Attachment 6 Consent form tracked changes



HREBConsent
FormV6.doc

Attachment 7
Fractured Hip Script Version 5

Case Scenario

Rationale for Simulated Patient Clinician Interaction

The goal of this simulation is to create a video-taped interaction of a clinical assessment of a patient with a fractured hip. This, in combination of a textual patient record from a previous encounter, will provide information that will be used by participants of a research study to document their clinical note.

Scene

The patient has just been transferred from the emergency department to the acute care ward. She is awaiting a repair of her fractured right hip that is scheduled as an add-on for the next available operative opening. She is accompanied by her daughter. She is being examined by a clinician who, through the standard ward procedure, is completing a health history and other admission processes.

Length of interaction

The interaction should take no more than 8 mins

The Patient

History of the Present Problem: Ivy Jenkins is an 82 yr old woman who fell while watering her plants, which were located on the top of her kitchen cabinets, yesterday at 3 pm. She has been feeling tired, short of breath, and has noticed her ankle swelling has not decreased since a recent hospitalization and change in medications. As she lives alone, was unable to weight bear, and her phone was out of reach, she was found by her daughter Jean who had brought turkey dinner over 3 hours later. Jean called the ambulance and Ivy was in the emergency department 30 mins later. She was examined by the ED physician who confirmed an intertrochanteric hip fracture upon review of the xray.

Video:

Location:

Patient room setting-3 people (Patient & Daughter & RN)

[patient is lying on a stretcher with her daughter sitting beside her holding her hand. She has an oxygen tube, intravenous in left arm hooked up to a 1 liter bag of 2/3 1/3, it is almost empty. She is grimacing, and holding her right hip through the bed sheets. Her hair is messy. She smiles a bit as the RN who has a stethoscope around her neck is listening to her lungs. There is a clipboard with forms, and a syringe, on the bedside table. There is a vital sign machine at the bedside and a side table with a tissue box. There is a catheter bag with yellow liquid hanging from the bed. There is a chair with a purse and jacket on it, All 4 side rails are up, 3 pillows are on counter call bell is pinned to her gown]

Script:

CL: *Entering the room, Hi Mrs Jenkins. My name is Sam and I am a member of your healthcare team. How are you doing?*

PT: *Moaning, holding her right hip through the sheets, looking towards daughter* It really hurts. Why does it hurt?

DTR: *Glancing at clinician worriedly and back at PT with a slight smile* It's ok mom. You fell yesterday afternoon while watering your plants. I found you a few hours later when I brought you your dinner. The ambulance brought you to the emergency room last night. Don't you remember?

[RN listens to bowel sounds]

[CL takes clipboard and reads the documents-they are the ED note and discharge record]

PT: *Looking back and forth between DTR and CL* But who is taking care of Fluffy? She will be missing me. And she will be hungry.

DTR: That's her cat. Peter is taking care of her. He fed her last night and this morning

RN: *looking at IV bag and O2 level on wall, then at IV in hand* Your lungs sound like they have a few crackles. You are going to have to remember to do lots of deep breathing. I am sorry your hip is hurting. Out of a scale of 0-10, what number is your pain?

PT: 10!

RN: Do you have any allergies? RN *checks wrist band*

DTR: Peanuts make her lips tingle and the doctor told her to stop taking ibuprofen. I don't really know why.

RN: *injects into IV.* This will help with the pain.

CL: Do you know what day it is and where you are?

PT: *Turning to daughter* I think I am in a hospital. Is it Thursday?

DTR: No mom it's Friday. I think you may have lost a day.

CL: I am going to write some things on this board to help you remember.

[CL writes patient's name Ivy Jenkins on board, adds "Ivy" beside "What I like to be called", adds RNs name (Marian) and today's date.]

PT: *Licking her lips and coughing.* I am so thirsty. Can I have something to drink?

DTR: *Standing up and holding glass of water with straw to PTs mouth. Pt coughs after taking a sip*

RN: Have you been coughing like this for a while?

DTR: She has had this cough off and on for about a year now. She was in the hospital in the fall and was ok until a couple of months ago. Her ankles swell and she is always tired.

[CL and RN make eye contact, RN leaves room]

PT: Where are we? Why am I here? I just want to go home. [*Agitated, trying to pull covers off and starts to put feet over side of bed.*]

DTR: Mom, you need to stay in bed. You are in the hospital because you have broken your hip. You fell last night at home.

[DTR and CL gently shifting PTs legs back into bed. Pulling the covers back and sitting down to hold her hand]

PT: *PT states tearfully, with voice slowly rising* Ohhhhhh Jim. Are you here? Where is your father? Jim, where are you? Why isn't he here?

[RN walking back into room with warm blanket, IV bag, and inspirometer. Opens the inspirometer package, assembles it and puts it on the side table. Puts the warm blanket on the side of the bed. Hangs the new IV, throws the empty bag in the garbage]

CL: Who is Jim?

[Hands PT and DTR tissues]

DTR: *Tearing up* That's my dad. Mom, remember dad died 2 years ago of pneumonia after he broke his hip. He was actually on this ward.

PT: *Tearing up* Ohhhhhh I forgot dad died. Of course he did.

CL: You must miss your husband very much.

[RN listens to bowel sounds while conversation continues]

DTR: They were married for 50 years. Dad taught high school, mom worked part time in a corner store for 35 years. She misses him so much and is lonely when I am not with her.

PT: It's been a terrible few years. And Jean has to do so much for me. I am too tired to clean and cook; I can't even drive to church anymore.

DTR: We had to sell my parents place and find a smaller apartment for mom. She has been a bit down. She used to read all the time and she won't even do that anymore

[PT reaching for DTRs hand, nodding her head and gently smiling]

CL: Are there other things in your life you need help with?

DTR: I have been bringing some of her dinners to her, taking her to appointments, and shopping for her groceries

[RN puts finger probe on finger, takes temperature, and feels pulse during the subsequent conversation until]

CL: Do you use any walking equipment?

PT: My cane helps when I go outside, and I hold onto my couch and kitchen counter when I am inside.

CL: How is your memory?

PT: It is so bad, just like my mother. She stopped recognizing me for the last 10 years of her life. We had to pay \$3000 dollars a month for her to be taken care of. I would never be able to afford that. I am on a fixed income don't you know.

DTR: [Turning to CL] Mom collects dad's pension. I pay her bills at the bank. She doesn't have a lot of extra money and I think it worries her. Hey mom?

PT: With the cost of groceries these days. It is highway robbery and I end up throwing half of it away. It goes rotten; it just doesn't taste the same anymore.

DTR: All she really eats these days are tea and toast. Can she have a snack now?

RN: *turning to CL* She can have some crackers and cheese. Can you grab those for her? And can you also bring me a cold cloth?
 [CL finishes taking notes, nods, puts clipboard down and walks out of room]
 RN: *picks up clipboard* Your heart rate is a bit irregular. What medications do you take? [DTR takes folded paper out of moms purse and hands it to RN, RN reads it]
 DTR: She has been getting dizzy. Her doctor changed her pills last week but I can't remember if we actually picked up her new prescriptions....[looking worried, handing list of meds over to RN]
 RN: *Putting the medication list on clipboard and filling in one of the documents.* It looks like you have asthma, and heart burn. Are you diabetic as well?
 DTR: She forgets to take her sugar level and I know she sneaks chocolate.
 PT: I am fine, chocolate makes me happy.
 [CL comes back into room with a snack and places it on counter beside patient, hands the cold cloth to RN]
 RN: Do you normally have any problems passing your urine?
 PT: No, but when I have to go, I have to go. And I have to get up to go pee a couple of times every night. I don't sleep very well at the best of times. My arthritis keeps me awake. I don't think my pain pills are helping
 DTR: Moms hands and knees get pretty sore.
 CL: What else are you doing to help with your arthritis pain?
 PT: I used to take a hot bath at night. Now I am afraid I am going to fall even though I had those bars installed.
 RN: *placing wet cloth on forehead.* Your temperature is a bit high, this cloth will help bring it down. I would like to take a peek at your legs and feet.
 [Lifts bed sheet to the side to expose left leg, then lifts covers off both feet. Gently feels right hip; PT moans. CL shifts her examination to PTs feet. Feels pulses, PTs right foot is shorter than the left, externally rotated. Both feet are pale]
 RN: Its ok, I know it hurts. I am almost done. Your ankles are quite swollen. I noticed your toe nails are a bit long. Do you cut them yourself?
 DTR: (*glancing at toes*) I didn't notice how bad they had gotten. Mom doesn't really like to leave the house, even to get her nails done.
 [CL retrieves the pillows As the subsequent dialogue continues she places each pillow horizontally underneath PTs left leg, remains on left side of bed, where the camera is. RN walks over to the right side of bed]
 DTR: Come to think of it, you aren't really leaving the house very much at all.
 PT: Those outside stairs make me nervous. And that railing feels loose. You know, I sometimes feel like my legs are going to give way. I'm such a burden.
 RN: We are just going to roll you over to take a look at your skin
 [PT rolls onto right side with the two pillows between her knees. She groans a little bit. CL examines her back and backside for about 5 seconds]
 RN: Your buttocks are a bit red and you have a bit of a sore starting. I think we will need to keep you on your side for a bit otherwise this could turn into a bedsore
 DTR: Dad had a bedsore....
 [CL places third pillow it at PTs back. DTR walks over to sit in the chair and places her head in her hands]
 CL: I have put a pillow behind you, relax back into it.
 [PT gently shifts into pillow, CL puts warm blanket on patient and makes sure call bell is still pinned to gown]
 CL: How does that feel?
 PT: *coughing a bit* Not too bad.
 [CL walks over to daughter and puts her hand on her shoulder]
 CL: We have a whole team of people who will be looking after your mom. We will work with her and your family, to come up with a plan to get her back home safely. She is in good hands. [Camera fades out]

Attachment 8 Discharge Note Tracked Changes



Discharge
Note_track changes.r

Attachment 9 Discharge Note

Patient: Ivy Jenkins MRN: 807 Encounter #: 1386

Discharge Summary: Congestive Heart Failure

Chief Complaint: SOB

Author: Fox, Jason (RN: Liaison)

Date: November 8, 2014

Hospital Course

Patient has recovered from CHF, renal insufficiency. Treated with IV Lasix 48 hours and home meds adjusted. No longer SOB. Bilateral pitting edema has improved. Will need home safety assessment for the following concerns:

1. Fall risk. Due to loss of energy related to cardiac issues, unsteady gait at times with progressive weakness over the past several months. Uses a cane while out, uses furniture and counters inside home; has scatter rugs. Patient mobilized well with physiotherapy. Over course of 3 day hospital stay progressed from bed to washroom with 4WW to walking 2 lengths of the hallway (approximately 200 meters) with 2WW. 1 flight of stairs to get into home; requires installation of railing. Patient to practice stairs with physiotherapy prior to discharge. Feels unsafe in bathtub; feels dizzy and is difficult to get in and out. Will need handle bars and possible bathing stool
2. Cognitive decline. Occupational therapy noted some early cognitive decline with a MOCA score of 18.
3. Social issues. Lives alone and struggles with heavy cleaning and meal makings. May have worsening social isolation due to loss of energy and potential depression. Unable to read and play bridge due to vision issues. Attends church although unable to find a ride at times. Stopped driving about 6 months ago. Daughter main support.

Plan

Referral made to Quick Response Team. Patient and daughter aware to follow up with GP in 1 week. Given requisition for repeat CBC/lytes. Daughter to drive home, aware Home and Community Care will call for an initial visit and assessment.

Attachment 10 ED Summary Tracked Changes



ED Summary_Track
Changes.docx

Attachment 11 ED Summary

Patient: Ivy Jenkins MRN: 807 Encounter# 1462

ED Note: Hip Injury

Chief Complaint: Pain in Hip

Author: Paige, Sean (ED Physician)

Date: June 8, 2015

Diagnosis: Fractured Superior Pubic Ramus.

History of Present Illness

Hip Injury-Pain The patient presents with Right hip pain. The onset was 5 hours ago. The course/duration of symptoms is constant and worsening. Type of injury: fall. The character of symptoms is pain, swelling and loss of mobility. * The degree at onset was severe, 10/10. * The degree at present is severe. 10/10. The exacerbating factor is movement. There are relieving factors including analgesics and immobilization. The incident occurred at home. Risk factors consist of diabetes mellitus, coronary artery disease, hypertension, immobility and age, COPD. Associated symptoms: dizziness and palpitations.

Review of Systems

Skin symptoms: Pale, warm, slightly moist.

Respiratory symptoms: Shortness of breath, cough, wheezing, Recent history of CHF in fall 2014.

Cardiovascular symptoms: Palpitations, tachycardia, peripheral edema.

Gastrointestinal symptoms: Constipation, Abdomen round and distended.

Genitourinary symptoms: Catheterization for urinary frequency and incontinence.

Musculoskeletal symptoms: Joint pain, Arthritic pain in hands, right leg slightly shortened and externally rotated

Neurologic symptoms: Dizziness. Not oriented to person, place nor time. Daughter provided most of past medical history.

Endocrine symptoms: Hyperglycemia.

Hematologic/Lymphatic symptoms: Bruising tendency.

Allergies:

Peanuts: Anaphylaxis

Ibuprofen: Unknown reaction

NSAIDs: Stomach pain

Medical history (see patient's home med list)

COPD (chronic obstructive pulmonary disease)

CHF (congestive heart failure)

Diabetes

GERD (gastroesophageal reflux disease)
 Hip pain, right
 HTN (hypertension)

Surgical history: Appendectomy 1952, Thyroidectomy 1992

Family history: Mother: Dementia: Father: Died of complications related to diabetes

Social History:

Retired: Local grocery store. Grade 12 or equivalent

Home/Environment

Lives alone. Apartment. Own Home. Patient cares for cat, plays bridge and reads
 Home equipment: Walker/Cane.
 Alcohol abuse in household: No.
 Substance abuse in household: No.
 Smoker in household: No
 Widowed 2 yrs. -husband died of pneumonia related to fractured hip repair complications
 Sexual: Number of lifetime partners 1.

Physical Examination:

Heart Rate Monitored	88bpm
Peripheral Pulse Rate	100bpm
Respiratory Rate	22br/min (HI)
Systolic Blood Pressure	160mmHg (HI)
Diastolic Blood Pressure	90mmHg (HI)
Mean Arterial Pressure, Cuff	110mmHg
POC BBGM	3.9
Temperature Tympanic	38.2 Deg C (HI)
Height	182 cm
Weight	71 kg
Basic Oxygen information	1747
Oxygen Therapy	Room air
SpO2	88%
Oxygen Therapy	Nasal cannula
SpO2	94%
Oxygen Flow rate	3L/min

Bilateral pitting edema +3 lower legs.
ECG rate 120, atrial fibrillation with ST-T changes.
CXR shows bilateral pleural effusions with increased interstitial changes and cardiomegaly

Consistent with CHF.

Laboratory Results

Routine Hematology: WBC 12.8; RBC 3.02; Hemoglobin 85; HCT .33

Anemia Profile: Iron binding capacity 48; Iron saturation .17; Femitin level 132

Electrolytes: Sodium 129; Potassium 5.8; Chloride 10; Carbon Dioxide total 32;

Renal Function: Urea level 10; eGFR 40; Creatinine 150; Anion Gap 9

ABGs: pH arterial 7.3; PCO2 84; PO2 138; Bicarb calculated 41; Excess Base 12; O2 Sats 93%;

Flow rate 3 LNP

Urinalysis positive for WBC >100

Inpatient Orders

- Resuscitation: Full Code
- Admit to Inpatient
- Non Weight Bearing right leg, up to chair for meals
- Urinary Catheter Insertion
- Consult to Geriatric Medicine or house physician for delirium management
- Refer to OT for early cognitive decline, equipment needs, discharge planning
- Refer to PT for bed exercises, discharge planning
- Incentive Spirometry:
- Neurovascular Assessment Lower Extremity:
- Pulse Oximetry: sats > 92%
- Vital Signs routine
- BBGM AC and HS
- 2/3 Dextrose 1/3 NS KCI 20 mmol/L 1,000 ml: 75 ml/h, IV

Medications:

Dilaudid inj: 2 mg, SUBCUT, Q4H, PRN:

Dilaudid, 4 mg, oral, Q4H, PRN:

Imovane: 7.5 mg, oral, OHS, PRN: sleep

Maxeran inj: 10mg, IV, Q6H, PRN: gastric stasis or NV opioid-induced

Neurontin: 100 mg, oral, BID

Synthroid: 0.25 mg, oral AC BKFT

Tylenol: 1,000 mg, oral QID

Vasotec: 20 mg, oral, Q12H

Ventolin inhalation solution: 5 mg, inhale, Q6H, PRN: bronchospasm

Dalteparin: 5,000 IU, SUBCUT, Q24H

MetFORMIN: 500 mg, oral AM & SUPPER

Metoprolol: 25 mg, oral, AC BKFT

Pantoprazole: 40 mg,

Impression and Plan

To be admitted to Orthopaedics for conservative treatment.

- Blue puffer when I need it
- Heart burn pill that says "P40"
- in the morning.
- Blood sugar pill before breakfast
and dinner.
- Heart pills - one each with breakfast.
- TYLENOL - 2 pills when I get sore.
(usually in morning and
before bed)
- Thyroid pill with breakfast.

WY

Attachment 12 Recruitment Poster Tracked Changes



Recruitment
poster_tracked changes



Research and Capacity Building
 Memorial Pavilion – Kenning Wing – Royal Jubilee Hospital – 1952 Bay Street
 Victoria, BC V8R 1J8

Attachment 14
 HREB Protocol with UVIC Academic Supervisor Comments

**Finding Common Ground:
 The Road to Electronic Interprofessional Documentation**

Principal Investigator: *Kristie McDonald, BScN, Masters Student*

Institutions: *University of Victoria*

Protocol version number/version date: **V4 March 29, 2015**

7. Protocol Synopsis

Using a qualitative descriptive research approach this study will identify and report common data elements among and between disciplines. Participants will watch a video of a simulated admission of a patient with a fractured hip and will review the same patient's emergency department paper record for this admission. Based on the simulated information and using *FluidSurveys* participants will:

4. Answer the first open ended survey question with a narrative clinical note of their assessment and potential interventions (*Appendix*)
5. Answer a second open ended survey question asking for them to provide the missing topics of patient information required for them to provide care
6. Answer the third part of the survey asking a series of questions related to participant sampling characteristics such as demographic and background information.

Through *Nvivo* statistical software, the narrative clinical notes and the topics missing from the simulated information will be analyzed using a cumulative approach within each discipline and a summative approach once all data across all disciplines is obtained. Common data elements within each discipline and among the disciplines will be coded. The data that emerges represents core patient information of importance to all members of the interprofessional teams; it is this data that will be interpreted and reported.

8. Background & Rationale:

The research question is: **What are the common data elements found within electronic narrative text between multiple disciplines?** Evidenced by the lack of academic literature on the concept 'interprofessional electronic documentation', there is gap in knowledge required to inform EHR design that aligns with interprofessional care. Interprofessional care is a strategic priority of Canadian governing healthcare bodies at both a national and provincial level (Health Canada, 2012; British Columbia Ministry of Health, 2014(a)). Indeed, some research suggests that interprofessional care may reduce error rates, improve health and quality of

life, increase patient satisfaction (Ash & Miller, 2013), improve communication (Keenan et al., 2012), and improve sharing of information (Demiris et al., 2008). Although interprofessional care delivery is a well-supported model, the concept of 'multidisciplinary electronic documentation' is proliferative throughout current literature. EHR design based on this body of knowledge has been wrought with challenges. Reports describe that the 'deluge of data' often found in EHRs leads to an inability to appropriately display and process vital patient information (Collins & Vawdrey, 2011; & Keenan et al., 2012). Disciplines can't agree on what is considered pertinent data (Green & Thomas, 2008). Electronic documentation is often left unread, despite the time and effort invested by multiple disciplines (Hripcsak, Vawdrey, Fred, & Botswick, 2010). To avoid similar pitfalls, research must focus on identifying common data. Once designers know the common data elements, they can build an EHR that leverages single data collection. Research focused on closing the gap between interprofessional care and electronic clinical documentation is required.

9. Study Objectives(s)/Purpose:

The purpose of the study is to identify the common data elements shared between different disciplines within the interprofessional team in order to leverage electronic capabilities such as decreased repetition, duplication, and ease of locating patient information. Patients, clinicians, and governing bodies will reap the benefit as time documenting can shift back into delivering direct patient care.

- The primary objective is to find and report the common data elements within electronic narrative text between multiple disciplines.
- Secondary Objectives:
 - To find and report common data elements within a discipline
 - To find and report data elements unique to a discipline
 - To include patient data not captured within the simulation that participants would have found helpful in their clinical note creation

10. Study Population

- As the goal is to recruit participants who will provide rich information, a purposive sampling method will be used. The study population consists of participants from the disciplines of medicine, nursing, occupational therapy, physiotherapy, and social work.

Inclusion Criteria

- Are currently practicing in Island Health, in one of the following professions: medicine, nursing, occupational therapy, physiotherapy, and social work
- Have at least 1 year of practice within their discipline
- Provide direct care to patients with fractured hip patients within an acute care setting
- Have an ability to type
- Have access to Island Health email and an ability receive and send messages
- Have the ability to access the study's *FluidSurvey* account
- Have the ability to access and read a pdf file through *Adobe Reader*
- Be agreeable to participate outside of working hours

Exclusion Criteria

- Those who cannot understand, read, nor write in the English language
- Medical physicians who are not attending orthopedic surgeons
- Nurses, other than those who provide direct patient care
- Students of the included disciplines

11. Study Design & Procedures

- Undertaking exploratory work using naturalistic qualitative inquiry, and using the framework of 'common ground', common data elements between multiple disciplines will be identified through a descriptive research approach. Participant narrative clinical notes will be based on patient information presented in a simulation. . A patient having fallen at home and fractured her hip, will have been admitted to the emergency department and transferred to an acute care orthopaedic unit. . Participants will 1) review her emergency department physician and nursing documentation and 2) watch a videotaped clinician/patient/family member interaction upon admission to the acute care unit. Sources will provide contextual patient information for participants to write a narrative note reflecting their observations, assessment, and proposed interventions.
- The study includes consultation with Subject Matter Experts (SMEs) who are considered experienced staff members with a minimum of 3 years experience working on their perspective units
- The study consists of two phases:
 1. Phase one: The Creation of Patient Simulation
 1. SME consultants from RJH ED:
 - Including a physician and RN who will validate and/or modify:
 - A case scenario a patient admitted with a fractured hip
 - The simulated ED paper record
 2. SME consultant from the RJH orthopaedic unit:
 - Including an RN who will validate and/or modify:
 - A case scenario of the patient admitted with a fractured hip
 - The script for the re-enactment of the patient's admission with her fractured hip
 - The script will be further validated by the Uvic School of Nursing clinical trainer for formatting, continuity, and other components required by the actors. The clinician, patient, and patient family member actors will be prepped by reviewing the fractured hip case scenario, studying the script, and through a verbal question and answer period prior to recording. The simulation will be recorded in the RJH Coronation annex simulation lab. It will be edited by the principal investigator.
 3. Consultants are clinicians who are considered experienced on their units who have knowledge of providing direct patient care. While they will inform the simulation for the study, they are not considered research participants; they will be excluded from phase two. Approximately an hour of their own time outside of working hours is requested.
 2. Phase two: Participation in the Study
 1. Participants from the orthopaedic units from the larger centers (RJH, VGH, NRGH) will be watching a video of the patient's admission with her fractured hip and will read her ED paper record. Orthopaedic surgeons (n=5), bedside nurses, (n=5), occupational therapists (n=5), physiotherapists (n=5), and social workers (n=5) will write a narrative note reflecting their observations, assessment, and proposed interventions through an online survey. Approximately 30 mins of their own time outside of working hours is requested.
- Data, initially stored within the *FluidSurveys*, will be extracted from the survey into an excel format. It will then be uploaded and stored into *NVivo* qualitative software for the analysis phase. Once the data is analyzed, the interpretation and discussion portions of the report will be stored in principal investigator's password protected, encrypted, firewalled Island Health hard drive. The principal investigator will access her hard drive drive by using 'remote.viha.ca' through non VIHA devices. She will also access her hard drive directly through Island Health devices outside of working hours. All data will be stored electronically for 7 years and then will be sent to the electronic 'recycling bin' which will then be emptied for permanent removal.

- Similarly, the principal investigator will use Island Health's email service as it is both secure and encrypted to communicate with other Island Health employees. For example, it will be used to:
 1. Communicate with Island Health Research Department
 1. To submit documents such as Operational Review Application, HREB Protocol, HREB application form, and email content for recruitment
 - In order to prevent power over issues with participant recruitment and potential subsequent breach of participant right to refuse, third party utilization would be ideal. Power over will be mitigated as the principal investigator will submit a request to the Island Health Research Department for assistance through a third party delegate. The 3rd party will contact potential participants on behalf of the principal investigator during the recruitment phase
 - The email body will contain the invitation to participate and the principal investigator's and supervisors' email and telephone contact information
 - Once potential participants contacted the principal investigator and expressed interest, inclusion and exclusion screening and informed consent processes would be completed.
 - Potential participants would be listed as participants
 - Their names, anonymized codes, and contact information will be recorded and stored on the study code list in the principal investigator's locked storage cabinet. This study code list will be shredded upon successful thesis oral defense and report submission.
 2. Communicate directly with participants
 1. Participant instructions, the pdf paper ED record, the video, and the link to the study's *FluidSurvey* research questions, and participant questions and answers will be through email
 3. Communicate with operational directors regarding the potential for both subject matter expert consultants and study participants to use own time for study processes :
 1. Subject matter expert consultants for review of the case scenarios, paper record, and script
 2. Participants' review of paper ED record and video and recording their clinical note.
- Participants, according to the email describing study steps, will review the patient ED record, watch the video and access the study's *FluidSurvey* account. Utilizing the 'open ended question' concept, participants will attend to the three sets of survey questions (Appendix A):
- Upon submission of the second clinical note from a member of the same discipline, cumulative analysis will begin; summative analysis will begin once all participants have submitted.
- **The study schedule is:**
 1. Early April submission of Operational Review Application and HREB Protocol,
 2. Early April submission of HREB application form
 3. Early April -late April modifications of HREB Operational Review Application, Protocol, application form
 4. Early April-late April creation of simulated patient record and video
 5. Early May-mid June- Participant recruitment
 6. Late April-Late June- Participant completion of clinical notes in Fluid Surveys
 7. Late April- Late July- Analysis of clinical notes through NVivo
 8. Late September- completion of analysis
 9. Early October-Late November-completion of written thesis report

12. Statistical Considerations

- The sample size for participants was determined by reviewing typical participation in other qualitative studies. As the scope is somewhat narrow (select disciplines', working on an inpatient

unit, narrative notes) and the nature of the topic is obvious and clear (common data elements shared across disciplines) fewer participants per discipline are needed to reach an understanding of their shared data elements (Morse, 2000). Phenomenological studies, which usually contain a large amount of in depth data, should contain six participants according to (Morse, 1994). A metadata study found that focus groups had a mean of 8.4 with a median of 5 participants (Carlsen & Glenton, 2013). While other studies seek saturation through analysis techniques, this descriptive study seeks to identify common data elements. The intent is not to discover and report an exhaustive list of all common data elements for all disciplines within all patient contexts. Rather, the intent is to identify common data elements within a controlled context of a few participants from select disciplines using a single patient and provide a snapshot of common data elements. While limited in generalizability, this study marks a starting point for future broader initiatives; it is easily reproducible.

- Each participant group including orthopedic surgeons, bedside orthopedic nurses, occupational therapists, physiotherapists, and social workers will have 5 members from RJH, and/or VGH, and/or NRGH. The regional total will be 25.
- Once the second clinical note is submitted from within the same discipline group, constant comparative analysis will begin. Common data elements such as nouns and concepts will be grouped together and coded using the *NVivo* qualitative analysis software. The results of this analysis will identify the common data elements within a discipline. Once all participant groups have submitted their notes, a summative analysis will begin until all data elements from all disciplines have been analyzed.
- *Missing or incomplete information will be managed in the analysis phase through participant check in either by email, in person, or by telephone. Consent for clarification of data will be obtained during the consent phase and will be captured in the consent form.*

7. Data Collection and Data Management

- The clinical narrative notes based on simulated patient information are the research data.
- The time points for collection will be upon submission of participant clinical notes through *FluidSurvey*, and for validation of missing or incomplete information on an as needed basis during analysis.
- Informed Consent for potential participants will be provided by ensuring provision for questions and answers, alerting about the awareness of study withdrawal at any time, and the use of a consent form consisting of all ethical review board elements. Study withdrawal, outlined in the consent form, will be requested through a written format and submitted by either email or mail. This will assist in tracking and transparency in partial data and will allow for clear statistics on completion vs withdrawal rate. Participants will be made aware that if partial data is obtained, it may be included in the study.
- Confidentiality will be provided by ensuring that participants remain anonymous. Upon enrollment, the principal investigator will record participant name, contact information and anonymized identifier to the study code list. The study code list will be stored in a locked cabinet along with the signed paper consent forms. This information that would otherwise potentially link participants' confidential information will be kept separate from study data. Study data will be stored on the principal investigator's Island Health hard drive. While the principal investigator will know which participant documented which data, participants will be cited using their identifiers (OT1, RN1, PT1, etc) in the analysis section of the report. The study code list will be destroyed through the paper shredder once the study report has been released finalized. Further, while the nursing participants have a large pool of potential recruits, the other disciplines do not. For this reason, a different consent form will be used outlining the possibility that confidentiality may be at risk for those in the smaller pool. With only a handful of potential participants, such as social workers who have worked within the orthopaedic unit, there is a chance that co-participants could more readily identify information within the report. This risk will be outlined in the consent form as the protection of

identity and confidentiality will be made clear in the consent form as participant protection is of utmost concern to the principal investigator.

- The life cycle of the data including collection, storage and transmission will occur approximately over a 4-5 month period
- Data will be examined for quality assurance or verification when clinical notes are unclear to the principal investigator. Follow up for clarity with participants will occur using an ongoing consent process.
- Once collection and analysis is completed, interpretation of the data through examination, exploring significance of findings, forming conclusions, generalization, and consideration of future studies, will begin (Tymkow, 2013).
- During the consent process, participants will be asked to contact the principal investigator if they would like to obtain the study results. Upon request, a copy of the abstract and link to the UVIC published thesis will be sent to them upon completion of research.

8. Publication of Results

The principal investigator will take the lead in publication(s) and presentations of the results. This will include but may not be limited to, UVICs online repository of published research.

9. References

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10. Appendices

Appendix. Survey Questions

1. You are now a part of the patient's interprofessional team and you will be documenting your initial clinical note based on the simulated information. Using data from the historical patient record and the videotaped admission create your typical clinical note. Use your usual format, language, which may, or may not contain subjective/objective data, assessment, and your plan.
1. 2. "What missing patient information would you have typically sought from the patient, family member, other professionals, or other sources to have included in your clinical note?"
2. 3. Information about yourself:
 - What is your discipline?
 - Physician
 - Nurse
 - Physiotherapist
 - Occupational therapist
 - Social worker
 - How many years have you been working in your discipline?
 - 1-5
 - 6-10
 - 11-15
 - 16-20
 - 21-25
 - >25 years
 -
 - How many years have you been working in your current position?
 - 1-5
 - 6-10
 - 11-15
 - 16-20
 - 21-25
 - >25 years
 -
 - How old are you?
 - <25
 - 25-30
 - 31-35
 - 36-40
 - 41-45
 - 46-50

- 51-55
 - >55
- What is your gender?
 - M
 - F
- I am comfortable documenting in the electronic health record
 - Strongly disagree
 - Disagree
 - Agree
 - Strongly agree
 - Neutral
- I believe patient information is duplicated in the health record
 - Strongly disagree
 - Disagree
 - Agree
 - Strongly agree
 - Neutral
- I believe electronic documentation is beneficial for patients
 - Strongly disagree
 - Disagree
 - Agree
 - Strongly agree
 - Neutral
- I believe electronic documentation is beneficial for clinicians
 - Strongly disagree
 - Disagree
 - Agree
 - Strongly agree
 - Neutral

Appendix K

Certificate of Ethical Approval



Board of Record
Island Health, Health Research
Ethics Board (HREB)

**Certificate of Ethical Approval for
Harmonized Minimal Risk Health Study**

1952 Bay Street
3rd Floor – Kenning Wing,
Memorial Pavilion
Royal Jubilee Hospital
Victoria, BC V8R 1J8

**Also reviewed and approved by:
University of Victoria**


PRINCIPAL INVESTIGATOR: Ms. Kristie McDonald	Primary Appointment: N/A	Board of Record REB NUMBER: J2015-046
Study Title: Finding Common Ground: The Road to Electronic Interprofessional Documentation		
Study Approved: 8-JUN-2015 Expiry Date: 7-JUN-2016		
Research Team members:	N/A	
Sponsoring Agencies:	UVic - Dorothy J Kergin grant	
Documents included in this approval:	HREB application content	Version 8, 16-May-2015
	Study protocol	Version 9, 16-May-2015
	Informed Consent Form	Version 6, 6-Jun-2015
	Letter of invitation	Version 3, 30-May-2015
	Survey questions	Version 5, 6-Jun-2015
	Script	Version 5, 7-Apr-2015
	Study budget	Version 1, 1-Apr-2015
	Discharge note	Version 3, 16-May-2015
	ED summary	Version 3, 16-May-2015
	Recruitment poster	Version 8, 16-May-2015

This ethics approval applies to research ethics issues only and does not include provision for any administrative approvals required from individual institutions before research activities can commence.

The Board of Record (as noted above) has reviewed and approved this study in accordance with the requirements of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2, 2014).

The "Board of Record" is the Research Ethics Board delegated by the participating REBs involved in a harmonized study to facilitate the ethics review and approval process.

Board of Record Research Ethics Board Representative

Lynn Cummings, BNSc, MN	Chair, Health Research Ethics Board (HREB)	8-JUN-2015
		

Appendix L

Consent Form

Finding Common Ground: The Road to Electronic Interprofessional Documentation

PARTICIPANT INFORMATION & CONSENT FORM

PRINCIPAL INVESTIGATOR AND STUDY TEAM:

Principal Investigator Name and Affiliation/Title:

Kristie McDonald, BScN

Graduate student Schools of Nursing and Health Information Science

Regional Leader Clinical Informatics, Island Health

Address: #3 134 Ontario Street, Victoria B.C., Canada, V8V 1M9

Phone Number:250-889-0902

Email: Kristina.mcdonald@viha.ca

Background and Purpose of the Study

You are invited to participate in a research study. The purpose of this study is to identify the common words, phrases, and concepts, otherwise known as data, shared between multiple disciplines. The purpose is to identify the common words, phrases, and concepts, otherwise known as data, shared between multiple disciplines. Knowledge of how different disciplines document on the same case scenario will inform how to design an electronic health record that leverages common information.

Participants will watch a video, review a brief discharge note and emergency department record, and create a narrative clinical note. Analysis and interpretation of the common information will help those who are designing electronic health records to identify the data that can be captured once and reused by multiple members of the patient care team. Decreasing duplicate information will save clinical time, prevent patients from repeating themselves, and will reduce the potential for overwhelming information within the electronic health record. This work is the first of its kind to build knowledge about interprofessional electronic documentation.

You are being asked to participate in this study because you potentially meet the following inclusion criteria:

- Are currently practicing in Island Health, in one of the following professions: medicine, nursing, occupational therapy, physiotherapy, and social work
- Have at least 1 year of practice within their discipline
- Provide direct care to patients with fractured hip patients within an acute care setting
- Have an ability to type
- Have access to Island Health email and an ability receive and send messages
- Have the ability to access the study's *FluidSurvey* account
- Have the ability to access to read a pdf file through *Adobe Reader*
- Be agreeable to participate outside of working hours and/or have leadership support to participate during working hours

Location of Research

This research study will be conducted within your home or at work outside of working hours. If you choose to participate at work, please find a location where you will not be disturbed.

Number of Participants

25 participants will be included in this study with a total of 5 from multiple disciplines (medicine n=5, nursing n=5, occupational therapy n=5, physiotherapy n=5, social work n=5).

What is Required if I Participate?

If you are interested in participating, please contact the principal investigator to discuss the study. You are encouraged to participate on your own time. As a study participant:

You will be sent an email to your Island Health Outlook account that will outline the following steps:

2. Review the discharge note from a previous admission
 1. Information from the patient's previous admission will help provide more context
3. Review the brief emergency department record (PDF file)
 1. It will contain physician and nursing documentation during the patients' stay in the emergency department prior to being transferred

- i. You can either read the records from the computer screen, print them off and read a hard copy, or contact the principal investigator for a printed copy.
- 4. Watch the video
 - 1. There will be a link to an 8 minute video portraying the same patient who fell and broke her hip. She is being admitted to the acute care unit and she and her daughter are answering questions by the clinician who is both assessing and admitting her. It will depict physical, emotional, and cognitive details that you can use for Step 4.
- 5. Complete and submit the survey (link to online survey through *FluidSurveys*).
 - 1. Document your clinical note
 - i. You are now a part of the patient's interprofessional team and you will be documenting your initial clinical note based on the simulated information. Using data from the historical patient record and the videotaped admission, create your typical clinical note. Use your usual format, language, that may, or may not contain subjective/objective data, assessment, and your plan.
 - 2. Answer a brief follow up question about what missing patient information would you have typically sought out from the patient, family member, other professionals, or other sources and included in your clinical note.
 - 3. Complete participant sampling characteristics (discipline, age, gender, years worked, level of comfort with computers, years of experience with electronic documentation, level of understanding interprofessional care, etc.).

It is predicted that these 4 steps will take approximately 30 minutes. Additionally, if the information you enter into the survey requires clarity, the principal investigator may contact you for a brief follow up conversation shortly after you complete your survey.

What are the Possible Risks or Inconveniences of Participating?

This is a minimal risk study with the potential exposure to the following risks and inconveniences:

1. As participation will be on your own time, you may be inconvenienced because of the time commitment. As it will take approximately 30 minutes to watch the video, read the patient records, and answer the survey questions, this is time otherwise spent with your everyday life commitments.
2. As you are more familiar with interacting with a live patient in real time, it may be a challenge to work with a patient simulation. Although reviewing a patient record and writing a clinical note are a part of your everyday workflow, watching a video and then creating a realistic clinical note may require you to think differently than you normally do. This may be a minor irritation.
3. You are required to use a device with sound in a quiet area where you can focus and not be disturbed. If you do not have a device at home, you may need to use a device at work outside of your working hours in an area such as the library or in an office with a set of headphones. Finding a suitable device and space may be an inconvenience.
4. While the study contains some technical functions such as opening a link to watch a video and answering online survey questions, there may be some minor irritations if these are unfamiliar processes to you.
5. If the principal investigator needs to hold a follow up conversation, it may be a challenge for you to recall information that would provide clarity around your clinical note.

To reduce these risks, the following steps have been and should be taken:

1. Understanding that participation will be approximately 30 minutes, organize this into your everyday schedule.
2. Choose a space where you will not be interrupted whether at home or at work
3. Test the device you will be using to make sure you can hear the sound, open up the patient record, and access the survey link.
 - a. The video was recorded so that it is easy to view and hear.
4. Write your clinical note as you typically would; do not put added pressure on yourself to create the perfect narrative as this will produce unrealistic findings. Use a naturalistic approach as this will provide a comfortable sense of the familiar.
5. Reach out to the principal investigator for any assistance during the day and evenings through email and/or telephone contact information listed on Page 1.

What are the Possible Benefits of Participating?

The possible benefits of your participation include:

- You will be provided with the opportunity to review the study outcome(s) and have an early understanding of the how your discipline's documentation overlaps with other disciplines. As Island Health's electronic health record (EHR) is imminently going live, you will come to appreciate its ability to reuse information in various areas throughout the patient record. As very little research has been conducted on interprofessional electronic documentation, many pieces of documentation may continue to be repeated. You have the opportunity to add knowledge to this relatively unknown concept.
- This will benefit patients and family members as the need to repeat historical information is a burden for patients and family members. This is a strain cognitively and emotionally when people are often at their most vulnerable.
- Although the two concepts of interprofessional care and electronic documentation are well known throughout the healthcare arena., there is a gap in knowledge about interprofessional electronic documentation. A deeper understanding of this concept will build the knowledge designers require to know what data should be reused among and between disciplines. This study will contribute to the body of knowledge encompassing the requirements of an integrated, wholesome electronic patient record.

Do I Have to Take Part?

You are free to participate or not. If you decide not to participate, employment status will not be affected in any way. If you do decide to participate and then change your mind later, you can withdraw without any consequences or explanation. If you do withdraw from the study and you have partially completed portions of the survey, your data may be included in analysis and reporting. To withdraw from the study, please contact the principal investigator in writing via email or letter.

Will I be Paid for Taking Part?

You will not be provided with any payments or coverage of costs for participating in this study.

Researcher's Relationship with Participants

As the researcher, I am also a colleague of some participants. To help prevent my relationship from influencing your decision to participate, the following steps have been taken:

- I have used a 3rd party to initiate contact with potential participants
- I have disclosed the title of my position at the beginning of this consent form

Confidentiality & How my Personal Information will be Used

- Maintaining your confidentiality is of utmost importance. This will be accomplished in several ways:
 - Once the principal investigator receives your signed consent form, your name, contact information, and your assigned code name (OT1, PT3, RN2, etc.) will be entered into the Study Code List. While this list will allow the principal investigator to be able link which participant recorded which data, this information will not be accessible by anyone else. As an added layer of protection, it, along with your signed consent form, will be stored in a locked cabinet, separate from survey data. The study code list will be destroyed upon completion of research.
 - Survey data will be stored on the principal investigator's Island Health Authority's secured and encrypted hard drive. This means the data is protected with a code, and password. Storing it separately from the study code list is an added layer of protection.
 - Personal information collected such as your name, contact information, discipline, age, gender, years worked, level of comfort with computers, years of experience with electronic documentation, and level of understanding interprofessional care will be analyzed and reported as an overview of participant characteristics; no participant identifiers will be used.
 - If examples of content from your clinical note are used in the study's report, you will be acknowledged through your code name.
- As there is a relatively small pool of potential physiotherapist, occupational therapist, social worker, and surgeon participants, you can limit the risk of breaking confidentiality by not disclosing your participation and completing the survey outside of your typical work environment.

- I, as the principal and single investigator, will have sole access to your information. Your consent to collect your information for the purpose of this research project will expire when you complete the study.

Future Use of Data

- Your personal data will continue to be de-identified (coded) at the conclusion of this study resulting in the inability to re-contact you for purposes of any future consenting.

Disposal of Data. Your data from this study will be disposed of in the following manner:

Data Source	How Destroyed	When Destroyed
Survey in <i>FluidSurvey</i>	Erased	7 years post completion of study
Study Code List	Shredded	This will be retained until after oral defense
<i>NVivo</i> Statistical Analysis	Erased	7 years post completion of study

Sharing of Study Results

Please contact the principal investigator through the email listed on page one if you would like a report of the findings. If requested, upon publication, the study abstract and link to the full report will be sent to you through your Island Health outlook email address.

Who Should I Contact if I Need More Information or Help?

The contact information for the Principal Investigator is provided on the first page of this Informed Consent Form. For questions or concerns about your rights as a research participant, please contact the VIHA Research Ethics Office in Victoria at (250) 370-8620 or email: researchethics@viha.ca.

Faculty Supervisors:

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CONSENT

Your signature below indicates that:

1. All sections of this Consent form have been explained to your satisfaction
2. You understand the requirements, risks, potential and responsibilities of participating in the research project, and;
3. You understand how your information will be accessed, collected and used.
4. All of your questions have been fully answered by the researchers.

Name of Participant (print)	Signature	Date
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Name of Person Administering Informed Consent	Signature	Date
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Role of Person Administering
Informed Consent

A copy of this consent form will be given to you, and a copy will be kept by the researcher.

Appendix M

Introductory Email to Third Party Recruiters

Hello XX,

Thank you so much for your assistance in acting as my 3rd party for recruitment for my research. This will entail forwarding the below content to a couple of distribution groups; the Letter of Invitation is both the content and the attachment. Are you able to:

1. Forward this email
2. Add the following emails to the To... line
 - a. VS5A@viha.ca
 - b. SocialWorkRJHVGHSPH@viha.ca
3. Delete the red instructions I have provided in red
4. Delete the FW: in the Subject: line
5. If anyone contacts you for more assistance related to the study, direct them back to me?

Thank you so much!

Best Regards,

Kristie McDonald

Office: 250-519-5300 (11895)

Cell: 250-889-9091

Appendix N

Invitation to participate

Hello,

My name is XX and I am sending you this email on behalf of Kristie McDonald, the Principal Investigator of a research study. I am acting as a neutral third party so that your privacy is protected and so you do not feel (unintentional) coercion by a recruitment email sent directly from the Principal Investigator. If you are interested in taking part in this study please contact Kristie directly using the contact information at the end of this email.

Title of Study: Finding Common Ground: The Road to Interprofessional Documentation

Principal Investigator: Kristie McDonald, RN, BScN, Master's Student NUHI, University of Victoria

Faculty Supervisors:

Noreen Frisch, Professor and Director School of Nursing, University of Victoria

Karen Courtney, Associate Professor, School of Health Information Science, University of Victoria

Greetings,

You are being invited to participate in a research study. Your participation must be free and voluntary. You are free to withdraw at any time.

As part of my Master's degree in Nursing and Health Informatics, I (Kristie McDonald, RN, BScN) am conducting a research study exploring interprofessional documentation.

You are invited to participate in a research project entitled "Finding Common Ground: The Road to Interprofessional Documentation". I am recruiting clinicians with at least one year experience in caring for patients with fractured hips within Island Health Authority. If you are a surgeon, nurse, occupational therapist, physiotherapist, or social worker and are able to dedicate approximately 45-75 minutes outside of working hours please consider participating.

The purpose of this research project is to identify the common words, phrases, and concepts, otherwise known as data, shared between multiple disciplines. Knowledge of how different

disciplines document on the same case scenario will inform how to design an electronic health record that leverages common information.

Should you choose to participate, you will be asked to watch a video, review a brief discharge note and emergency department record, and create a narrative clinical note based on the simulated information provided.

The expected duration is approximately 45-75 minutes with a possible follow up phone call.

This research should benefit:

- Clinicians as duplicate documentation could be reduced.
- Patients and family members as the need to repeat historical information is a strain cognitively and emotionally when people are vulnerable.
- Those who are designing Electronic Health Records as this study will contribute to the body of knowledge required to create an integrated, wholesome electronic patient record.

To participate in this study, please contact me via:

- Email (Kristina.mcdonald@viha.ca)



- Work 250-519-5300 (11895) or local 11895

For questions or concerns about your rights as a research participant, please contact the Island Health Research Ethics Office in Victoria at (250) 370-8620 or email: researchethics@viha.ca.

Please feel free to contact me (see below for contact information). Thank you,

Kristie McDonald,

RN, BScN, Master's Student Nursing and Health Informatics Program, University of Victoria



kristina.mcdonald@viha.ca

Academic Supervisors:

Noreen Frisch

Professor and Director School of Nursing, University of Victoria

(250) 721-7953

nfrisch@uvic.ca

Karen Courtney

Associate Professor, School of Health Information Science, University of Victoria

(250) 721-8599

court009@uvic.ca

This study has been reviewed and received ethics clearance through Island Health's and University of Victoria's Research Ethics Boards [# J2015046].

Appendix P

Email with Consent Form (Consent Form found in Appendix L)

Hello xx,

Thank you very much for considering participation in my research titled **Finding Common Ground: The Road to Interprofessional Documentation**. Please have a read through the consent form and do contact me with **any concerns or questions**.

Send the consent form via:

1. Interdepartmental mail to :

Kristie McDonald
RJH EMP 447

2. Mail to:

Kristie McDonald

[REDACTED]
[REDACTED]
[REDACTED]

3. In person-I can pick up at mutually agreed meeting place

Once I receive your consent, you will be assigned a unique code that you will use in the survey and I will send you an email with instructions on how to complete the survey. As always, please contact me if you have any questions or concerns.

Kind Regards,

Kristie McDonald

Office: 250-519-5300 (11895)

Work Cell: 250-889-9091

[REDACTED]

Email: Kristina.mcdonald@viha.ca

Appendix Q
Participant Instructions

Hello XX

Thank you for participating in my research! The information you provide will be invaluable for future build of interprofessional documentation into the electronic health record. *Prior to beginning, please ensure you will have uninterrupted time and access to a computer with sound.*

Then follow these steps:

1. Read the Discharge Note_CHF (1st attachment)
 - a. (Note: the pdf format was provided in the email; the content of Discharge note can be found in Appendix G)
2. Read the ED Summary (2nd attachment)
 - a. (Note: the pdf format was provided in the email; the content of ED Note can be found in Appendix H)
3. Watch the video found through selecting Ctrl on your keyboard and clicking this link:
 - a. [Patient Admitted with a Fractured Hip](#)
4. Begin the survey found by selecting Ctrl on your keyboard and clicking this link:
 - a. [Survey for Common Multidisciplinary Data Elements](#)
 - b. Your Code is: xx- this is what you will enter into the appropriate line on the survey

Please contact me if you have any questions or concerns,

Kristie McDonald

Office: 250-519-5300 (11895)

Work Cell: 250-889-9091



Email: Kristina.mcdonald@viha.ca

Appendix R
Analysis Worksheet



Analysis
Worksheet.xlsx

Appendix S

Codes and Code ID Numbers, Terms, and Data Elements

ID number	Term	The Data
1.	Living situation	
1.1.	Difficulties at home	
1.1.1.	Challenges with IADLs	
1.1.1.1.	Daughter's support with IADLs	
1.1.1.1.1	Support with groceries	<ul style="list-style-type: none"> • Dtr assists with meals, finances, groceries" (OT1) • "daughter assists with getting meals/groceries" (RN3) • "supportive daughter who assists with community management, groceries" (OT7) • "daughter...provides all transportation for her mother including...grocery shopping" (SW2)
1.1.1.1.2.	Support with meals_cooking_shopping	<ul style="list-style-type: none"> • "dtr assists with meals" (OT1 & OT4) • "provides meals" (OT7) • "daughter supports patient with meals/groceries and shopping" (RN3) • "Dtr helps with cooking, shopping" (PT1)
1.1.1.1.3.	Support with transportation	<ul style="list-style-type: none"> • "Dtr assists with...driving" (OT1) • "dtr assists with meals, driving" (OT4) • "provides all transportation for her mother" (SW2) • "dtr helps with cooking, shopping, transportation" (PT1)
1.1.1.1.4	Support with medications	<ul style="list-style-type: none"> • "dtr gets meds for pt" (PT1)
1.1.1.1.5.	Support with bills	<ul style="list-style-type: none"> • "pays her mother's bills at the bank" (SW2)
1.1.1.1.6	Support with cleaning	<ul style="list-style-type: none"> • "patient has difficult with cleaning, and writer assumes daughter assists with that as well" (RN3)
1.1.1.2.	Managing medications	

1.1.1.2.1	Patient taking medications	<ul style="list-style-type: none"> • “pt takes them” (PT1) • “is the client able to take her medication” (OT4) • “does she ever forget to take it” (OT4) • “unsure how patient is taking medication at this time” (RN3) • “patient not likely compliant with medication regimen” (RN3) • “she doesn’t think that the patient has started taking it yet” (RN6)
1.1.1.2.2	General med management	<ul style="list-style-type: none"> • “who manages her finances, meds” (OT7) • “ask dtr about how patient has been managing at home-meds” (PT5) • “IADL assistance-food, meds” (RN7)
1.1.1.2.3	Medication changes	<ul style="list-style-type: none"> • “recent med changes” (Phys3) • “GP may have changed her heart medication recently” (RN6)
1.1.1.2.4	Medication delivery	<ul style="list-style-type: none"> • “unsure how medications are delivered to household” (RN3) • “delivery?” (RN3) • “nothing about how medications were delivered” (RN3) • “how does she get her meds” (OT1)
1.1.1.2.5	Medication blister packs_docette	<ul style="list-style-type: none"> • “blister packs and/or dosette used” (RN3) • “docette, blister pack” (OT1)
1.1.1.3.	Nutrition	
1.1.1.3.1.	Meals	<ul style="list-style-type: none"> • “has she tried community resources for meal” (OT1) • “patient struggles with heavy cleaning and meal making” (SW1) • “managing at home-meds, meals” (PT5)
1.1.1.3.2.	Eating habits	<ul style="list-style-type: none"> • “eating habits” (RN3) • “consists on ‘tea and toast’” (RN3) • “decreased intake” (OT1)
1.1.1.3.3.	Poor diet_food	<ul style="list-style-type: none"> • “fridge full of expired foods” (OT7) • “patient notes she forgets about food in fridge” (RN3) • “assess dietary needs, as they were noted to be poor” (RN3) • “IADL assistance-food” (RN7)

1.1.1.4.	Driving_transport	<ul style="list-style-type: none"> • “pt doesn’t drive” (PT1) • “stopped driving in June 2014” (SW1) • “used to drive but she doesn’t anymore” (SW2) • “cannot find a ride” (SW2) • “unable to drive” (RN3) • “transport to appointments” (RN7) • “driving?” (Phys3) • “getting to/from appointments” (OT7) • “registered with handydart” (OT1)
1.1.1.5.	Cleaning	<ul style="list-style-type: none"> • “patient struggles with heavy cleaning” (SW1) • “patient has difficulty with cleaning” (RN3) • “Patient unable to do heavy cleaning” (RN3)
1.1.2.	Challenges with ADLs	
1.1.2.1.	Getting around	
1.1.2.1.1	Equipment_aides _fall prevention	<ul style="list-style-type: none"> • “Equipment: cane” (OT1) • “bars in bathtub” (OT1) • “fall prevention strategies (classes, hip protectors)” (OT1) • “indp with cane” (OT1) • “adaptive aides” (OT1) • “Pt mobilizes with a cane/walker” (OT7) • “equipment in place at home” (OT7) • “has a cane” (PT1) • “walks I using a cane” (PT1) • “Usually uses cane/ 4w/w” (PT5) • “with cane outside” (OT4) • “Equipment: client has walker, cane, rail on stairs, bars in tub, and bath seat” (OT4) • “cane/walker,” (Phys3) • “Patient has a cane at home.” (RN3) • “no indications patient has dentures or hearing aides” (RN3) • “mobilizing with an aid?” (RN7)
1.1.2.1.2.	Compliance_equipment	<ul style="list-style-type: none"> • “Mobility: - Old chart indicate a 4ww but not currently used” (OT1) • “she didn't follow through with the recommendation to use a 4ww” (PT1) • “Client has walker, but does not use it” (OT4) • “Patient admits to using the cane outside only” (RN3) • “rarely checks sugars” (Phys3)
1.1.2.1.3.	Furniture surfs	<ul style="list-style-type: none"> • “furniture surfs” (OT1, PT1, RN3) • “furniture walks inside” (OT4)

1.1.1.2.	Dressing	<ul style="list-style-type: none"> • “ADL function-dressing” (OT7) • “Client previously able to dress self” (OT4) • “Unsure how patient dresses in lower and upper extremities, but likely has difficulties” (RN3)
1.1.2.3.	Bathing general	
1.1.2.3.1.	Bathing	<ul style="list-style-type: none"> • “ADL function-dressing, bathing” (OT7) • “not able to bath (OT4)
1.1.2.3.2.	Bathing for pain relief	<ul style="list-style-type: none"> • “hot bath helps to decrease pain” (PT1) • “bath which helps with pain relief (OT4)
1.1.2.4	Toileting	
1.1.2.4.1.	Void at night	<ul style="list-style-type: none"> • “nocturia x2” (OT1) • “OT4 BID at night” (OT4) • “noted to void often at night” (RN3)
1.1.2.4.2.	Indep_urgent toileting	<ul style="list-style-type: none"> • “Indp, urinary urgency” (OT1) • “is up x2/day to use the bathroom” (OT7) • “independent with toileting getting up BID” (OT4)
1.1.2.5.	Self care_toe nails	<ul style="list-style-type: none"> • “self care” (OT1) • “toenails neglected” (OT1) • “toe nails not maintained” (OT7) • “not even to get her nails done” (SW2)
1.1.2.6.	Sleep	<ul style="list-style-type: none"> • “indicated she does not sleep well” (OT7)
1.1.3.	Support system	
1.1.3.1.	Home supports_resources_formal	
1.1.3.1.1.	Home supports	<ul style="list-style-type: none"> • “home supports in the past” (OT1) • “community f/u” (OT7) • “no indication of whether or not she has been receiving home care services” (SW2) • “no HS” (Phys3) • “previous home supports” (RN4)
1.1.3.1.2.	Physician support	<ul style="list-style-type: none"> • “previous history with geriatrics” (RN7) • “who are the MD’s involved in her care”(Phys3)
1.1.3.2	Family_othersupport_informal	
1.1.3.2.1.	Other support_informal	<ul style="list-style-type: none"> • “someone is looking after the cat” (PT5) • “friends available to her as social supports” (SW2) • “possibly visit and help” (SW2) • “other supports other than daughter” (RN7) • “supports?” (Phys3)

		<ul style="list-style-type: none"> • “any other informal supports at this time” (RN3) • “any other support people” (RN6)
1.1.3.2.2.	Family support_beliefs_goals_concerns	<ul style="list-style-type: none"> • “any other family?” (OT1, SW2) • “what are the families concerns and goals”(OT7) • “families perspective on the patients cognition” (OT7) • “concerns they have” (OT7) • “other children” (Phys3)
1.1.3.3.	Daughter as general support at home	
1.1.3.3.1	Daughter main support	<ul style="list-style-type: none"> • “supportive daughter who assists with community management” (OT7) • “daughter is her main support” (SW1) • “daughter is main support” (SW2) • “Dghtr doing more” (Phys3) • “daughter clearly was helping a lot” (RN3) • “relies heavily on her daughter” (RN3)
1.1.3.3.2.	Well-being of daughter	<ul style="list-style-type: none"> • “does Dtr work” (OT1) • “daughter reports caregiver burnout” (OT1) • “daughter suffering from care giver burnout” (RN4)
1.1.3.3.3.	Daughter’s concerns	<ul style="list-style-type: none"> • “concerns re: managing prior to admission (OT1) • “daughter concerned about financials” (RN3)
1.1.4.	Living at risk	
1.1.4.1.	Managing at home	
1.1.4.1.1.	Managing health issues	
1.1.4.1.1.1	Management of eye eight	<ul style="list-style-type: none"> • “struggling with eye sight” (SW2)
1.1.4.1.1.2	Compliance_management of diabetes	<ul style="list-style-type: none"> • “patient dismissive of health issues when questioned about her diabetes” (RN3) • “patient does not check blood sugars” (RN3) • “patient’s diabetes does not seem to be well controlled” (RN3) • “difficulty managing diabetes” (OT1) • “pt not checking blood sugars” (OT7) • “does not check her blood glucose levels at home” (OT4) • “rarely checks sugars” (Phys3)
1.1.4.1.2.	Concerns managing at home	<ul style="list-style-type: none"> • “report concerns re: managing prior to admission” (OT1) • “pt not managing well at home IND’ly” (OT7) • “get lost in the community” (OT4)

		<ul style="list-style-type: none"> • “dangers with cooking” (OT4) • “railing not safe” (OT4)
1.1.4.2.	Physical limitation	<ul style="list-style-type: none"> • “pt c/o feeling weak in legs” (OT7) • “legs feel like they are going to ‘fold up underneath her’” (OT4) • “tires easily” (PT1) • “limited endurance” (PT1) • “patient complains of feeling tired and weak” (RN3).
1.1.4.3.	Challenge with stairs	<ul style="list-style-type: none"> • “nervous on stairs” (OT7) • “nervous about taking stairs” (OT4) • “stairs are going to be a barrier to discharge” (PT1) • “unable to return home due to the stairs” (SW1)
1.1.4.4.	Use of alarm_lifelinesystem	<ul style="list-style-type: none"> • “does she have a medical alarm (lifeline)?” (OT1) • “medical alarm” (PT1) • “a life line” (RN4)
1.2.	Lives in home_apartment	
1.2.1	Layout of home	
1.2.1.1.	Stairs	<ul style="list-style-type: none"> • “with stairs” (OT1) • “number of stairs and specifics of railings” (OT1) • “stairs with railing” (OT1) • “stairs with rail” (OT4) • “?stairs” (OT7) • “details of stairs:outside/inside, how many, 1 or 2 handrail” (PT1) • “1 flight of stairs to access main floor” (PT1) • “she has one flight of stairs to get into her home (SW1)
1.2.1.2.	Layout of bathroom	<ul style="list-style-type: none"> • “layout of bathroom (tub?, height of toilet)?” (OT1) • “walker fit in the bathroom” (OT4) • “bars by her toilet at home” (OT4) • “height of the toilet” (OT4) • “bathroom set-up: walk-in shower vs tub, grab bars” (PT1) • “handle bars, bath stool” (RN6)
1.2.1.3.	Details of bed	<ul style="list-style-type: none"> • “bar on her bed” (OT4) • “height of toilet and bed” (OT4)
1.2.1.4.	Rooms_flooring	<ul style="list-style-type: none"> • “how many rooms_flooring” (OT1)

1.2.2.	Lives alone	<ul style="list-style-type: none"> • “lives alone in apartment” (OT1, PT1 & SW2) • “lives alone with a cat” (OT1) • “pt resides alone in apartment” (OT7) • “lives alone” (SW1, OT4, Phys3) • “home alone” (Phys3)
1.2.3.	Alternate living arrangements	<ul style="list-style-type: none"> • “willingness to relocate to a wheelchair accessible environment” (SW1) • “considered an assisted living type of arrangement” (SW2)
1.2.4.	Downsizing of home	<ul style="list-style-type: none"> • “downsizing from her house” (SW2” • “recently sold home and moved into a smaller unit” (RN3)
2.0	Assessments	
2.1	Physical Assessment	
2.1.1.	Musculoskeletal	
2.1.1.1.	Pain_hip_OA (osteoarthritis)	
2.1.1.1.1.	Use of numeric scale	<ul style="list-style-type: none"> • “client reports her pain is 10/10” (OT4, PT7) • “now right hip pain 10/10” (Phys3) • “10/10 pain d/t fall” (RN3) • “pain right hip 10/10” (RN1) • “patient stated 10/10” (RN4) • “patient is in 10/10 pain to her right hip” (RN6) • “pain stated 10/10” RN7) • “pt c/o 10/10 pain” (OT7) • “pt report P 10/10 with leg movement (PT1)
2.1.1.1.2.	Fractured hip	<ul style="list-style-type: none"> • “#hip” (OT1) • “# pubic ramus” (OT1) • “with #hip” (OT1) • “in with a fractured hip” (OT4) • “# superior pubic ramus” (OT7) • “# superior pubic ramus” (PT1) • “possibility of #R hip (PT5) • “sustaining a R hip #” (PT7) • “clarification of type of fracture” (PT7) • “right hip fracture” (SW1) • “fractured right hip (SW2) • “pelvic fracture” (Phys3) • “right fractured superior pubic ramus” (RN3)
2.1.1.1.3.	Pain with assessment_movement	<ul style="list-style-type: none"> • “c/o pain with mov’t” (PT5) • “pain with any bed mobility” (PT7) • “in pain esp with moving” (Phys3) • “in pain during assessment” (RN3)

		<ul style="list-style-type: none"> • “very painful to move or touch” (RN6)
2.1.1.1.4.	In pain significant_severe	<ul style="list-style-type: none"> • “severe pain at the moment” (PT1) • “severe pain” (PT5) • “expressing significant pain” (PT7)
2.1.1.2.	Mobility	
2.1.1.2.1.	Challenges with mobility	<ul style="list-style-type: none"> • “mobility limited” (PT1) • “pain meds prior to mobilization” (PT5) • “is currently below baseline re: mobility” (PT7) • “ADL ax when pt more mobile” (OT7) • “unable to walk at this time” (RN3) • “bed bound” (RN3) • “able to turn from side to side in bed” (RN3) • “unable to mobilize at this time” (RN6)
2.1.1.2.2.	Weight bearing	<ul style="list-style-type: none"> • “pt is NWB on (R)” (OT7) • “she is NWB R leg” (PT1) • “patient is non weight bearing on her right leg” (SW1)
2.1.1.2.3.	Level of assistance	<ul style="list-style-type: none"> • “requiring assist for all care and mobility” (OT1) • “mobilizing with 1xassist” (OT1) • “2A to turn” (PT1) • “turned to R side lying with 2A” (PT1) • “minimal participation from pt” (PT1) • “1A and bed rail” (PT5) • “lie to sit with 1A” (PT5) • “physio to assist” (PT5) • “2p assist to dangle” (PT7)
2.1.1.3.	Right leg rotation_shortening	<ul style="list-style-type: none"> • “R L/E resting in some external rotation and slightly shortened” (PT5) • “externally rotated/ shortened R L/E” (PT5) • “Rt leg shortened, externally rotated” (RN1) • “Patients right leg is slightly shortened and externally rotated” (RN6) • “right leg shortened and rotated externally (RN7)
2.1.2.	Cardiovascular	
2.1.2.1.	Edema_swelling	<ul style="list-style-type: none"> • “bilateral L/E edema” (OT1) • “pitting edema noted to bilat.” (OT7) • “elevate l/e to decrease edema” (OT7) • “swelling to both ankles observed” (PT1) • “ L/Es swollen, R greater than L” (PT5) • “moderate pitting edema bliat L/E” (PT7) • “ankle swelling” (Phys3)

		<ul style="list-style-type: none"> • “bilateral pitting edema +3 lower legs” (Phys3) • “pitting edema bilat” (RN1) “pitting edema bilateral legs noted” (RN3) • “edema to feet bilaterally” (RN4) • +3 bilateral pitting edema to her lower legs” (RN6) • “edema +3 bil. lower legs” (RN7)
2.1.2.2.	Pedal pulses	<ul style="list-style-type: none"> • “pedal pulses x4” (RN7)
2.1.2.3.	Cardiomegaly_CHF_CXR	<ul style="list-style-type: none"> • “cardiomegaly; CHF” (phys3) • “CXR notes ... other signs related to CHF” (RN3)
2.1.3.	Vital signs	
2.1.3.1.	O2 sats	<ul style="list-style-type: none"> • “SpO2 94% on 3LNP” (PT5) • “88% RA” (Phys3) • “spo2 94% on 3Lnc” (RN7)
2.1.3.2.	Temp	<ul style="list-style-type: none"> • “38.2” (Phys3) • “patient is febrile at 38.2” (RN6)
2.1.3.3.	Resp rate	<ul style="list-style-type: none"> • “22” (Phys3) • “RR 22” (RN7) • “patients respiratory rate is elevated at 22/min (RN6)
2.1.3.4.	Pulse	<ul style="list-style-type: none"> • “88” (Phys3) • “HR 100 peripheral” (RN7) • “patients HR is 88 apically, 100 peripherally” (RN6)
2.1.3.5.	Blood Pressure	<ul style="list-style-type: none"> • “patient’s blood pressure 160/90” (RN6) • “160/90” (Phys3) • “VS-BP 160/90 (RN7)
2.1.3.6.	BBGM	<ul style="list-style-type: none"> • “her BBGM is 3.9 at this time” (RN6) • “Blood b=glucose 3.9” (RN7)
2.1.4.	Respiratory	
2.1.4.1.	SOB	<ul style="list-style-type: none"> • “SOB, increased on exertion” (PT5) • “SOB” (Phys3) • “patient short of breath at rest” (RN4)
2.1.4.2.	Crackles	<ul style="list-style-type: none"> • “crackles to lungs on auscultation” (PT1) • “bilateral lower lobe crackles” (PT7) • “crackles bilat” (Phys3) • “chest crackles bilat” (RN1) • “chest has some crackles (RN4) • “has crackles throughout her lungs” (RN6) • “crackles bil laterally” (RN7)

2.1.4.3.	Cough	<ul style="list-style-type: none"> • “audible wet cough” (RN7) • “cough has occurred for 1 year” (RN7) • “worsening cough” (Phys3) • “patient noted to have cough (RN3)
2.1.4.4.	Pleural effusions_interstitial changes	<ul style="list-style-type: none"> • “bilateral pleural effusions” (Phys3) • “increased interstitial changes” (Phys3) • “bilateral pleural effusions” (RN3, RN6)
2.1.5.	Genitourinary	
2.1.5.1.	Trouble_frequency_urgency	<ul style="list-style-type: none"> • “urgency with urination” (PT1) • “trouble urinating” (RN3) • “frequency and incontinence” (RN6)
2.1.5.2.	Catheter inserted	<ul style="list-style-type: none"> • includes “catheter inserted at this time (RN6) • “catheter insitu” (RN7)
2.1.6.	Integumentary	<ul style="list-style-type: none"> • “coccyx red” (OT1) • “red area noted on back” (OT7) • “skin checked” (OT7) • “stage 2 pressure ulcer on her coccyx” (OT4) • “pressure area on coccyx area (PT7) • “coccyx reddened” (RN1) • “to assess buttocks” (RN3) • “patient has redness and a sore on her buttocks” (RN3) • “small area of breakdown to coccyx” (RN7)
2.1.7.	Gastrointestinal	
2.1.7.1.	Abdomen round_distended	<ul style="list-style-type: none"> • “Abd distended and slightly firm (RN1) • “abdomen distended and rounded (RN6) • “abd round and distended (RN7)
2.1.7.2.	Bowel movement	<ul style="list-style-type: none"> • “unable to remember last bowel movement” (RN6) • “patients last bowel movement” (RN6)
2.1.7.3.	Bowel sounds	<ul style="list-style-type: none"> • “bowel sounds present” (Phys3) • “bs x4 quadrants” (RN4) • “patient have bowel sounds” (RN6) • “BS x4” (RN7)
2.1.7.4.	Swallowing_cough when drinking	<ul style="list-style-type: none"> • “spontaneous strong cough when drinking water” (PT1) • “patient was noted to have difficulty with fluids” (RN3) • “upon drinking water through a straw, patient coughed more” (RN3) • “pt given sips of water, and coughed immediately after (RN7)
2.1.8.	Communication_hearing	<ul style="list-style-type: none"> • “communication/hearing: patient able to communicate clearly” (RN3)

2.2.	Cognitive_delirium assessment	
2.2.1.	Cognitive concerns	
2.2.1.1.	Alert_oriented_disoriented	<ul style="list-style-type: none"> • “alert, disoriented” (Phys3) “oriented to person and place but not date” (OT1) • “pt recognizes dtr but is disoriented to place and time” (PT5) • “client orientated to person and place however not to date” (OT4) • “A&O x2” (RN1) • “Patient A&O x1” (RN3) • “alert to person” (RN4) • “patient responds well to reorientation by her daughter” (RN6) • “some disorientation with current events and history” (RN7) • “oriented to person and place” (RN7)
2.2.1.2.	Memory	<ul style="list-style-type: none"> • “client forgot where she was” OT4) • “unable to recall fall” (OT1) • “memory not good” (Phys3) • “daughter noted patient forgetful” (RN3) • “patient does not remember fall” (RN3) • “she remembered her deceased husband” (RN3) • “unable to remember last bowel movement” (RN6) • “forgetful” (PT5)
2.2.1.3.	MOCA	<ul style="list-style-type: none"> • “previous MOCA 18/30” (OT1) • “cognitive decline (MOCA of 18/30 November 2014)” (SW1) • “MOCA Nov ’14 18/30” (Phys3) • “patient had a MOCA of 18/30 last year in Nov. 2014” (RN3)
2.2.1.4.	Awareness	
2.2.1.4.1.	Wants to go home_not aware of injury	<ul style="list-style-type: none"> • “pt asking why she is here (PT5) • “asking to go home” (PT5) • “to go home” (RN6) • “not aware of injury” (OT1)
2.2.1.4.2.	Aware memory bad	<ul style="list-style-type: none"> • “client reports memory ‘very bad’” (OT1) • “patient agreed her memory is “bad” (RN3) • “patient admits to forget food in fridge” (RN3) • “Pt indicated poor memory bad” (OT7)

2.2.1.5.	Competency_POA_health rep	<ul style="list-style-type: none"> • “unclear if there is a Power of Attorney in place” (SW2) • “Representation Agreement?” (SW2) • “geriatrics will need to see if patient is competent” (RN3) • “there was no indication of a POA/Health rep” (RN3) • “Sw to assess legal status fo POA/Health rep” (RN3) • “nothing about POA/Health rep” (RN3) • “does the patient have a living will” (RN4)
2.2.1.6.	Cognitive decline_assessment	<ul style="list-style-type: none"> • “referral received re: cognitive ax” (OT7) • “not appropriate for cognitive testing at this time” (OT7) • “further cognitive assessment” (OT4) • “if cognition is worse off than last admission” (RN3) • “cognitive level in the past and currently” (RN3)
2.2.2.	State of delirium	
2.2.2.1.	Patient behaviour	
2.2.2.1.1.	Agitated_distracted_visibly upset	<ul style="list-style-type: none"> • “agitated” (OT1) • “distracted” (PT5) • “patient visibly upset” (RN3) • “patient’s state” (RN3)
2.2.2.1.2.	Asking about husband	<ul style="list-style-type: none"> • “asking about her husband” (OT4) • “was calling out for husband” (RN3) • “asking for her deceased husband (RN6)
2.2.2.1.3.	Wanting to leave	<ul style="list-style-type: none"> • “attempts to get out of bed” (RN6) • “asking why she is here” (PT5) • “asking to go home” (PT5)
2.2.2.2.	Delirium	<ul style="list-style-type: none"> • “?delirium” (OT1) • “pt currently in a state of delirium” (OT7) • “will ax as pt delirium clears” (OT7) • “pt appears delirious” (PT1) • “delirium management” (SW1) • “client in delirium” (OT4) • “some increased delirium “ (RN7)
2.2.2.3.	Confusion_Hallucinations_vague	<ul style="list-style-type: none"> • “currently confused” (OT1) • “with hallucination of her deceased hsbd” (PT1) • “Pt confused” (PT5) • “increased confusion” (PT5)

		<ul style="list-style-type: none"> • “appears confused” (PT5) • “confused” (Phys3) • “vague” (RN1) • “noted to be confused” (RN3)
2.3.	Emotional Assessment	
2.3.1.	Nervous_anxious_ Frightened_agitated	<ul style="list-style-type: none"> • “agitated” (OT1) • “being fearful of future falls” (OT1) • “nervous about taking stairs” (OT4) • “nervous on stairs” (OT7) • “she is suffering” (SW2) • “easily frightened” (RN3) • “appears very anxious” (RN6)
2.3.2.	Sad_concerned_upset _down	<ul style="list-style-type: none"> • “report concerns re: managing prior to admission” (OT1) • “low mood” (OT1) • “noted to be sad” (RN3) • “visible upset” (RN3) • “client is down” (OT4)
2.3.3.	Happy_enjoyment	<ul style="list-style-type: none"> • “enjoyed (i.e. reading, bridge)” (OT7) • “patient states eating chocolate cookies makes her happy” (RN3)
3.0	Histories	
3.1.	Medical History	
3.1.1.	Diagnoses_conditions	
3.1.1.1	Endocrine conditions	<ul style="list-style-type: none"> • “DM” (OT1 & Phys3) • “renal insufficiency” (SW6) • “now hypothyroid” (Phys3) • “diabetes” (RN3) • “patient also has a history of diabetes” (RN6)
3.1.1.2.	Cardiovascular conditions	<ul style="list-style-type: none"> • “CHF” (SW, OT1, Phys3, RN3, RN6) • “CAD” (Phys3, OT1) • “afib with ST-T changes” (RN6) • “a fib” Phys3) • “HTN” (OT1, Phys3)
3.1.1.3.	Cognitive conditions	<ul style="list-style-type: none"> • “early cognitive decline” (OT4) • “cognitive impairment at baseline” (OT4) • “pre-existing cognitive decline” (OT7) • “impaired thinking skills (PT1) • “as indicated by her cognitive level” (RN3) • “cognitive imp” (Phys3) • “cognitive defects” (Phys3)

3.1.1.4.	Respiratory conditions	<ul style="list-style-type: none"> • “COPD” (OT1 & Phys3) • “patient has a history of COPD” (RN6 & RN4) • “patient states has a history of COPD” (RN6)
3.1.1.5.	Arthritis_falls	<ul style="list-style-type: none"> • “arthritis” (OT1) • “previous falls” (OT1) • “history of falls” (OT1) • “OA, esp hands, not controlled” (Phys3) • “also noted to have arthritic pain” (RN3)
3.1.1.6.	Genitourinary conditions	<ul style="list-style-type: none"> • “urinary urgency and nocturia x2” (OT1) • “urinary inc and freq” (Phys3) • “noted to have trouble urinating” (RN3) • “noted to void often at night” (RN3)
3.1.1.7.	Depression	<ul style="list-style-type: none"> • “mood:-any history of depression” (OT1) • “?depression” (OT7) • “depression” (Phys3) • “history of depression” (RN4)
3.1.1.8.	Visual Conditions	<ul style="list-style-type: none"> • “decreased vision” (OT1) • “struggling with her eye sight (SW2)
3.1.1.9.	PMH completed	<ul style="list-style-type: none"> • “complex PMHx (OT1) • “Chart reviewed for PMH” (OT7)
3.1.1.10.	General decline_fatigue	<ul style="list-style-type: none"> • “fatigue over months” (Phys3) • “General decline over months” (Phys3) • “feeling tired and weak, likely related to her CHF” (RN3)
3.1.1.11.	GERD	<ul style="list-style-type: none"> • “GERD” (OT1 & Phys3)
3.1.2.	Previous hospitalizations	
3.1.2.1.	Previous admission	<ul style="list-style-type: none"> • “admissions Nov/14 & June/15)” (OT1) • “pt was previously admitted in Nov 2014 (PT1), • “previously admitted in November 2014” (SW1), • “with admit in Nov ‘14” (Phys3) • “during that admission” (RN3)
3.1.2.2.	Previous discharge	<ul style="list-style-type: none"> • “a home safety Ax was done on D/C” (PT1) • “was discharged with QRT” (SW1) • “previous discharge note by liaison” (RN3) • “once patient got home” (RN3)
3.1.2.3.	Procedures	<ul style="list-style-type: none"> • “hx thyroidectomy, hx appy” (Phys3)
3.1.3.	Medication history	<ul style="list-style-type: none"> • “Meds: 1. Synthroid 0.25 mg po daily 2. Tylenol 500 mg 2 tabs po prn 3. Vasotec 20mg po daily 4. Metformin 500 mg po bid 5. Metoprolol: 25 mg, oral daily 6. Pantoprazole

		<p>40 mg po daily” (Phys3)</p> <ul style="list-style-type: none"> • “chart reviewed for HPI, PMHx, Meds” (Phys3) • “hypothyroid, on replacement” (Phys3) • “Medications: please see ED note for complete list” (RN3) • “on heart medication” (RN6) • “heart medication changes recently” (RN6) • “takes a puffer” (RN6) • “chart reviewed for HPI, PMHx, Meds” (PT5)
3.1.4.	Allergies	<ul style="list-style-type: none"> • “Allergies: 1. Peanuts: Anaphylaxis 2. Ibuprofen: Unknown reaction 3. NSAIDs: Stomach pain” (Phys3)
3.1.5.	Code status	<ul style="list-style-type: none"> • “full code” (Phys3) • “how was code status established” (Phys3) • “patients wishes if she wants CPR in case of her heart stopping” (RN4)
3.2.	History of Present Illness	
3.2.1.	Circumstances of admission_ assessment	
3.2.1.1.	Location of admission	<ul style="list-style-type: none"> • “assessment: Pt seen in room” (OT7) • “client lying in bed on R side” (PT7) • “Nanaimo Regional General Hospital” (SW2) • “on the 6th floor (SW2) • “client received in bed” (OT4) • “pt. admitted to floor” (RN1) • “orthopedic unit” (RN3) • “patient received onto the unit” (RN6)
3.2.1.2.	With daughter at bedside	<ul style="list-style-type: none"> • “Pt seen with dtr present” (PT1) • “writer met with patient and daughter at bedside” (SW2) • “with daughter at bedside” (OT4) • “daughter at the bedside” (RN6) • “Patient now at the beside with daughter” (RN6) • “Daughter at bedside to assist with history” (RN7)
3.2.1.3.	Ambulance_stretcher_transp ort	<ul style="list-style-type: none"> • “before calling an ambulance” (SW2) • “Patient arrived to ED by way of BCAS” (RN3) • “ patient received lying on stretc.her” (RN6)
3.2.1.4.	Referral received	<ul style="list-style-type: none"> • “Referral received” (OT1, OT7, & PT5) • “Writer (SW) referred to see” (SW1) • “Referral received” (OT4)
3.2.2.	Circumstances of fall	

3.2.2.1.	Time of fall_admission	<ul style="list-style-type: none"> • “Pt fell June 8” (PT1) • “on June 8th, 2015” (SW1) • “was admitted on 8 June 2015” (SW2) • “5 hours ago” (Phys3) • “Undetermined how long patient was on the ground” (RN3) • “Patient admitted hospital on June 8, 2015” (RN3) • “yesterday” (RN6) • “earlier today” (RN7)
3.2.2.2.	Fall location	<ul style="list-style-type: none"> • “a fall at home” (OT7) • “Client fell at home” (PT7) • “Fall at home” (Phys3) • “on the floor” (RN3) • “patient fell in the garden” (RN6) • “while watering plants” (RN3)
3.2.2.3.	Daughter found patient	<ul style="list-style-type: none"> • “found on the floor by her dtr.” (PT1) • “Daughter is main support and found her in her home” (SW2) • “Patient found by daughter” (RN3)
3.2.2.4.	Reasons_details of fall	<ul style="list-style-type: none"> • “Details about the fall” (PT1) • “what was she doing” (PT1) • “dizziness and palpitations” (Phys3) • “circumstances around the fall” (Phys3) • “mechanical (trip) or not” (Phys3) • “(? postural dizziness or pals prior)?, did she pass out” (Phys3)
3.2.2.5.	Patient recollection of fall	<ul style="list-style-type: none"> • “Patient does not remember fall” (RN3)
3.3.	Social History	
3.3.1	Widowed_deceased husband	<ul style="list-style-type: none"> • “widowed x2 years” (OT1, OT7) • “husband who passed away two years ago” (OT4) • “her deceased hsbd” (PT1) • “patient is widowed (SW1) • “deceased husband” (SW2) • “Jim passed away two years ago” (SW2) • “her deceased husband” (RN3) • “widowed” (Phys3)
3.3.2.	Cat	<ul style="list-style-type: none"> • “cat in an apartment” (OT1) • “patient has a cat (fluffy)” (OT7) • “caring for her cat” (PT1) • “with her cat” (SW1, OT4) • “cat” (Phys3) • “assisting with feeding her cat while in

		<p>hospital” (RN3)</p> <ul style="list-style-type: none"> • “Peter (neighbour) is assisting now with patient’s cat while she is in hospital” (RN3) • “patient is very worried about her cat” (RN6)
3.3.3.	Hobbies	<ul style="list-style-type: none"> • “activities she once enjoyed (i.e. reading, bridge)” OT7) • “bridge” (SW1) • “used to read and play bridge (SW2) • “enjoys reading” (PT1) • “leisure activities (attending church and reading)” (OT4) • “not been reading as much” (RN3)
3.3.4.	Church	<ul style="list-style-type: none"> • “going to church” (PT1) • “she previously attended church” (SW1) • “struggles to attend church” (SW2) • “unable to go to church” (RN3) • “transportation to church” (OT4)
3.3.5.	Demographics	
3.3.5.1.	Gender	<ul style="list-style-type: none"> • “she” (PT1, PT5, OT1, OT4, SW1, SW2, Phys3, RN3, RN4, RN6) • “female” (OT1 & OT4) • F (Phys3) • “her” (PT1, OT1, OT4, OT7, SW1, SW2, Phys3, RN3, RN4, RN6)
3.3.5.2	Age	<ul style="list-style-type: none"> • “82” (OT1, OT4, SW1, Phys3)
3.3.5.3	Name	<ul style="list-style-type: none"> • “Mrs Jenkins” (SW2)
3.3.6.	Social isolation_no friends	<ul style="list-style-type: none"> • “socially isolated” (OT1, SW1, & RN3) • “social isolation” (OT7, SW2) • “does not seem to have friends” (RN3)
3.3.7.	Finances_income	<ul style="list-style-type: none"> • “source of income” (SW1) • “fixed senior’s income (SW2) • “gets some financial support from her deceased husband, Jim’s, pension” (SW2) • “no further information on other sources of income” (SW2) • “total sources of monthly income” (SW2) • “patient and daughter concerned about finances (RN3) • “can’t afford to go to LTC due to cost” (RN3) • “manages finances” (OT7) • “cost of future care needs” (OT1)
3.3.8.	Exercise program	<ul style="list-style-type: none"> • “does she do any exercise program” (PT1)
3.3.9.	Retiree	<ul style="list-style-type: none"> • “retired shop clerk” (Phys3)

3.3.10.	Education	<ul style="list-style-type: none"> “grade 12 education” (OT7)
3.3.11.	Substance use	<ul style="list-style-type: none"> “no sig EtOH, no smokes” (Phys3)
4.	Interventions	
4.1	Planned interventions	
4.1.1.	Transition back home	
4.1.1.1.	Assist with discharge plan	
4.1.1.1.1.	Manage cognitive_physical barriers	<ul style="list-style-type: none"> “stairs are going to be a barrier” (PT1) “NWB R leg, pt may need rehab” (PT1) “once mobilizing with 1xassist” (OT1) “railing not safe” (OT4) “when pt more mobile and pain better managed” (OT7) “cognitive ax, specifically ILS health and safety” (OT7) “will be unable to return to her home due to the stairs” (SW1) “she can’t afford to go to LTC due to cost” (RN3) “once patient is medically stable” (RN6)
4.1.1.1.2.	Manage home supports_LTC	<ul style="list-style-type: none"> “needs HS on d/c” (Phys3) “increased supports at home” (OT4) “d/c planning (...home supports)” (OT7) “home-supports” (RN3) “patient will likely need QRT services” (RN3)
4.1.1.1.3.	Manage equipment_life line needs	<ul style="list-style-type: none"> “OT to provide w/c for pt.” (OT7) “OT to assist with d/c planning(equipment needs..)” (OT7) “recommend Life Line as a support for patient at home” (SW2) “to ax for equipment” (OT4) “client will likely benefit from further equipment review prior to d/c” (OT4) “equipment needs” (RN3) “to set up equipment” (RN3)
4.1.1.1.4.	Discharge planning	<ul style="list-style-type: none"> “assist with discharge planning” (OT1) “d/c planning” (OT4 & OT7) “re D/C plan” (PT5)
4.1.1.1.4.	Assess home function	<ul style="list-style-type: none"> “to assess physical functioning ADLs, IADLs” (RN3) “ax functional ADLs to ax for equipment and support needs” (OT4) “ADL ax” (OT7) “to contact daughter re: further collateral on pt

		pre-admit fxn and home set-up” (OT7)
4.1.1.2.	Support_educate_general	
4.1.1.2.1.	Support_encourage	<ul style="list-style-type: none"> • “provide ... support to client” (OT1) • “encourage pt to do it regularly” (PT1) • “encourage pt to be up in chair” (OT7) • “SW to follow and provide support” (SW1)
4.1.1.2.2.	Educate_review_instruct	<ul style="list-style-type: none"> • “provide education” (OT1) • “review deep breathing” (PT1) • “review of DB&C” (PT5) • “instructed pt to do 10 deep breaths” (PT7)
4.1.2.	Team members_referral_follow up	
4.1.2.1.	PT	<ul style="list-style-type: none"> • “Dtr. Liaise with PT re:mobility” (OT1) • “liaise with nsg to time PT session with P meds” (PT1) • “Physio to assist with transfers to chair daily” (PT5) • “physiotherapy” (RN4) • “PT/OT, mobilization” (Phys3)
4.1.2.2.	Physician general	
4.1.2.2.1.	Geriatrics	<ul style="list-style-type: none"> • “patient is deferred to Geriatrics for delirium management” (SW1) • “?GEM referral” (OT7) • “Geriatrics to assess” (RN3) • “Geriatrics will need to see if patient is competent” (RN3)
4.1.2.2.2.	Ortho_MRP_house	<ul style="list-style-type: none"> • “consult with orthopod” (PT5) • “admit under House” (Phys3) • “consult ortho” (Phys3) • “will request bowel care meds from MRP” (RN6) • “will inform MRP” (RN6)
4.1.2.3.	OT	<ul style="list-style-type: none"> • “OT to monitor skin, mood” (OT1) • “OT to provide w/c for pt. (OT7) • “OT to contact daughter” (OT7) • “OT mobilization” (Phys3) • “OT to asses physical functioning, ADLs, IADLs, and cognition” (RN3) • “occupational therapy” (RN4)

		<ul style="list-style-type: none"> • “OT to assess patient for cognitive decline” (RN6)
4.1.2.4.	Whole team	<ul style="list-style-type: none"> • “will liaise with team” (OT7) • “all staff to...” (OT7) • “liaise with team re d/c planning” (OT4) • “consults to Geriatrics, OT. PT, SLP, RD, SW, and liaison” (RN3)
4.1.2.5.	SW	<ul style="list-style-type: none"> • “SW to follow” (SW1) • “Sw to assess legal status” (RN3) • “Sw will need to put in paper work” (RN3) • “would talk to SW to get process started” (RN3) • “social worker” (RN4)
4.1.2.6.	SLP	<ul style="list-style-type: none"> • “query consult to SLP to further investigate” (RN3) • “SLP to assess swallowing” (RN3)
4.1.2.7.	Rehab assist	<ul style="list-style-type: none"> • “RA delegated to assist with L/E exercises” (PT5)
4.1.2.8.	RD	<ul style="list-style-type: none"> • “RD to assess dietary needs” (RN3)
4.1.2.9.	Liaison	<ul style="list-style-type: none"> • “liaison RN” (Phys3) • “Liaison nurse” (RN4) • “Liaison to assess” (RN3)
4.1.3.	Manage medical conditions	
4.1.3.1.	Manage hip fracture	<ul style="list-style-type: none"> • “conservative treatment for her #” (PT1) • “conservative management” (PT7) • “plan: ?Sx” (OT1) • “plan:-admit under House, consult ortho-analgesics, mobilization” (Phys3) • “no surgery planned at this time” (RN3) • “conservative treatment only for patient” (RN3)
4.1.3.2.	Monitor_manage mental status	<ul style="list-style-type: none"> • ”re-administer MOCA when cognitively able to participate” (OT1) • “?cognitive ax, will assess as delirium clears” (OT7) • “delirium management” (SW1) • “assess...cognition” (RN3) • “reorientation by her daughter...-will monitor” (RN6) • “to assess patient for cognitive decline” (RN6) • “further ax cognition” (OT4) • “further cognitive assessment once delirium

		clears” (OT4)
4.1.3.3.	Mobilize_transfer _reposition	<ul style="list-style-type: none"> • “turn schedule for skin” (OT4) • “to be up in chair x3/day for meals” (OT7) • “side lie when able” (OT7) • “elevate legs to decrease edema” (OT7) “progress mobility as tolerated (PT1) • “transfers to chair daily” (PT5) • “up to chair for meals” (PT5) • “continue dangle” (PT7) • “progress to standing” (PT7) • “transfer to chair” (PT7), • “mobilization” (Phys3)
4.1.3.4.	Manage medications	<ul style="list-style-type: none"> • “BB as also CHF” (Phys3) • “DVT proph, dalteparin” (Phys3) • “anticoag vs ASA for a fib” (Phys3) • “make a medication reconciliation record”(RN4) • “use Ventolin when needed” (RN6) • “request bowel care medications” (RN6) • “may benefit from medication management” (OT4)
4.1.3.5.	Manage pain	<ul style="list-style-type: none"> • “pain better managed” (OT7) • “liaise with nsg to time PT sessions with P meds” (PT1) • “when pain control improved” (PT7) • “-analgesics” (Phys3) • “what else has been tried for OA” (Phys3)
4.1.3.6.	Manage hemodynamics	<ul style="list-style-type: none"> • “diurese, daily wt, low Na diet-rate control, BB as also CHF-discuss anticoag vs ASA for a fib” (Phys3) • “will monitor if this brings down patients BP as well (RN6) • “given cold cloth for her head at this time, will monitor” (RN6) • “Will monitor for fluid overload in lungs and worsening peripheral edema” (RN6) • Blood sugars will be monitored throughout the day” (RN6)
4.1.3.7.	Manage diet	<ul style="list-style-type: none"> • “orders for diet” (RN1)
4.1.3.8.	Manage respiratory status_general	<ul style="list-style-type: none"> • “why ABG’s out of whack” (PT5) • “will monitor resp status (RN6) • “use Ventolin when needed for shortness of breath” (RN6)

4.1.3.8.1.	DB&C	<ul style="list-style-type: none"> • “review deep breathing and coughing” (PT1) • “pt to practice DB&C” (PT5) • “DB&C” (PT7)
4.1.3.8.2.	Monitor resp_ABG	<ul style="list-style-type: none"> • “will monitor resp status” (RN6) • “why ABGs out of whack” (PT5)
4.1.3.9.	Monitor skin	<ul style="list-style-type: none"> • “to monitor skin” (OT1) • “would benefit from turn schedule for skin” (OT4) • “pt turned on side. Will monitor” (RN1)
4.2	Completed interventions	
4.2.1.	Managed physical movement	<ul style="list-style-type: none"> • “was turned to R side” (PT1) • “F&A exs” (PT5) • “side lying with HOB to 20 degrees” (PT7) • “side-lie” (OT7) • “elevate I/e with pillow when able” (OT7) • “pt turned on side” (RN1) • “moved to side” (RN3) • “turned on her side” (RN4) • “legs elevated at this time” (RN6)
4.2.2.	Enhanced oxygenation	<ul style="list-style-type: none"> • “DB&C practiced” (PT7) • “on 3L NP” (Phys3) • “she has also been given an incentive spirometer at the bedside” (RN6)
4.2.3.	Diagnostic exams	
4.2.3.1.	Lab work	<ul style="list-style-type: none"> • “Labs: WBC 12.8; Hb 85; TIBC 48; Iron sat 0.17; Ferritin 132; Na 129; K 5.8; Cl 10; HCO2 32; BUN 10; eGFR 40; Creatinine 150 ABG: pH 7.3; PCO2 84; PO2 138; Bicarb 41; Excess Base 12” (Phys3) • “patients potassium level is too high” (RN4)
4.2.3.1.1.	Urinalysis	<ul style="list-style-type: none"> • “urinalysis positive for WBC” (RN3) • “urinalysis was taken on admission” (RN6) • “urine was positive for WBC>100” (RN6) • “C&S of the urine that is +WBC” (RN7) • “U/A WBC>100” (Phys3)
4.2.3.2.	Xray hip	<ul style="list-style-type: none"> • “Xray results of R L/E” (PT5) • “X-Ray of right hip (RN3) • “imaging of hip” (RN7)
4.2.3.3.	CXR	<ul style="list-style-type: none"> • “CXR:” (Phys3) • “CXR notes” (RN3) • “Patients CXR” (RN6)
4.2.3.4.	ECG	<ul style="list-style-type: none"> • “ECG: 120 bpm” (Phys3) • “ECG shows a fib” (RN6)

4.2.4.	Provided nutrition and hydration	<ul style="list-style-type: none"> • “IV patent and infusing” (RN1) • “IV running into left arm” (RN4) • “review IV solution with the kcl” (RN4) • “IVF of 2/3 dextrose 1/3 NS” (RN6) • “patient was given cheese and crackers” (RN6) • “IVF” (RN6) • “small snack given” (RN7)
4.2.5.	Prevented skin breakdown	<ul style="list-style-type: none"> • “turned on her side to prevent further skin breakdown” (RN4)
4.2.6.	Managed genitourinary issues	<ul style="list-style-type: none"> • “catheter inserted at this time” (RN6)
4.2.7.	Comfort_analgesia_safety	<ul style="list-style-type: none"> • “nsg has provided pain meds” (PT5) • “given analgesia” (RN4) • “given 2 mg dilaudid SC for pain” (RN6) • “patient given cold cloth for her head at this time” (RN6) • “bed alarm on” (RN6) • “analgesic given” (RN7)
5.	Sources of patient information	
5.1	Daughter as source	<ul style="list-style-type: none"> • “Dtr reports” (OT1) • “Dtr states” (PT5) • “Daughter stated” (SW2) • “hx from dghtr” (Phys3) • “Daughter noted” (RN3)
5.2	Patient records	
5.2.1.	Current record	<ul style="list-style-type: none"> • “as per doctor note” (OT7) • “history on the chart” (PT7) • “initial ED assessment” (RN3)
5.2.1.1	Chart reviewed	<ul style="list-style-type: none"> • “chart reviewed (all sections)” (OT1 & PT1) • “chart reviewed for PMH, HPI, and social history” (OT7) • “chart reviewed for HPI, PMHx, Meds, etc.” (PT5)
5.2.1.2.	Other documentation completed	<ul style="list-style-type: none"> • “usually use pre-admit form” (PT1) • “OT/PT initial form filled out” (OT4) • “PHFST given to daughter to complete” (RN7)
5.2.2.	Old chart_last discharge note	<ul style="list-style-type: none"> • “old charts requested and reviewed” (OT1) • “previous discharge note” (RN3) • “would search through PowerChart” (RN3) • “according to last discharge note” (RN3)

5.3.	Patient reported	<ul style="list-style-type: none"> • “pt indicated poor memory” (OT7) • “expressed being fearful” (OT1) • “reports feeling” (OT1) • “Client and daughter report” (OT1) • “pt report P 10/10 with leg movement” (PT1) • “history taken from patient” (RN4) • “Pt indicated” (OT7) • “Client and dtr report” (OT4) • “Patient complains of” (RN3) • Patient admits to” (RN3)
5.4	Team reports	<ul style="list-style-type: none"> • “based on team reports” (RN3)
6. Organization of clinical note		
6.1	Participant specific	<ul style="list-style-type: none"> • “Plan” (SW1) • “Nanaimo Regional Hospital, PROCESS, PLAN” (SW2) • “On exam, -skin:, Resp:, GI:, GU:, MSK:” (RN7) • “Cognitive:, Communication/Hearing:, Mood and behaviour:, Social Functioning:, Informal Supports:, Physical function:, Medications:, Nutrition:, Plan:” (RN3) • “Note:, ID:, HPI:, PMHX:, Meds:, Allergies:, SoHX:, O/E:, Labs:, CXR:, Imp:, Plan:” (Phys3) • “S/O), Mobility: ADL:, Equipment:, A), P)” (OT4) • “I/e., Assessment:, Cognition:, Pre-Admit fxn:, Plan:” (OT7) • “HPI:, Dx:, PMHx:, O/E:, Skin:, Social Hx:, NOTE:, Equipment:, Mobility:, ADLS:, IADLS:, Cognition:, Analysis:, Plan:” (OT1)
6.2	Non standardized headers	<ul style="list-style-type: none"> • “-skin:” (RN7) • “Skin” (OT1) • “Social Hx” (OT1) • “SoHx:” (Phys3) • “Social Functioning:” (RN3) • “Resp:” (RN7) • “PROCESS” (SW2) • “Previous functioning_mobility” • “Pre-admit fxn” (OT7) • “PMHx” (OT1) • “PMHX:” (Phys3) • “Plan” (OT1) (OT7) (Phys3) (RN3) • “PLAN:” (SW2)

		<ul style="list-style-type: none"> • “Physical function:” (RN3) • “On exam” (RN7) • “OE” • “O/E: (OT1) (Phys3) • “Nanaimo Regional Hospital” (SW2) • “NOTe:” (OT1) <li style="padding-left: 20px;">• “Note:” (Phys3) • “Nutrition:” (RN3) • “MSK:” (RN7) • “Mood and behaviour:” (RN3) • “Mobility” (OT1) (OT7) • “Medications:” (RN3) • “Meds:” (Phys3) • “Labs:” (Phys3) • “Informal supports:” (RN3) • “Imp” (Phys3) • “ID” (Phys3) • “IADLs” (OT1) • “I/E” (OT7) • “HPI:” (OT1) (Phys3) • “GU:” (RN7) • “GI:” (RN7) • “Equipment” (OT1) (OT7) • “Dx:” (OT1) • “CXR:” (Phys3) • “Communication/Hearing:” (RN3) • “Cognitive:” (RN3) • “Cognition” (OT1) (OT7) • “Assessment” (OT7) • “Analysis” (OT1) • “Allergies” (Phys3) • “ADLs” (OT1) (OT7)
6.3	Use of SOAP	<ul style="list-style-type: none"> • “S/O” (OT4) • “S:” (PT5) • “S-“ (PT7) • “O” (PT7) • “O:” (PT5) • “O:” (PT5) • “A:” (PT5) • “A)” (OT7 & PT1) • “P” (PT7) • “P)” (PT1 & OT4) • “S/O” (OT7) • “S:” (PT5)

		<ul style="list-style-type: none">• “A)” (OT7) (PT1)• “A:” (PT5)• “P)” (OT7)• “P:” (PT5)
6.4	No use of headers	<ul style="list-style-type: none">• RN1, RN6, RN4 did not use any headers

Appendix T

Patterns of Documentation Unique to Each Discipline

	Only from RN	From all RNs
Living Situation	<ul style="list-style-type: none"> • Support with cleaning 	
Assessments	<ul style="list-style-type: none"> • BBGM • Catheter Inserted • Bowel Movement • Abdomen round _distended • Communication_Hearing • Pedal Pulses 	<ul style="list-style-type: none"> • Assessments • Respiratory • Use of Numeric Scale • Gastrointestinal • Cardiovascular
Histories	<ul style="list-style-type: none"> • Patient recollection of Fall 	<ul style="list-style-type: none"> • Histories
Interventions	<ul style="list-style-type: none"> • SLP • RD • Manage diet • Prevented skin Breakdown • Managed Genitourinary issues 	<ul style="list-style-type: none"> • Interventions • Completed interventions • Managed physical movement
Sources of patient information	<ul style="list-style-type: none"> • Team Reports 	<ul style="list-style-type: none"> • Sources of patient information
Organization of Clinical note	<ul style="list-style-type: none"> • No use of headers 	<ul style="list-style-type: none"> • Organization of Clinical note
	Only from OT	From all OTs
Living Situation	<ul style="list-style-type: none"> • Rooms_Flooring • Details of Bed • Sleep 	<ul style="list-style-type: none"> • Living Situation • Lives in Home_Apartment • Stairs • Living alone • Difficulties at home • Managing at home • Managing Health Issues • Compliance_Management of Diabetes • Challenges with IADLs • Driving • Daughter's support with IADLs • Support with Meals_cooking • Challenges with ADLs • Toileting

		<ul style="list-style-type: none"> • Use of equipment_aides
Assessments		<ul style="list-style-type: none"> • Assessments • Fractured Hip • Integumentary • State of Delerium • Emotional Assessment • Nervous_Anxious_Frightened_Agitated_Labile • Cognitive Decline_Assessment • MOCA • Memory
Histories	<ul style="list-style-type: none"> • PMH completed 	<ul style="list-style-type: none"> • Histories • Social History • Widowed • Medical History • Diagnoses_conditions • History of Present Illness • Circumstances of Admission_Assessment • Referral Received
Interventions	<ul style="list-style-type: none"> • Rehab Assist • DB&C 	<ul style="list-style-type: none"> • Interventions • Planned interventions • Transition Back Home • Assist with Discharge Planning • Manage barriers • Discharge planning • Team members_Referral_Follow up • Manage Medical Conditions • Monitor_Manage Mental Status • Mobilize_Transfer_Reposition
Sources of patient information		<ul style="list-style-type: none"> • Sources of Patient Information • Patient Reported • Current Record • Daughter as Source
	Only from PT	From all PTs
Living Situation	<ul style="list-style-type: none"> • Support with medications 	
Assessments	<ul style="list-style-type: none"> • In Pain_Significant_Severe 	<ul style="list-style-type: none"> • Assessments • In Pain_Significant_Severe • Mobility • Level of assistance • Cardiovascular • Edema_Swelling
Histories	<ul style="list-style-type: none"> • Exercise program 	<ul style="list-style-type: none"> • Histories • History of Present Illness • Circumstances of

		Admission_Assessment
Interventions		<ul style="list-style-type: none"> • Interventions • Planned interventions • Support_Educate_general • Educate_review_instruct • Support_Encourage • Manage Medical Conditions • Manage Respiratory Status • DB&C • Manage Hip Fracture • Completed Interventions • Managed Physical Movement
Sources of patient information		<ul style="list-style-type: none"> • Sources of Patient Information • Patient Reported • Current Record
Organization of Clinical note		<ul style="list-style-type: none"> • Organization of Clinical note • SOAP
	Only from SW	From all SWs
Living Situation	<ul style="list-style-type: none"> • Alternate living arrangements • Management of Eye Sight • Support with Bills 	<ul style="list-style-type: none"> • Living Situation • Lives in Home_Apartment • Alternate living arrangements • Living alone • Difficulties at home • Managing at home • Support System • Daughter as general support at home • Challenges with IADLs • Driving • Daughter's support with IADLs
Assessments		<ul style="list-style-type: none"> • Assessments • Fractured Hip • Cognitive Decline_Assessment
Histories	<ul style="list-style-type: none"> • Name 	<ul style="list-style-type: none"> • Histories • Social History • Widowed • Social Isolation • Church • Hobbies • Time of Fall_Admission • Demographics
Interventions		<ul style="list-style-type: none"> • Interventions • Planned interventions • Transition Back Home • Assist with Discharge Planning • Manage barriers • Discharge planning

Sources of patient information		<ul style="list-style-type: none"> • Sources of Patient Information • Current Record
Organization of Clinical note		<ul style="list-style-type: none"> • Organization of Clinical note
Colour legend	Only from Physician	
Histories	<ul style="list-style-type: none"> • Substance use • Retiree • Procedures • Allergies 	