Practices and Experiences of Family Caregivers on Early Mobilization in the Cardiac Surgery ICU: A Mixed-Methods Study of Observations and Interviews

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Abstract

Background: In the cardiac surgery (CS) intensive care unit (ICU), early mobilization is an established component of postoperative care that supports recovery. Prior research suggests that caregivers often support early mobilization in the ICU. However, little is known about what this support actually involves and there are gaps in documenting caregivers' perspectives and motivations regarding their role in patient early mobility within the CS ICU. **Objectives:** The purpose of this thesis was to: (1) observe how caregivers engage in and support patient early mobilization within the CS ICU, and (2) gain insight of caregivers' understanding, perspectives, and perceptions of their roles in supporting patient early mobilization within the CS ICU. **Methods:** This mixed-methods study was conducted in the CS ICU at St. Boniface Hospital and combined behavioral mapping/observations (Protocol A) with semi-structured interviews with caregivers (Protocol B). *Protocol A* consisted of five days of behavioral mapping, each spaced five days apart, to directly observe caregiver engagement in early mobilization activities. Observations were conducted over ten-hour periods (10:00 a.m.–8:00 p.m.), with data collected in 15-minute rounds during which each of the 15 patient beds was observed for 30 seconds. *Protocol B* followed an interpretive description methodology involving 20 semi-structured interviews with caregivers conducted by one researcher. All interviews were transcribed verbatim, and thematic analysis guided theme development. **Results:** In *Protocol A*, 1,140 observations were recorded, including 372 instances of patient mobilization. Caregivers were present in nearly half of the mobilizations (172 counts), most often during the afternoon (12:00–13:59; 45 counts) and evening (18:00–18:59; 44 counts). Sitting in a chair was the most common mobilization activity, representing approximately 80% of all mobilizations. Caregivers primarily provided passive support (137 counts; 79%). Hospital staff were present in 39 of the 172

caregiver-engaged mobilizations, during which caregivers most often demonstrated passive (27 counts; 71%) or active engagement (10 counts; 26%). In *Protocol B*, five major themes captured caregivers' perspectives and experiences: (1) *Defining Mobilization and Interpreting "Early"*, where mobilization included "any movement", though the concept of "early" was often unclear; (2) *Movement Supports Recovery and Health through Progression*, where mobilization was linked to physical health, emotional well-being, and visible signs of progress; (3) *Emotions and Impressions around Early Mobilization Conceptualization,* emotions ranging from feeling prepared and reassured to feeling nervous about whether early mobilization was too soon or unsafe; (4) *Experiencing Caregiving – Roles and Emotions in Early Mobilization*, which described the balance between helping and fostering independence in their loved ones, while caregivers managed feelings of worry and confidence; and (5) *Staff Partnerships Shape Caregiver Engagement*, which highlights the caregivers deference on hospital staff guidance and reassurance to engage in early mobilization. **Conclusion:** Early mobilization is best understood as a flexible, relational process shaped by caregiver priorities rather than a standardized, time-based intervention. Behavioral mapping showed that mobilization was dominated by low-intensity activities, primarily chair sitting and eating or drinking, with caregivers present for nearly half of these events but most often they are providing passive support. Many caregivers did not know what early mobilization meant but recognized that any movement signaled recovery and independence. Their engagement was often limited by uncertainty and lack of guidance. Strengthening education and collaboration between caregivers and healthcare staff can bridge the gap between clinical goals and lived recovery, supporting caregivers as confident, active partners in recovery.

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Chapter I: Background

Early Mobilization: Cardiac Surgery ICU

In 2023-2024, cardiovascular disease remained one of the leading causes of hospitalization in Canada. To contextualize the setting of this study, institutional information from St. Boniface Hospital is provided. St. Boniface Hospital has completed 2,064 cardiac surgeries, with the number of procedures performed each year remaining relatively consistent (St. Boniface Hospital Cardiac Surgery Access Office, 2025). With this ongoing demand for cardiac care, one approach gaining increasing attention is early mobilization, a key component of postoperative cardiac care. It is widely integrated into major ICU care frameworks, including the ICU Liberation Bundle and Enhanced Recovery After Surgery (ERAS) Guidelines that both recommend early mobilization as a standard part of care (*ICU Liberation Bundle (A-F) | SCCM*, n.d.; Obafemi et al., 2023).

Early mobilization in the cardiac surgery (CS) intensive care unit (ICU) refers to initiating purposeful movement shortly after surgery, typically beginning on the day of the procedure or the first postoperative day (Borges et al., 2022; Phillips, et al., 2025a; Phillips, et al., 2025b). Evidence shows that early mobilization can support physical recovery after CS and is generally considered safe within the ICU setting (Doiron et al., 2018; Santos et al., 2017). It has been linked to a range of positive outcomes, including reduced ICU-acquired weakness, shorter hospital stays, and better functional recovery overall (Cameron et al., 2015; Doiron et al., 2018). These benefits are particularly significant for older adults (65+ years), who face an increased risk of postoperative functional decline (Arora et al., 2018; Scandroglio et al., 2015). Despite the

existence of the ICU Liberation Bundle and ERAS guidelines and strong evidence supporting the benefits of early mobilization, the integration of early mobilization into routine clinical practice continues to be uneven and inconsistently applied across ICU settings (Jacob et al., 2021; Phillips, et al., 2025b).

In a scoping review, Phillips et al. (2025b) examined how early mobilization has evolved within CS settings to better understand the extent, scope, and characteristics in the existing literature. The authors highlight variability in how early mobilization is defined, delivered, timed following CS, and more (Phillips et al., 2025b). Their review synthesized findings from 109 studies, including randomized controlled trials, pilot projects, quality improvement initiatives, and grey literature, to provide a comprehensive picture of how early mobilization is currently understood and practiced (Phillips et al., 2025b). They found that definitions of early mobilization varied widely, and its implementation ranges from initiation on the day of surgery to up to seven days post-surgery (Phillips et al., 2025b).

Common identified early mobilization activities include active range of motion, sitting at the edge of the bed, transferring to a chair, ambulation (walking), and cycling (Phillips et al., 2025a; Phillips et al., 2025b). Some studies have introduced technology-supported options like virtual reality or interactive games as early mobilization activities; however, functional tasks and activities of daily living (ADL) were included far less often, appearing in only 3 of 109 studies (Phillips et al., 2025b). Together, these variations in activity type and timing reflect the broader inconsistency in how early mobilization is defined and implemented across CS settings (Phillips et al., 2025b).

Phillips et al. (2025b) describe early mobilization as any active movement initiated as soon as feasible after CS rather than offering a fixed definition. They note that no single, uniform

approach fits CS ICU practice, positioning early mobilization as an adaptable, context-responsive practice rather than a tightly time-bound protocol (Phillips et al., 2025b). This flexibility suggests that early mobilization can be tailored to align with the unique resources, staffing, and patient populations of individual CS ICUs while still serving as a practical and effective element of postoperative care (Phillips et al., 2025a; Phillips et al., 2025b).

Caregiver Engagement in Early Mobilization

In this thesis, caregivers are defined broadly to include not only family members, but also close friends or other trusted individuals identified by the patient (St. Boniface Hospital, 2024). The term *caregiver* will be used throughout; however, when referencing studies that use the term *family*, that original terminology will be retained to reflect the original authors' wording.

Engaging caregivers in early mobilization during and after recovery from critical illness may serve as a valuable approach to improving outcomes for both patients and themselves (Phillips et al., 2025b). To my knowledge, no research has specifically examined caregiver engagement in early mobilization within the CS ICU setting. Among the studies that more broadly address caregiver engagement in early mobilization within the ICU, many emphasize that a team-based approach is an effective strategy for promoting early mobilization (Cussen et al., 2024; Mukpradab et al., 2022). A team-based approach is particularly well-suited to early mobilization in the CS ICU, where recovery is complex and depends on coordinated support from multiple contributors, including hospital staff or clinicians (healthcare team), the patients, and their caregivers. When responsibility is shared across the care team, early mobilization becomes an integrated component of routine practice rather than an additional task competing with other clinical duties (Cussen et al., 2024; Mukpradab et al., 2022). Effective communication

further ensures alignment on goals and fosters confidence among both staff, patients, and caregivers, potentially enhancing safety and promoting consistent, patient-centered care (Cussen et al., 2024; Mukpradab et al., 2022). This approach also reflects family-centered care by engaging caregivers as active partners who support recovery and continuity beyond the ICU. Overall, early mobilization is most successful when grounded in collective teamwork that unites clinical skill, communication, and caregiver involvement; however, the current definition of the team remains largely limited to the healthcare team, with caregivers viewed as peripheral participants rather than active collaborators, leaving their potential contributions underrecognized (Cussen et al., 2024).

Generally, caregiver involvement in ICU or critical care settings has been widely recognized as a meaningful and beneficial practice, often improving experiences and outcomes for patients, caregivers, and healthcare teams alike (Olding et al., 2016; Xyrichis et al., 2021). However, the ways in which this role is facilitated, its nature, depth, and extent, remain poorly described and understood. In a scoping review of 124 studies on patient and family involvement in adult critical care or ICU settings, Olding et al. (2016) identified five primary ways families are involved in critical care. These include: (1) family presence, referring to situations where family members remain at the patient's bedside or observe aspects of care, (n = 40); (2) receiving care and having needs met, referring to the identification and satisfaction of family needs (n = 33); (3) communication and receiving information, where studies examined how family members perceive and use informational support from healthcare providers (n = 17); (4) decision-making, focusing on how families participate in care-related decisions (n = 17); and (5) contribution to care, the least explored component, describing the direct actions families take to support patient care (Olding et al., 2016).

The term *involvement* may not fully capture the role of caregivers when they are envisioned as partners of the care team. In the same context, caregiver involvement has primarily focused on 'collaborative' communication practices, such as sharing information, contributing to decision-making, and families participating in ward rounds to increase understanding and continuity of care (Burns et al., 2018; Xyrichis et al., 2021). However, much of the literature describes caregivers as passive participants in care, positioned primarily as sources of information for the healthcare team and researchers instead of being seen as care partners in the care process (Burns et al., 2018; Olding et al., 2016). To move beyond this limited conceptualization, this thesis adopts the term *engagement* to describe a more reciprocal and partnered dynamic between caregivers and healthcare providers. Engagement embodies the idea of doing with" rather than doing for, a collaborative process through which patients, caregivers, and the healthcare team work together to shape care, share understanding, and influence decision-making to improve health system delivery (Burns et al., 2018). To be consistent with the approach taken for using the terms caregiver or family, the words *involvemen*t, *engagement*, and *support* will be applied as they appear in the original studies to preserve the original authors' intended meanings.

Research on caregiver involvement in early mobilization within the ICU is limited but growing (Cussen et al., 2024). However, research specifically addressing caregiver engagement in early mobilization within the CS ICU remains even more limited. While a few studies have included caregiver support or engagement in early mobilization protocols within the CS ICU, this had not been the primary focus. Phillips et al. (2025b) identified only 8 out of 109 studies that included family support or engagement within their protocols. Within these studies, the described engagement of families was brief, offering limited detail or justification for including

families and little discussion of the outcomes linked to their engagement or support. Table 1 presents six of the eight studies identified (excluding two published before 1999 because they are deemed outdated for the purpose of this thesis) and summarizes their key characteristics related to caregiver support or engagement.

Table 1. Summary of Studies Examining Caregiver Engagement in Early Mobilization Following CS from Phillips et al. (2025b).

Authors	Study Design	Setting/ Sample	Early Mobilization Mode	Mode of Family Engagement	Discussion of Caregiver Engagement
(Cook et al., 2024)	Quality improvement project	CS unit; patients undergoing isolated coronary artery bypass graft surgery (n = 237; 103 preintervention, 134 postintervention)	Nurse-driven early mobility protocol: transfer from bed to chair on postoperative day 0 (score of 4 on Johns Hopkins Highest Level of Mobility Scale)	Families assisted with ambulation once patients reached later recovery stages; initial mobilization led by nursing and physiotherapy staff	No further discussion.
(Cui et al., 2020)	Single-center, randomized controlled clinical trial	Elderly patients (>60 years) after off-pump coronary artery bypass graft (OPCABG) surgery; n = 178 (89 per group)	Precision Early Ambulation program guided by age-predicted maximal heart rate and VO_2max; compared with routine ambulation	Family members assisted patients with ambulation, supporting them to stand for five minutes and walk at least 30 m alongside rehabilitation staff.	No further discussion.
(Jacob et al., 2021)	Quality improvement project using model for improvement	Cardiothoracic ICU; postoperative cardiac surgery patients	Multidisciplinary early mobility program introduced to initiate out-of-	Families were engaged through a preoperative educational	Authors highlight education of patients and families as key

	and rapid cycle testing		bed activity soon after surgery; replaced bed-only exercises	handbook explaining the importance of mobility; provided as part of routine patient–family education	to sustaining early mobility culture.
(Obafemi et al., 2023)	Single-center, retrospective analysis using propensity-score matching	Patients undergoing CABG/valve and open aortic surgery before and after ERAS protocol implementation	Early mobilization included as part of the ERAS protocol for perioperative recovery	Provided patient and family education on surgery, deep breathing exercises, and incentive spirometer use on post-op day 0. Family engaged in ambulation and stair mobility goals.	No further discussion.
(Wang et al., 2024)	Cross-sectional, multi-center survey study	227 ICU nurses across eight hospitals in Beijing, China	Assessed the perceptions, actual practices and intentions of ICU nurses regarding the implementation of early mobilization.	5.1% of respondents indicated that family members participated in early mobilization activities. 26% reported EM efforts being rejected by patients or their families, categorizing families as occasional barriers rather than contributors. 30% reported patient or family	The survey tables in Wang et al. (2024) are not clearly explained or defined, which limits interpretability. No further caregiver discussion.

				withdrawal from EM, categorized as an adverse event.	
(Zhou et al., 2023)	Single-center prospective, randomized, open, controlled trial (1:1 ratio)	800 adults undergoing elective valve surgery	Short-term perioperative rehabilitation including education, inspiratory muscle training, active cycle of breathing techniques, and early mobilization	On the day of randomization, patients and their families will be scheduled an education session of approximately 30 min with a registered nurse	Suggested engagement of families through education only.

The studies in Table 1 focus on caregiver engagement in early mobilization within the CS ICU within their research questions. Therefore, this project draws on broader critical care literature on caregiver involvement, engagement, or support in early mobilization, such as Cussen et al. (2024), who conducted an umbrella review on early mobilization and family involvement in the ICU. Their search strategy incorporated related early mobilization terms such as *exercise*, *physical activity*, and *early ambulation*. In their discussion, early mobilization was described as encompassing a range of activities, including turning, repositioning, range of motion exercises, walking, and transfers (Cussen et al., 2024).

Cussen et al. (2024) also examined how often family involvement appear in randomized controlled trials (RCTs) of early mobility interventions for critically ill patients. Their review was structured around two key questions:

1. What early mobility interventions are implemented for critically ill patients?
2. How is family involvement in these interventions documented in the literature?

Of the 33 systematic reviews analyzed by Cussen et al. (2024), which together included 37 RCTs, only two incorporated any form of family involvement (Chen et al., 2011; Chiang et al., 2006). In Chen et al. (2011), families were trained to help patients perform targeted physical therapy exercises, including breathing regulation, muscle strengthening, assisted transfers, and basic functional movements such as sitting, standing, and walking. Likewise, Chiang et al. (2006) taught family members diaphragmatic breathing exercises to support patient recovery as part of a home-based program. Cussen et al. (2024) emphasized an ongoing issue in this area: family involvement in critical care settings often remains passive, aligning with the findings of Olding et al. (2016). Caregivers may be present or offer emotional support; however, they are seldom invited by the healthcare team engaging role in early mobilization efforts. While few studies have involved or engaged caregivers in early mobilization (Chen et al., 2011; Chiang et al., 2006), even fewer have explored how the caregivers themselves understand early mobilization or their role within it, leaving little evidence to guide engagement strategies that reflect both patient and caregiver needs. Early mobilization is, by its nature, a team effort that traditionally relies on coordination among nurses, physiotherapists, physicians, and patients (Burns et al., 2018; Xyrichis et al., 2021). From a patient- and family-centered care perspective, caregivers should be viewed as essential partners whose engagement can strengthen communication, ensure continuity, and support post-surgery recovery. Caregivers also often take on much of the responsibility for helping patients regain function after discharge, making it even more pertinent to understand how they experience and make sense of early mobilization, both in the ICU and once patients return home.

Najjar et al. (2021) examined patient and family perspectives on early mobilization in acute cardiac care. Responses from 78 patients and 23 family members captured their attitudes,

knowledge, experiences, and perceived barriers. The survey items were scored on a 0–100 barrier scale, with higher scores indicating greater perceived obstacles. Most family members (82.6%) were willing to learn how to assist with mobilization, yet only 17.4% reported receiving guidance from staff. Family knowledge deficits emerged as the highest barrier (mean = 52.0), followed by concerns about the quality of mobilization care (49.5). A low family-role score (18.1) indicated that involvement was limited or unclear. Most family members (91.3%) believed early mobilization should be routine, although 26.1% had concerns about safety. Nearly half of patients (44.9%) reported receiving assistance from family during mobilization. Families showed high interest and positive attitudes toward being involved in mobilization but low actual involvement and minimal training from the healthcare team. Najjar et al. (2021) concluded there is a need to understand contemporary patient and family-member perspectives and attitudes toward early mobilization in acute cardiac care.

Existing research demonstrates that while caregiver involvement or engagement in early mobilization is conceptually supported, it remains inconsistently applied and often poorly defined within CS and critical care contexts (Cussen et al., 2024; Phillips, et al., 2025b). Caregivers are frequently present and willing to contribute but are rarely equipped or supported to take an active role in early mobilization (Najjar et al., 2021; Olding et al., 2016). Studies such as Najjar et al. (2021) highlight both the interest and the barriers caregivers face, showing that many want to engage but lack the knowledge, training, and inclusion needed to do so safely. Although some studies have involved or engaged caregivers in early mobilization, (Chen et al., 2011; Chiang et al., 2006; Cussen et al., 2024; Phillips et al., 2025b), few have explored how caregivers themselves understand early mobilization or view their role within it, leaving little evidence to guide engagement strategies that reflect both patient and caregiver needs. Caregivers

should be recognized as key partners in early mobilization efforts, both in the ICU and after discharge. Their engagement can shape patient recovery, support continuity of care, and inform how mobilization efforts are designed and implemented.

Statement of the Problem

Although caregiver engagement in early mobilization holds promise, the role caregivers play in supporting these activities remains poorly understood, particularly in the CS ICU (Cussen et al., 2024; Phillips et al., 2025b; van Delft et al., 2021). Limited attention has been given to how caregivers understand and conceptualize early mobilization, constraining the development of collaborative, team-based approaches that reflect caregivers' needs and priorities. **The purpose** of this mixed-methods study was to explore how caregivers understood, experienced, and engaged in early mobilization in the CS ICU, including how they conceptualized early mobilization, and to identify the ways caregivers supported these activities.

Objectives

This thesis draws on two complementary methods-behavioral mapping and semi-structured interviews-to address the following objectives:

1. To describe how caregivers engage in early mobilization within the CS ICU using behavioral mapping (direct observation).
2. To explore caregivers' understanding, perspectives, and experiences of early mobilization through semi-structured interviews, including how they perceive their role in supporting patient mobilization.

3. To integrate observational and interview findings to develop a comprehensive understanding of caregiver engagement in early mobilization within the CS ICU.

Chapter II: Methods

Mixed Methods Research

Mixed methods research combines quantitative and qualitative approaches within a single study to capture different dimensions of a phenomenon (Shorten & Smith, 2017). Using this design, researchers can make the most of both methods, offering multiple perspectives and helping to unpack complex relationships that may be overlooked by either approach alone (Shorten & Smith, 2017). Central to mixed methods is the intentional embedding of data, merging information across multiple stages of the research to generate a richer and more multidimensional understanding (Shorten & Smith, 2017). However, this approach also introduces complexity, requiring additional time, personnel, and expertise, as well as careful navigation of differing paradigms in sampling, data collection, analysis, and interpretation (Shorten & Smith, 2017). Originally, this study focused on behavioral mapping to observe caregiver engagement, but as the project developed, and building on what I learned from EVE's behavioral mapping findings (Phillips et al., 2025a) I became interested in understanding why caregivers engage as much as they did in early mobilization.

Context of Behavioral Mapping

Behavioral mapping originated in the mid-20th century out of environmental psychology and urban planning as a way to systematically study how people interact with their surroundings (Lipson-Smith & McLaughlan, 2022). The approach was developed to record real-time interactions between individuals and their physical and social surroundings, providing a contextual understanding of human behavior within specific environments (Bahillo et al., 2015). Over time, its use has expanded into fields like architecture and design, nursing and clinical sciences, environmental psychology, and ethnography (Lipson-Smith & McLaughlan, 2022). In

healthcare research specifically, behavior and spatial observation methods are frequently used to examine how physical settings influence behavior, particularly in terms of movement, activity, and interpersonal interaction (Lipson-Smith & McLaughlan, 2022). This dual focus, on both environment and behavior, allows researchers to explore the reciprocal relationship between design and human action, by informing evidence-based improvements in health environments (Lipson-Smith & McLaughlan, 2022).

A systematic review by Lipson-Smith and McLaughlan (2022) examined how behavioral mapping and related observation methods are used in healthcare design research. Their review analyzed 67 studies across a range of settings, such as acute, surgical, and palliative care, however, none were conducted in an ICU setting (Lipson-Smith & McLaughlan, 2022). In total, the authors identified 79 different observational techniques, revealing substantial variation in terminology, data collection, timing, and participant selection (Lipson-Smith & McLaughlan, 2022). To address these inconsistencies and improve methodological clarity, they proposed a classification system distinguishing between two main observation types: (1) participant observation (n = 37), where researchers follow pre-identified individuals who have typically consented to being observed, and (2) non-participant observation (n = 34), where individuals in a space are observed without their knowledge or consent (Lipson-Smith & McLaughlan, 2022). They also outlined two sub-classifications that describe how observations are conducted: (1) snapshot observation, which captures behavior at specific moments through brief, structured recordings that quantify frequency or duration; and (2) continuous observation, which involves sustained monitoring (e.g., video recording) to document behaviors as they unfold and is typically used in qualitative research (Lipson-Smith & McLaughlan, 2022). Based on these dimensions, four observation categories were identified: (1) participant continuous, (2)

participant snapshot, (3) non-participant continuous, and (4) non-participant snapshot (Lipson-Smith & McLaughlan, 2022).

The scoping review also explored how these studies reflected on their methodological strengths and limitations, uncovering persistent gaps in transparency, reliability, and reporting practices (Lipson-Smith & McLaughlan, 2022). One recurring issue was limited generalizability, often stemming from small sample sizes, single-site designs, and short observation periods (Lipson-Smith & McLaughlan, 2022). Additionally, many studies failed to include detailed environmental descriptions, making it difficult to interpret behavioral patterns in relation to spatial factors without layering in qualitative data (Lipson-Smith & McLaughlan, 2022). A lack of reporting around observer training, piloting procedures, and reliability checks further complicated efforts to assess data accuracy and reproducibility (Lipson-Smith & McLaughlan, 2022). While studies that utilized triangulation, combining observational data with other methods, showed stronger interpretive depth and broader relevance across contexts (Lipson-Smith & McLaughlan, 2022). Those grounded in theoretical frameworks were also better equipped to make sense of the complex interactions between space and behavior (Lipson-Smith & McLaughlan, 2022). Importantly, the review highlighted that using structured data collection tools added a level of rigor often missing in studies that relied solely on unstructured observation (Lipson-Smith & McLaughlan, 2022).

Informed by Lipson-Smith & McLaughlan's (2022) recommendations, I provide additional detail on their suggestions to help readers understand and assess the rigor and reliability of this thesis. This thesis includes a behavioral mapping or observational component that directly observes and characterizes how caregivers engage in early mobilization in the CS ICU at St. Boniface Hospital. The behavioral mapping approach I used is classified as non-

participant snapshot observation (Lipson-Smith & McLaughlan, 2022). The protocol of this behavioral mapping is described in greater detail below (Protocol A: A Cross-Sectional Behavioral Mapping/ Observations).

This study integrates behavioral mapping and semi-structured interviews with 20 caregivers that were intentionally designed to complement one another and address the research questions from another angle, providing a more layered understanding of caregiver engagement (e.g., utilizing a mixed methods component) as suggested by Lipson-Smith & McLaughlan, (2022). The observational variables were drawn from expected forms of caregiver engagement and centered on ICU-based mobilization activities, such as ambulation, sitting in a chair, assisting with transfers, and select ADLs, including personal hygiene tasks (e.g., brushing teeth, brushing hair, and sponge bathing), which are rarely examined in early mobilization research (Phillips, et al., 2025a; Phillips et al., 2025b). The approach also allows for capturing naturally occurring and unanticipated forms of engagement that may arise during observation, supporting the documentation of both predefined and emerging patterns of caregiver engagement.

Because visiting hours in the St. Boniface Hospital CS ICU are unrestricted, accessibility to the target population was not expected to be an issue. I scheduled observation periods during times when caregiver engagement in mobilization was most frequent, increasing the likelihood of capturing caregiver engagement (Phillips et al., 2025a). While participant-type observation, as described by Lipson-Smith and McLaughlan (2022) may enable a more holistic understanding of behavior, a non-participant approach was better suited for this study. The CS ICU is a sensitive, high-acuity environment and maintaining distance allowed caregiver, hospital staff, and patient behaviors to unfold naturally while respecting the clinical context and supporting the study's aim to capture authentic engagement. I remained covert as an observer and moved between several

observation points within the unit rather than following a single caregiver, as would occur in participant observation. To structure data collection, I used snapshot observation, recording behaviors at fixed intervals (e.g., every 1, 10, or 15 minutes) and documented with a structured data collection form. This approach offered systematic coverage without being intrusive or overly demanding and allowed me to capture a broader range of caregiver engagement rather than focusing on one individual or moment.

A structured observation protocol with consistent intervals will promote reliability (Lipson-Smith & McLaughlan, 2022). Prior studies vary widely in how they implement behavioral observation: snapshot intervals range from 1, 10, or 15 minutes, and some record activity in intervals of 30, 15, or even 5-10 seconds (Ariza-Vega et al., 2019; Blennerhassett et al., 2018; Eriksson et al., 2010; Phillips, et al., 2025a; Valkenet et al., 2024). Observation durations vary from just a few minutes to two hours and study periods may span anywhere from a few days to six months, depending on the scope and goals (Ariza-Vega et al., 2019; Blennerhassett et al., 2018; Eriksson et al., 2010; Phillips et al., 2025a; Valkenet et al., 2024).

My approach builds on this prior work but is most directly informed by Phillips et al's (2025a) behavioral mapping approach. Due to the variability in existing designs, developing a consistent observation protocol for this study was challenging. Phillips et al. (2025a) was the only study I found that applied behavioral mapping to early mobilization in the CS ICU, and it served as the foundation for adapting and refining my own methodological approach.

Currently, there is very limited understanding of caregiver engagement in early mobilization within the CS ICU and no published studies have applied direct observational methods, such as behavioral mapping, to explore this area. Our research group is addressing the broader gap in early mobilization through the Early Mobility to ImproVE Health Outcomes

Following Cardiac Surgery (EVE) Clinical Trial, which aims to develop evidence-based, patient-centered protocols for post-CS care (Phillips et al., 2025a; Phillips et al., 2025b). Building on this work, my study turns attention to caregiver engagement, adapting elements of the EVE Clinical Trial's behavioral mapping (Phillips et al., 2025a) to guide this study's design.

EVE Clinical Trial Behavioral Mapping

The EVE Clinical Trial is a multifaceted project, and one component involved conducting behavioral mapping in the CS ICU at St. Boniface Hospital to understand the current state of early mobilization and describe patterns of patient mobility (Phillips et al., 2025a). Observations took place over four days, two non-consecutive weekdays and two weekend days, with each 16-hour observation period focused on tracking the behaviors of patients and staff (Phillips et al., 2025a). The authors described early mobilization as any purposeful physical activity performed soon after CS while the patient remains in the ICU, such as sitting, standing, moving from bed to chair, ambulating, cycling, or engaging in other active movements (Borges et al., 2022; Phillips, et al., 2025a). The study documented the type of activity (e.g., bed exercises, ambulation), location (e.g., bed, room, hallway), and personnel involved (e.g., nurses, healthcare aides, physiotherapists, or family members). Observations were conducted every 15 minutes for 15 seconds across nine designated points, following a predetermined path and avoiding rooms with closed curtains to respect privacy (Phillips et al., 2025a). The results showed that sitting in a chair was the most common early mobilization activity, accounting for 430 of 487 observations, while ambulation and sitting at the bedside were observed far less frequently, with only 18 and 17 instances, respectively (Phillips, et al., 2025a). Most mobilizations occurred within the patient's ICU room, with family members serving as the

primary supporters in 178 observations, considerably more than nurses (Phillip et al., 2025a). The highest frequency of caregiver support occurred between 10:31 a.m. and 2:30 p.m. (82 instances), followed by 2:31 p.m. to 6:30 p.m. (48 instances) (Phillips et al., 2025a).

Relevance of a Qualitative Component

At its core, this thesis sought to build a baseline and improve our understanding of how caregivers engage in early mobilization, laying the groundwork for future research that promotes more collaborative, team-centered care. To do that effectively, I needed to examine how caregivers viewed early mobilization: why it mattered to them, what benefits they recognized, and how they understood and described their role in the process. Adding a qualitative component felt like a natural next step. By capturing the stories behind the behaviors recorded in the quantitative data, I aimed to connect the "what" with the "why" bridging that crucial gap in understanding.

Positionality as a Researcher

As a qualitative researcher, I believe it is important to be transparent about my own standpoint to foster trust and authenticity in the research process. I identify as a young, healthy, active, and educated woman. My perspective is shaped by both my background and personal experiences. While I have not experienced heart disease myself, nor had close family members undergo heart surgery or other major medical procedures, I have witnessed my father's experience with cancer and the challenges that came with his time in hospital. Through that experience, I came to understand just how emotional and demanding the caregiving role can be, both physically and emotionally. Though I cannot personally relate to heart complications or CS,

I have supported a heart disease prevention program for women, which deepened my understanding of cardiovascular health from a community perspective. I also gained firsthand exposure to clinical care through shadowing in the St. Boniface Hospital CS ICU, where I developed a clearer sense of the unit's rhythms and daily activities. Supporting clinician focus groups for the EVE Clinical Trial further broadened my awareness of the challenges faced by clinicians, patients, and caregivers, particularly from the perspective of the clinicians. These experiences have shaped how I approach this research and strengthened my commitment to understanding the lived experiences of caregivers.

Philosophical Approach

For this thesis, I applied interpretive description, a qualitative methodology often utilized in healthcare and social sciences to explore patterns and meanings within human experience and generate practical, context-based insights (Thorne, 2016). This approach emphasizes reflexivity, by acknowledging, rather than blinding how my own background, assumptions, and perspective influence both the research process and its interpretations. My choice of interpretive description reflects the integration of a constructivist epistemology and a pragmatic orientation, which together align with the nature of this work.

Constructivism recognizes that reality is shaped by individual experiences and contexts; in this study, each caregiver's understanding and engagement in early mobilization is influenced by their pre-existing knowledge, interactions with patients and healthcare staff, and the surrounding hospital environment (Dennick, 2016). Pragmatism complements this by focusing on what is useful and effective in practice, prioritizing solutions that improve real-world outcomes (Allemang et al., 2022; Dolan et al., 2022). Rather than seeking a single, universal

"truth," pragmatism values diverse perspectives and emphasizes the practical application of findings to enhance care experiences. This orientation is especially fitting for patient- and family-centered research, as it allows methodological flexibility while maintaining a focus on actionable, meaningful improvements. Together, these paradigms guide my research toward understanding caregiver engagement not only as an experience to be interpreted but also as a foundation for change in practice.

Protocol A: Cross-Sectional Behavioral Mapping/ Observations

Protocol A was a cross-sectional observational study that utilized behavioral mapping to systematically record and analyze caregivers' engagement of early mobilization at St. Boniface Hospital CS ICU. Before this study began, the protocol was reviewed and approved by both the University of Manitoba Research Ethics Board (REB) (HE2024-0332) and the St. Boniface Hospital Research Review Committee (RRC) (RRC/2024/2193).

Observations were conducted over five non-consecutive days, including three weekdays (Tuesday, Wednesday, and Thursday) and two weekend days (Saturday and Sunday) between 10:00 a.m. and 8:00 p.m. (1000–2000) over five weeks. These periods aligned with the times of highest caregiver presence identified by Phillips et al.(2025a). Between 2021 and 2023, the median length of stay in the St. Boniface Hospital CS ICU was 1.87 days (IQR 0.93–3.82), with an average of nine admissions per day (WHRA Critical Care Program, 2021–2023). These statistics informed the five-day interval between observation sessions to allow for the observation if a new pool of caregivers each week. Across the full observation period, I would estimate that I engaged with approximately 65 to 78 different caregivers, assuming each patient had one caregiver present.

In Phillips et al's (2025a) protocol, they observed up to 15 rooms every 15 minutes for 15 seconds during 16-hour sessions across four non-consecutive days. Within my study, I conducted slightly shorter daily sessions (10 hours) but extended observations over a five-day period. My protocol also increased observation duration to 30 seconds per room every 15 minutes, doubling the time per observation to capture a broader range of variables related to caregiver engagement that shorter intervals might miss. Reporting for this study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (Appendix A) (von Elm et al., 2007).

Setting

St. Boniface Hospital in Winnipeg, Manitoba, is the province's primary cardiac care center. As part of Cardiac Sciences Manitoba established in 2004, the unit specializes in comprehensive post-operative management for patients undergoing a range of cardiac surgeries, including coronary artery bypass grafting (CABG), valve replacements, and related procedures (St. Boniface Hospital, 2024). The hospital serves a population of approximately 1.6 million people and houses a 15-bed cardiac surgery intensive care unit CS ICU with 13 beds currently funded, meaning the unit has space for 15 beds, but staffing and operational funding support only 13 at any given time (Phillips et al., 2025a). On average, the unit performs about 21 cardiac surgeries each week, spanning routine to complex cases (Phillips et al., 2025a). The CS ICU team includes fourteen nurses, three healthcare aides, one physiotherapist, and two physiotherapy assistants all collaborating to support patient mobilization and recovery (Phillips, et al., 2025a).

The unit layout features 15 single-patient rooms arranged around a looping hallway. Each patient room has large glass windows facing the hallway, which can be covered with curtains to

provide privacy when needed (Phillips, et al., 2025a). To support patient mobilization, the CS ICU follows a standard order set for coronary artery bypass graft and valve replacement patients that includes a pre-scheduled physiotherapy consultation and adherence to an early mobilization protocol. This protocol outlines a structured, post-operative progression beginning on post-operative day 0 with breathing exercises, positioning, and early sitting, and advancing through assisted transfers, range-of-motion exercises, and walking. By post-operative days 3–4, patients are encouraged to ambulate independently and climb stairs when appropriate, with sternal precautions emphasized throughout the hospital stay (Phillips et al., 2025a).

The unit is well-equipped with mobility aids such as four-wheeled walkers, wheelchairs, portable oxygen tanks, reclining chairs, and bed cycle ergometers, for passive cycling (Phillips et al., 2025a). ICU visitation is flexible and generally limited to close friends and family rather than being bound by set hours (St. Boniface Hospital, 2024). The unit is accommodating to visitors and, when desired, permits overnight stays in the patient's room (St. Boniface Hospital, 2024).

Participants and Procedures

I was the sole observer in this study. Each observation period followed a consistent protocol in which all 15 ICU beds were observed in rotation for 30 seconds each, following a standardized traversal map (Appendix D) informed by the layout of the CS ICU and adapted from Phillips et al. (2025a). The route looped in a full circle around the unit and included nine designated observation stops (Phillips et al., 2025a). Since only 13 beds are typically in use (based on funded capacity), rooms that were unoccupied, had curtains drawn, or where no mobilization was occurring during a given 15-minute interval were skipped.

In accordance with St. Boniface Hospital RRC requirements, posters were developed as an approved alternative to obtaining caregiver and patient consent. Two posters, a Notice of Study (Appendix J) and a Debriefing Poster (Appendix K), were created to inform patients and caregivers about the study and provide an opportunity to withdraw if desired. The Notice of Study did not disclose the full purpose of the research but included the observer's contact information for questions or withdrawal requests. The Debriefing Poster provided additional detail, summarized the study's purpose, and offered a general overview of the day's findings. The Notice of Study poster was posted at the CS ICU entrance and exit from 9:00am to 8:00pm and distributed to each patient room by the nurses. The Debriefing Poster was given to each patient and remained visible on the entrance and exit doors of the unit for at least 12 hours. Both posters informed participants that they could request to withdraw from Protocol A activities by emailing or calling either myself or the research coordinator at St. Boniface Hospital. If a withdrawal was requested, the room number was recorded on an Opt-Out Master List (Appendix L) to ensure that the room was no longer observed. Room numbers were documented only for opt-outs and the list always remained with me. Any room included on the list was excluded from observation for the remainder of the day.

Data Description

Data collection focused on several variables related to caregiver engagement during early mobilization. First, I identified whether patient mobilization was occurring and identified the mode of mobilization observed, recorded in short answer form. I then noted whether caregivers were present (yes or no) and, if so, the type of support they provided, categorized as active or passive. Passive support involved being present or offering general help without directly

engaging in early mobilization, while active support involved directly assisting with mobilization activities. I also documented whether healthcare staff were present with caregivers during these interactions (yes or no) and, when staff were present, the type of engagement caregivers demonstrated, again classified as active or passive. The observation data collection tool was designed as a decision tree, reflecting the natural sequence I followed when watching a mobilization unfold (Appendix C). For each observation day, caregiver activity was summarized by one-hour time blocks (1000-1059, 1100-1259, etc.) and short descriptive notes were added to capture the type of patient mobilization observed (e.g., walking, sitting in a chair, brushing teeth). During data analysis, these notes were coded to categorize different mobilization types. This approach proved more practical than attempting to classify behaviors in real time and allowed flexibility for activities that were not anticipated. Definitions for each variable and support type are outlined in Appendix E to support consistency.

After identifying and recording patient mobilization, I moved to the next room if no caregivers were present. In the rare instances where more than one caregiver was present, each caregiver and their respective actions were recorded individually. If a patient was engaged in more than one mobilization activity at the same time (e.g., sitting in a chair while eating), each activity was recorded separately. The data collection sheet was used in hard copy format to avoid potential technical issues such as internet disruptions or device malfunction.

Pilot Testing

I conducted a one-day pilot test focused on refining the observation protocol. The structure of the pilot was informed by earlier visits to the CS ICU, during which I spent about 15 minutes walking through the unit noting what could realistically be observed from the hallway.

All patient rooms had large glass windows, which provided visibility unless the privacy curtains were closed. When curtains were closed, I did not observe the room. I observed hallway activity and what could be seen inside the rooms, such as patients eating, brushing their hair, or sitting in a chair. Activities like tooth brushing or bathroom use were not visible and I accounted for these limitations when defining what counted as observable actions.

At 10:00 a.m. (1000), I tested my original protocol of five continuous observation cycles over two hours, which translated to roughly 22–38 minutes of observation per hour. I quickly realized this approach left large gaps between rounds, excluded observations from the remaining hours, and was inconsistent with other behavioral mapping methods. I then tested 10-minute intervals with 30-second observations per room; however, my presence felt too noticeable, and mobilization events were less frequent than expected. For the remainder of the day, I used 15-minute intervals with 30-second observations per room. This cadence provided a better balance, reducing my visibility while allowing me to capture moments of early mobilization and caregiver engagement effectively.

Data Collection Day

On all day's of observations, I arrived at the St. Boniface Hospital CS ICU at 9:00am (0900) to get organized and prepare my materials. Around 9:30am (0930), I hung the Notice of Study on the entrance to the unit and asked the nurses to deliver copies to each their patient. Observations officially began at 10:00am (1000). The rooms have large clear glass windows at the front, offering visibility into each space, unless privacy curtains were drawn. If curtains were closed, I did not observe the room. I positioned myself in the hallway to maintain a respectful

distance from patients, caregivers, and staff while still being able to clearly view mobilization activities, especially those taking place in the hallways.

I began each observation session at 10:00 a.m. (1000) at Stop #1, recording caregiver engagement at Bed #2 for 30 seconds using my standardized data collection form (Appendix B). I referred to my definition sheet throughout to stay consistent with the predefined observation variables. I moved in a clockwise direction around the unit, ending each cycle at Stop #9, which included Bed #42. This cycle was repeated every 15 minutes, starting again at 10:15 a.m. (1015), and continued until 8:00 p.m. (2000). Although the unit has 15 rooms, only 13 are typically occupied. I skipped any room that was empty, had curtains drawn, or had no mobilization happening at the time of observation. If anyone, patient, caregiver, or staff, asked about my role, I explained that I was observing caregiver engagement in early mobilization to help improve the experience of both patients and caregivers.

Data Analysis

Once all five observation days were complete, I organized the observation data into two-hour time blocks (e.g., 1000–1159, 1200-1459, etc.) for each day, then grouped these by category across all five days. Grouping observations into two-hour intervals allowed me to examine whether certain types of caregiver engagement were more common at specific times of day. The day was divided into early afternoon (1000–1159), afternoon (1200–1359 and 1400–1559), and evening (1600–1759 and 1800–1959) periods. This grouping made it possible to identify which kinds of support occurred most frequently, describe what that support looked like, and explore whether different types of support were associated with early mobilization activities. I used an Excel sheet to sum the totals across all five days. The analysis was kept simple, each

category was recorded numerically and for patient mobilization, I used short written responses to capture what I observed and later coded that. For example, I might record “leg taps” or “moving arms to the side” which I later coded as “active limb movements.”

Protocol B: Semi-Structured Interviews

Protocol B involved semi-structured interviews with caregivers to explore their views on early mobilization and how they described supporting their loved ones during early mobilization in the CS ICU. This qualitative part of the study used interpretive description (Thompson Burdine et al., 2021), a methodology well-suited for health research because it captures the complexities of clinical phenomena. I chose this approach because it goes beyond surface-level description, potentially allowing for interpretation of caregivers’ stories to better understand how they conceptualize early mobilization and their engagement without forcing their experiences into a rigid framework. Interpretive description also gave me the flexibility to build an interview guide that balanced structure with openness (Thorne, 2016). While I had core questions, I also wanted caregivers to guide the conversation. In doing so, things like barriers and facilitators to early mobilization often came up naturally. I also included scenario-based questions to prompt reflection on how caregivers support their loved ones during specific mobilization activities (e.g., eating, transferring, walking). Another strength of this method is that it embraces researcher’s existing knowledge to actively shape and inform the study. My experience with the EVE Clinical Trial, where I co-facilitated focus groups to understand how clinicians conceptualized and implemented early mobilization, helped shape both the interview questions and the analytical approach in this study. Findings from the interviews are reported according to the Standards for Reporting Qualitative Research (SRQR) (O’Brien et al., 2014).

Epistemology and its Relation to Methodology

This study draws on a constructivist epistemology, which posits that knowledge is co-created through individuals' experiences, interactions, and social contexts (Dennick, 2016). From this perspective, there is no single objective reality of caregiver engagement in early mobilization; rather, caregivers' understandings and actions are shaped by their prior knowledge, relationships with patients and healthcare providers, and the norms and routines of the CS ICU environment.

Interpretive description was selected as the methodological approach because it aligns closely with these constructivist assumptions while remaining explicitly oriented toward applied health research (Thorne, 2016). Rather than seeking to generate theory or identify universal truths, interpretive description supports the development of contextualized understandings that are grounded in participants' experiences and directly relevant to practice. This methodology was therefore well suited to exploring how caregivers conceptualized early mobilization, how they understood their role, and how these understandings shaped their engagement within the CS ICU.

A pragmatic orientation further strengthened this alignment by shaping how knowledge generated through interpretive description was approached and interpreted. Pragmatism emphasizes the usefulness of knowledge and its potential to inform action in reality-based contexts (Allemang et al., 2022; Dolan et al., 2022). In this study, pragmatism guided analytic attention toward patterns in caregiver experiences that had practical relevance for clinical care, such as communication processes, role clarity, and opportunities for caregiver engagement Importantly, pragmatism did not direct the study toward intervention development or outcome

evaluation; rather, it supported an interpretive focus on identifying insights that could inform practice while remaining grounded in caregivers' lived experiences.

Context and Ethical Issues

Protocol B was also conducted in the CS ICU at St. Boniface Hospital. Semi-structured interviews were conducted with caregivers who were willing to share their perspectives on early mobilization. Interviews occurred either in the patient's room or in the family room located near the ICU, depending on each caregiver's or patient's preference and comfort level. Ethical approval was obtained from the University of Manitoba's REB (HE2024-0333) and the St. Boniface Hospital's RRC (RRC/2024/2194). Informed consent was obtained from caregivers prior to the interviews. All research staff signed the University of Manitoba's Oath of Confidentiality, the PHIA and St. Boniface Hospital's PHIA for Healthcare, as well as an Agreement to Comply with Standard Operating Procedures.

Participants and Sampling Strategies

In accordance with the conditions of approval from the St. Boniface Hospital RRC, approval from the bedside nurse was required before approaching any patient room. Once permission was obtained, caregivers present in the room were approached using a standardized recruitment script (Appendix H) and invited to participate in an interview. Caregivers may have been individuals I had previously observed during behavioral mapping or individuals I had not observed; this distinction was not tracked to ensure the study remained inclusive of all caregivers at the unit level. Caregivers present in patient rooms were eligible to participate, and no exclusion criteria were applied. Those who expressed interest were provided with an interview

invitation letter outlining the purpose of the study, the interview procedures, the $15 honorarium, and contact information should they have questions or later choose to withdraw.

The recruitment goal was 20 caregivers, achieved through convenience sampling. This target was guided by the concept of information power (Malterud et al., 2016), which emphasizes the relevance and depth of participant insight rather than reaching data "saturation." The concept considers factors such as, what the study seeks to achieve, the characteristics of its participants, the theoretical lens applied, the richness of the discussion, and the approach to analysis (Malterud et al., 2016). In this study, the caregiver participant group was intentionally broad, reflecting an inclusive definition of *caregiver*. This study was not theory-driven, and interviews were moderately detailed, lasting approximately 30 to 60 minutes. Given the comparative rather than case-based nature of the analysis, these factors collectively supported the need for a larger sample size. With 13 funded beds in the CS ICU and the assumption that most patients would have at least one caregiver, I anticipated observing approximately 65–78 caregivers across five days of observations in Protocol A. Recruiting about 30% of these individuals for interviews would approach the target participant group and align with the pillars of information power (Malterud et al., 2016).

Data Collection

Each interview, intended to last 30 to 60 minutes, followed the same semi-structured guide (Appendix G) while allowing flexibility for follow-up or unplanned questions depending on the direction of the conversation (DeJonckheere & Vaughn, 2019). At the beginning of each interview, I collected demographic information (Appendix I), including age, education level, gender identity, relationship to the patient (e.g., spouse, child, sibling), and occupation. All

interviews were audio-recorded and transcribed verbatim by a secure professional transcription service (Transcription Heroes). Additionally, I wrote field notes immediately after each interview and kept a reflexive journal from data collection to data analysis. This allowed me to remain fully focused on the conversation as it unfolded, helping to keep the interaction relaxed for participants while also providing space to record my initial thoughts for data analysis. The field notes captured observations, non-verbal cues, and environmental details that might not have been evident in the audio recordings (Sutton & Austin, 2015). Together, the field notes and reflexive journal added depth to the analytic process and supported interpretation of the interview data within its broader context.

Data Processing

Each interview was audio-recorded and transcribed verbatim using the secure and professional transcription platform Transcription Heroes. Participants were assigned pseudonyms (e.g., CG01, CG02, CG03) and any identifying information (e.g., names of participants, caregivers, or workplaces) was removed from the transcripts. Three transcripts were reviewed by either me or JA (a research assistant and a fellow lab mate/ M.Sc. student in the Duhamel Lab), after which the corresponding audio recordings were deleted. This process was implemented to address potential gaps in the transcripts caused by mumbling, soft voices, or background noise and to ensure the completeness and accuracy of the data. By reviewing the transcript and identifying any missing portions of the conversation, we both used NVivo (version 15.2.1), a qualitative data analysis software, to manage the data and support analysis.

Data Analysis

Two researchers (myself and JA) collaboratively analyzed the interview transcripts using inductive thematic analysis. I decided to involve a second researcher (JA) to bring a broader perspective to the analysis. All data are stored in a secure project folder on Microsoft Teams within the University of Manitoba's computer network. Transcripts and demographic files were kept on a password-protected platform and are scheduled for destruction in August 2031. Audio recordings were stored on an encrypted USB drive and on the same secure platform and were deleted in August 2025.

We took an inductive approach to thematic analysis, meaning that themes were derived directly from the data rather than being guided by predefined categories or theoretical frameworks (Braun & Clarke, 2006, 2022). Braun and Clarke's (2006) six-phase framework is commonly applied across health, education, and the social sciences and emphasizes reflexivity and transparency in analytic decisions to support rigor. Thematic analysis was a fitting approach of this study because it allowed patterns to be derived from the data while remaining attentive to the unit-specific context of the CS ICU at St. Boniface Hospital, where caregiver engagement reflects local routines and practices (Braun & Clarke, 2006, 2022). It aligned well with interpretive description, which prioritizes generating practice-relevant insights rather than abstract theory. As the semi-structured interviews were designed to elicit accounts of caregivers' experiences, thematic analysis provided a systematic way to organize these accounts, trace recurring ideas, and develop themes that remained closely tied to the clinical setting and caregivers' perspectives. This ensured that the findings reflected the experiences of caregivers within this single-site context.

We (AA and JA) followed the six-step process of thematic analysis, recognizing that the method is iterative rather than strictly linear (Braun & Clarke, 2006, 2022). The general steps of thematic analysis include: (a) becoming familiar with the data through multiple readings of the data, (b) generating initial codes that capture relevant content, (c) organizing those codes into broader categories and identifying initial themes, (d) reviewing and polishing themes to affirm they reflect clear patterns grounded in the data, (e) defining and naming the themes based on their core meaning, and finally, (f) writing up the findings in a way that tells a clear and persuasive story (Braun & Clarke, 2006, 2022). Further details on how we applied this six-step process are outlined later in this section.

I learned to conduct inductive thematic analysis while working with Emily Phillips, a PhD candidate with qualitative expertise, on her doctoral project— the EVE clinician perspective focus group study. Under her guidance, I began by reading key literature on thematic analysis (Braun & Clarke, 2006, 2022) and then applied these principles through coding and early theme development from the clinician focus group. We met regularly to review coding decisions and discuss the analytic process. To further support my learning, I connected often with my committee member, Dr. Stephanie Chesser, who has qualitative expertise, to better my understanding of thematic analysis and qualitative research. After gaining this experience, I then oriented JA to the study, interpretive description, the purpose of thematic analysis, and the steps involved in conducting it.

NVivo was used to organize the data and support the analysis. I developed my skills with the software through independent learning, YouTube tutorials, and a 10–14-hour NVivo Skills Course offered by the company. This training improved my familiarity with NVivo's analytic functions and contributed to my certification progress. I shared these materials with JA,

including thematic analysis resources, instructional videos, and a standard operating procedure I created based on the NVivo course content.

The following description outlines the analysis process used by JA and AA: First, we each independently read all interview transcripts to familiarize ourselves with the data in the two weeks before meeting. In our first meeting, we met in person so I could walk JA through the analysis process and to practice coding a transcript. For example, we both analyzed CG05 transcript separately (but in person), which allowed us to get comfortable using NVivo and practice coding and interpretation. This step also gave JA an opportunity to ask questions and build confidence in conducting the analysis independently. Second, we divided transcripts for a second round of analysis. JA was assigned CG06, CG01, and CG03, while I analyzed CG06, CG02, and CG03. This overlap supported triangulation and allowed us to compare interpretations. Third, after about a week and a half of independent coding, we met again to consolidate our work. We created a shared Word document to organize codes alongside participant quotes, which made it easier to identify where our coding aligned or differed. There was strong agreement across both codes and supporting quotes. During this stage, we color-coded similar codes, reviewed each other's notes in detail, and discussed how our individual interpretations converged or diverged before reaching consensus. For the third round of coding, I analyzed transcripts CG08 and CG04, while JA reviewed CG07 and CG04. In the fourth round, I worked on CG10, CG11, and CG12, and JA analyzed CG09, CG11, and CG12. In the final round, I coded CG14-CG16, CG18, and CG20, while JA completed CG13, CG15, CG17, and CG18-CG19. Each round of coding typically spanned two weeks, allowing time for both independent work and collaborative review. Fourth, after coding approximately half of the transcripts (CG01–CG12), we worked together to develop preliminary themes and compiled

them into a written summary which we shared with the committee for feedback. We reviewed their suggestions carefully and took time to reflect on both their insights and our own evolving interpretations before continuing with the remaining analysis. Fifth the feedback informed how we approached the next set of transcripts (CG13–CG20), allowing us to refine our coding, themes, and strengthen our interpretations. Once all transcripts were coded and analyzed, we revised the written summary and shared it with Stephanie and Todd multiple times for feedback. In the final step, I incorporated both inputs and sent the updated version to Todd for final review.

Rigor

Trustworthiness was maintained by drawing on established qualitative guidance (Lincoln & Guba, 1985). To support dependability, detailed field notes and a reflexive journal and documented decisions were kept during the analysis. Confirmability was strengthened by showing how interpretations were grounded in the data. We also maintained coherence by aligning the study design, interpretive description approach, and analytic steps throughout (Thorne, 2016). Credibility was supported through ongoing reflexivity, independent and collaborative coding, and committee review of the developing findings. Reporting follows the Standards for Reporting Qualitative Research (SRQR) guidelines (O'Brien et al., 2014).

Reflexivity

Speaking with caregivers, especially in person, felt like a genuine privilege, and these conversations became one of the most meaningful parts of the study for me. I realized most research interviews now happen virtually, so being able to sit across from caregivers and hear their stories in-person impacted me in so many ways. I am so grateful for the chance to connect

with them and for the trust they placed in sharing their experiences, whether about early mobilization or the broader realities of caring for a loved one during a critical recovery time. Since recruitment and data analysis took place at the same time, I was able to move between listening and reflecting, letting each conversation shape how I approached the next stages of this thesis. Some interviews were very emotional and those moments have stayed with me. They were powerful reminders of the emotional weight that comes with caring for someone after major surgery, the fear of loss, the uncertainty, and the hope for things to get better. Hearing caregivers speak openly about their worries and the changes they wanted to make in their lives made me more aware of how much meaning and vulnerability exists in these experiences. Not every experience was the same, but together they showed why understanding caregivers' perspectives matters, not just to improve systems around them, but to stay connected to the real and complex experiences people live through.

Sequencing of Protocol A & B

Protocol A and Protocol B are distinct but intentionally designed to complement and inform the broader research objectives. Initially, the plan was to conduct observations and interview recruitment concurrently; however, delays in approval from the St. Boniface Hospital RRC resulted in a staggered timeline. Observations were completed throughout April and into May, while interviews took place from late May through the end of June. In hindsight, this sequencing proved beneficial, as running both protocols simultaneously would likely have been overwhelming and might have limited the depth of focus on each phase.

Study Timeline

In November 2024, the thesis research was developed. I then proposed the thesis to my thesis advisory committee, received feedback and completed the committee's suggested revisions. The submission of ethics applications to the University of Manitoba Research Ethics Board and the St. Boniface Hospital Research Review Committee occurred during that period. Ethics approval was received from the University of Manitoba Research Ethics Board in February 2025 and from the St. Boniface Research Review Committee in April 2025. Data collection for Protocol A took place from April to May 2025, followed by recruitment and data collection for Protocol B from May to June 2025. Data analysis for both protocols was conducted between June and August 2025, and the thesis document was completed between September and November 2025. The thesis defense was scheduled for December 2025.

Chapter III: Results and Findings

Protocol A: Cross Sectional Observations/ Behavioral Mapping

Modes of Mobilization Observed

Throughout this section, observational data are reported as either counts or instances, reflecting the frequency with which specific activities were observed. During data collection, no caregivers requested to withdraw from observation, and neither caregivers nor patients inquired about the purpose of the observations. On the few occasions when nurses asked, an explanation was provided.

Across the five observation days, a total of 1,140 observations were recorded, of which 372 involved patient mobilization activities (Table 2). Sitting in a chair was the most frequently observed mobilization activity, occurring 292 times and accounting for 78% of all mobilization events. Actively eating or drinking was the next most common activity (45 counts; 12%), with observations primarily clustered around mealtimes (12:00–13:59). All other mobilization activities occurred infrequently (35 counts; 9%). Active limb movements were observed eight times (2%) and included range-of-motion activities such as foot and ankle movement, hip and knee movement, or unilateral shoulder flexion. Additional activities included sitting on the edge of the bed (8 counts; 2%), repositioning (5 counts; 1%), wheelchair use (4 counts; 1%), transfers (3 counts; <1%), standing (2 counts; <1%), coughing or incentive spirometer use (2 counts; <1%), other activities of daily living (2 counts; <1%), and marching (1 count; <1%). Mobilization activity was lowest during the 14:00–15:59 time block, with only 30 recorded events.

Table 1: Patient mobilization modes across all observation days. Data reported as counts.

		1000-1159	1200-1359	1400-1559	1600-1759	1800-1959	Total
Mobilization Activity	**Sitting in a chair**	63	85	22	48	74	292
	Actively eating drinking	4	21	1	10	9	45
	Active limb movements	6	2	0	0	0	8
	Sitting edge of bed	2	2	2	2	0	8
	Standing	1	0	1	0	0	2
	Marching	0	0	1	0	0	1
	Repositioning	1	2	1	1	0	5
	Transfer	0	2	0	1	0	3
	In a wheelchair	0	2	2	0	0	4
	Coughing/ Incentive Spirometer	0	1	0	0	1	2
	Other ADL's*	0	3	0	0	1	2
	Total for time block	77	118	30	62	85	372

**Hygiene-related tasks (e.g., brushing hair, brushing teeth, etc).*

Caregiver Engagement During Mobilization

Caregivers were present during 173 of 372 mobilization instances (47%; Table 3). Their presence fluctuated across the day, with the highest counts occurring from 1200–1359 and 1800–1959 (45 instances each) and the lowest from 1400–1559 (22 instances). However, caregiver presence did not map neatly onto when mobilization occurred. During the lowest-presence block (1400–1559; 13%), mobilization still occurred regularly and during the higher-presence blocks (1200–1359 at 26% and 1800–1959 at 25%), many mobilizations took place without caregivers. This pattern shows that mobilization occurred throughout the day regardless of caregiver presence and the observations cannot determine whether mobilization timing reflected caregiver availability or clinical routines.

Caregiver engagement varied by mobilization type (Tables 3 and 4) but most frequently consisted of passive engagement (137 counts; 79%), which included observing, standing nearby, offering verbal encouragement, or giving light touch (e.g., holding their loved one's hand while seated in a chair), actions that did not directly support mobilization. Passive engagement was most common during the afternoon (1200–1359) and evening (1800–1959), when caregiver presence was highest.

Among the 292 instances of sitting in a chair, caregivers were present in 132 counts (45%). Within these, 119 counts (91%) reflected passive engagement and 12 counts (9%) demonstrated active engagement. For eating and drinking activities (45 counts), caregivers were present in 21 counts (47%), providing passive engagement in 12 counts (57%) and active engagement in 9 counts (43%), the highest proportion of active engagement observed across all mobilization types. Active engagement included tasks such as opening containers, feeding the

patient, or handing over food and utensils. Walking was documented in 11 counts, with caregiver engagement in 5 counts (45%), all representing active engagement. Caregivers also demonstrated active engagement during wheelchair use (4 counts; 100%). Repositioning occurred in 5 counts, with caregiver engagement in 3 counts (60%), including 2 active and 1 passive. Sitting on the edge of the bed occurred in 8 counts, with caregiver engagement in 3 counts (38%), including 2 active and 1 passive. In contrast, no caregiver engagement was observed during transfers (3 counts), standing (2 counts), marching in place (1 count), or other activities of daily living, such as brushing hair (2 counts) or a sponge bath in bed (1 count). For coughing or incentive spirometry, caregivers were present in 1 of 2 counts, providing passive engagement. In contrast, no caregiver presence was observed during transfers (3 counts), standing (2 counts), marching in place (1 counts), or other ADL's, such as brushing hair (2 counts) or a sponge bath in bed (1 counts).

Table 2. Caregiver presence and support during patient mobilization across all observation days. Data are reported as counts (% of total mobilization instances).

		1000-1159	1200-1359	1400-1559	1600-1759	1800-1959	Total
Caregiver Prescence	Yes	35 *(20%)*	45 *(26%)*	22 *(13%)*	27 *(16%)*	44 *(25%)*	173 *(45%)*
	No	46 *(20%)*	75 *(33%)*	10 *(5%)*	48 (22%)	42 *(20%)*	221 *(55%)*
Type of Support	Passive	27 *(77%)*	28 (80%)	14 *(64%)*	24 *(89%)*	34 *(77%)*	137 *(79%)*
	Active	8 *(33%)*	6 *(17%)*	8 *(36%)*	3 *(11%)*	10 *(23%)*	35 *(20%)*
	None	0 *(0%)*	1 *(3%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	1 *(<1%)*
Staff Presence	Yes	9 *(26%)*	14 *(31%)*	5 *(23%)*	5 *(19%)*	6 (13%)	39 (23%)
	No	26 *(74%)*	31 *(69%)*	17 *(77%)*	22 *(81%)*	38 *(86%)*	134 *(77 %)*
Caregiver Support Response	Passive	6 *(75%)*	11 *(79%)*	2 *(40%)*	3 *(40%)*	5 *(83%)*	27 *(71%)*
	Active	2 *(25%)*	2 *(14%)*	3 (60%)	2 (60%)	1 *(17%)*	10 *(26%)*
	None	0 *(0%)*	1 (7%)	0 *(0%)*	0 *(0%)*	0 *(0%)*	1 *(3%)*

Staff Presence and Caregiver Engagement

Healthcare staff (not individually identified) were present in 39 of the 173 caregiver-engaged mobilizations (23%; Tables 3 & 4). Staff assisted across several mobilization types when caregivers were present, including sitting in a chair (24 counts), walking (5 counts), sitting at the edge of the bed (2 counts), repositioning (1 counts), wheelchair use (4 counts), and coughing or incentive spirometry (1 count). When staff were present, caregivers most often demonstrated passive engagement (27 counts; 71%), with a modest increase in active engagement (10 counts; 26%) compared to when staff were not present (34 counts; 21%).

During any sitting in a chair activity, the most frequently observed mode of mobilization, staff assisted in 24 counts, with caregivers primarily offering passive engagement (22 counts; 92%), while active assistance was noted twice (8%). For eating and drinking activities (45 counts total), caregivers were present in 21 counts (47%), and staff assisted in 1 count (5%), during which the caregiver provided passive engagement. All walking mobilizations (5 counts) involved both staff and caregiver presence, with caregivers providing active engagement in all cases (100%). This engagement included walking alongside the patient or steadying them. Similarly, wheelchair use (4 counts) consistently involved both caregivers and staff, with caregivers providing active engagement in all instances (100%). For repositioning (5 counts total), staff assisted in 2 counts, during which caregivers demonstrated passive engagement in 1. Sitting at the edge of the bed (8 counts) involved staff in 2 counts, both of which also included caregiver presence, with one passive and one active engagement observed. For coughing or incentive spirometry (2 counts), staff assisted in 1 count, where caregivers provided passive engagement.

Table 3. Caregiver presence and support across different mobilization activities over all observation days in counts (% of total mobilization instances).

Mobilization Activity	Caregiver Presence		Type of Support			Staff Presence		Caregiver Support Response from Staff Presence		
	Yes	**No**	**Passive**	**Active**	**None**	**Yes**	**No**	**Passive**	**Active**	**None**
Sitting in a chair	132 *(45%)*	160 *(55%)*	119 *(91%)*	12 *(9%)*	1 *(<1%)*	24 *(18%)*	109 *(82%)*	22 *(92%)*	1 *(4%)*	1 *(4%)*
Actively eating/ drinking	21 *(47%)*	24 *(53%)*	12 *(57%)*	9 *(43%)*	0 *(0%)*	1 *(5%)*	19 *(95%)*	1 *(100%)*	0 *(0%)*	0 *(0%)*
Walking	5 *(45%)*	6 *(55%)*	0 *(0%)*	5 *(100%)*	0 *(0%)*	5 *(100%)*	0 *(0%)*	0 *(0%)*	5 *(100%)*	0 *(0%)*
Active limb movements	3 *(38%)*	5 *(62%)*	3 *(100%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	3 *(100%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*
Sitting edge of bed	3 *(38%)*	5 *(62%)*	1 *(33%)*	2 *(67%)*	0 *(0%)*	2 *(67%)*	1 *(33%)*	2 *(100%)*	0 *(0%)*	0 *(0%)*
Repositioning	3 (60%)	2 (40%)	1 (33%)	2 (67%)	0 (0%)	2 (67%)	1 (33%)	1 (100%)	0 (0%)	0 (0%)
In a Wheelchair	4 *(100%)*	0 *(0%)*	0 *(0%)*	4 *(100%)*	0 *(0%)*	4 *(100%)*	0 *(0%)*	0 *(0%)*	4 *(100%)*	0 *(0%)*
Transfer	0 *(0%)*	3 *(100%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*
Standing	0 *(0%)*	2 *(100%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*
Coughing/ Incentive Spirometer	1 *(100%)*	1 *(100%)*	1 *(100%)*	0 *(0%)*	0 *(0%)*	1 *(100%)*	0 *(0%)*	1 *(100%)*	0 *(0%)*	0 *(0%)*
Marching	0 *(0%)*	1 *(100%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*
Other ADL's	0 *(0%)*	3 *(100%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*	0 *(0%)*
Total	172 (45%)	212 (55%)	137 (80%)	34 (19%)	1 (<1%)	39 (23%)	133 (77%)	27 (72%)	10 (26%)	1 (2%)

Protocol B: Semi-Structured Interviews

In total, 20 caregivers participated in this phase of the project. Interviews were conducted either in the patient's room or in a nearby family room. In 8 of the 20 interviews, patients occasionally interjected or joined the recorded interview. While their comments were considered for contextual understanding while the focus of analysis remained on caregivers. In one instance, a second caregiver was present during an interview and occasionally contributed, both contributions were included in the analysis. In another case, two caregivers of the same patient were interviewed separately. Participant demographic information is presented in Table 5. No participants withdrew from the study.

Table 4. Participant Demographics.

Participant ID	Age (years)	Gender	Higher education	Relationship to patient	Occupation
CG01	54	Female	Bachelor's degree	Common Law Partner	General Manager
CG02	82	Female	High school diploma or equivalent	Wife	N/A
CG03	62	Female	Less than high school	Sibling	Retired
CG04	67	Female	Some college experience	Common Law Partner	Retired
CG05	55 to 70	Female	Some college experience	Wife	Administrative Assistant
CG06	49	Female	Bachelor's degree	Wife	Laundry Aid
CG07	49	Female	Some college experience	Wife	Retired
CG08	71	Female	Some college experience	Common Law Partner	Retired
CG09	78	Female	Some college experience	Wife	Retired
CG10	70	Male	Bachelor's degree	Husband	Retired Engineer
CG11	47	Female	Bachelor's degree	Wife	Housewife
CG12	64	Female	Less than high school	Wife	Retired
CG13	73	Male	Some college experience	Husband	Retired
CG14	63	Female	Bachelor's degree	Wife	Retired Financial Advisor
CG15	70	Female	High school diploma or equivalent	Wife	Retired
CG16	56	Female	Some college experience	Wife	MSR at Credit Union
CG17	76	Female	Bachelor's degree	Wife	Retired
CG18	33	Female	Bachelor's degree	Wife	Nurse
CG19	62	Female	High school diploma or equivalent	Wife	Homemaker
CG20	52	Female	Bachelor's degree	Parent	Registered Nurse

From the analysis, JA and I created five themes that mirror caregivers' understanding, experiences, and engagement in early mobilization within the CS ICU. Together, these themes reflect how caregivers defined early mobilization, perceived its benefits, navigated emotional responses, positioned themselves within caregiving roles, and interacted with hospital staff during mobilization.

Theme 1: Defining Mobilization and Interpreting "Early"

This theme provides an understanding of how caregivers understood and defined early mobilization. Caregivers described mobilization as any movement, however small, and explained why they believed it was beneficial. Three subthemes captured these caregiver conceptions: (1) Any early movement counts, which reflected the way caregivers defined "mobilization", (2) Knowing when to move, illustrating caregivers believed when mobilization should begin, including whether it should start as soon as possible, when the patient was ready, or by following healthcare staff guidance, and (3) Mobilization defined by what they saw, where caregivers were often unfamiliar with the term "early mobilization" and instead understood it through what they observed happening in the hospital.

Subtheme 1.1: Any Movement is Good

Caregivers most often described mobilization simply as movement. They did not usually distinguish between large and small actions; both were considered mobilization and seen as equally important for recovery. What mattered was that their loved one was moving. As one caregiver put it, "Any movement is mobilization…any movement is good, no matter what it is"

(CG02). Another agreed, saying, “I think it has equal amount of value, yeah, small movements, big movements, anything – any kind of movement is good” (CG07).

Subtheme 1.2: Early Mobilization Defined by What They See

Some caregivers expressed uncertainty about what early mobilization meant. One caregiver reflected, “Early mobilization… I don’t know what the early really means” (CG15), while another shared, “I’m not really sure” (CG02). Others inferred its meaning based on what they observed (e.g., activities such as sitting up, moving to a chair, walking, or eating) and described what they saw happening in the ICU: “Well, him getting up and out of bed, being able to get up and out of bed” (CG01), “Walking or being assisted to sit up” (CG05), and “Like what he’s doing, like sitting or eating or walking” (CG06). To CG08, it meant “getting up quickly after surgery... sitting up right away, trying to walk a little bit, according to, I guess, my partner’s ability.” CG16 described early mobilization in functional terms, tied to the patient’s capacity and the caregiver’s role in supporting daily activities: “I think it refers to the level of mobility that the patient has and what my involvement has to be to get him around the house to do the things that he needs to do, like hygiene, food, all that kind of stuff.”

Subtheme 1.3: Timing Mobilization by Patient Capabilities

For caregivers, the timing of early mobilization was not about the type of movement but about when their loved one was “ready” or “capable” of engaging in movement. Some believed that even large activities could begin early if the patient seemed ready. As CG07 explained, “I think [transferring from bed to chair] should happen as soon as he’s able to get him[self] up and moving.” Similarly, CG01 reflected those smaller actions, like reaching for a cup of water, began

soon after surgery: “As soon as he was awake, they were doing things with him, so I think that’s important, right, to gauge what he is capable of doing. Even if it is a slow process, he’s still able to do it.”

Other caregivers deferred to the healthcare team when determining timing. As CG16 shared regarding transferring from bed to chair, “I'm just going on their timeline, what the nurses and doctors, the care team have said... within that first 24 hours, maybe 48 hours, they were telling us that's what they're going to do and the reasons for it. And they're well-trained, and I trust the process.” Similarly, CG20 emphasized patient stability while giving a timeline for walking: “When the patient is ready. And yeah, once he’s ready, once his vital signs are stable, then maybe begin 24 or 48 hours.”

Theme 2: Movement Supports Recovery and Health through Progression

Caregivers consistently described movement as a vital part of their loved one’s recovery after CS They spoke about how mobilization helps the body heal, support circulation, reduce complications, and improve mental well-being. Two subthemes reflected these understandings: (1) Movement as evidence of health or the counter to poor health, where caregivers associated movement with maintaining health and preventing decline and(2) Mobilization as a marker of progress toward recovery, where movement was seen as visible proof of improvement and a reassuring sign that recovery was progressing as it should.

Subtheme 2.1: Movement as Evidence of Health or the Counter to Poor Health

To caregivers mobilization was important because it supported their loved one’s health during recovery. Many spoke about its physical benefits, describing how movement contributed

to the body's overall function. As one caregiver shared, "Yeah, so it's good to get him up and get the blood flowing" (CG15). This focus on circulation was echoed again: "Just to get the circulation back into, the normal circulation back into the body also is important, for sure" (CG17). Another linked mobilization to circulation and its wider effects, saying, "Yeah, I do. I think it helps your circulation, which helps your brain function" (CG08).

Caregivers also suggested other benefits, including keeping the joints loose, preventing blood clots, and reducing complications such as pneumonia and fractures. As one participant explained, "But it's allowing those joints to stay lucid and loose and not seize up" (CG03). Another noted, "It's going to prevent from [sic] blood clotting and for his lung to go back to the normal" (CG06). The importance of these outcomes was reflected by a caregiver who shared, "Early mobility reduces the complications. Like pneumonia and fractures, so we would love him to be moving around actively" (CG20).

Beyond physical benefits, caregivers also spoke about how mobilization shaped mindset during recovery. Walking again was described as "good for the heart…good for the soul and the mind to know that they're getting better, because they're on that path" (CG03). Another reflected, "It helps you to feel better about yourself... every movement you do adds to your breathing, your outlook, your whole mindset" (CG08). For others, seeing progress was key: "It helps in his well-being as well, mental well-being as well as physical... I think if you're seeing progress, I think that makes you mentally a lot more positive" (CG13).

Caregivers also raised concerns about the absence of movement. "[Without early mobilization] they get depressed… it's going to take them longer to heal, longer to feel better about themselves and about their situation" (CG05). Though generally caregivers saw mobilization as helping patients adjust after surgery: "The brain needs to adjust to the changes

that have taken place… the sooner that she believes and does her activities that will help her overcome her situation" (CG10). For CG17, the meaning was focused on quality of life: "Anything… to be able to have quality of life; it's called quality of life, is moving a section of his body."

Subtheme 2.2: Mobilization as Markers of Progress Towards Recovery

Caregivers described mobilization as a marker of progress toward recovery. For some, specific moments were seen as meaningful or successful milestones: "That was success to me [stated by a participant when talking about their loved one having walked the hallway one and a half times]" (CG05). Others spoke about these moments as signs of improvement and moving forward, saying, "For me it is. That's an improvement. That means that he's moving ahead. Not just lay[ing] in bed" (CG12) and describing them as a sign that "everything's moving forward" (CG13).

Success and progress were often defined through everyday activities that signaled recovery: "If you see him moving and eating you know he's getting better. And you know he's progressing" (CG09). These moments were described as meaningful achievements, with one caregiver sharing, "But for them to get up and then out of bed and into a chair, it's almost cheer-worthy… That was success to me" (CG05). Witnessing these signs, along with reassurance from the medical team strengthened caregivers' sense that recovery was moving in the right direction: "It's a sign that everything's moving forward and that the doctor's reassuring us that, yes, that everything's progressing the way it should be" (CG13).

Theme 3: Emotions and Impressions Around Early Mobilization Conceptualization

This theme captures the emotions and impressions caregivers expressed in response to early mobilization. Caregivers described reassurance and relief because movement signaled recovery, but also surprise at how quickly progress occurred and worry or nervousness about safety. Three subthemes reflect these responses: (1) Knowing to expect mobilization, shaped by prior experiences or medical backgrounds; (2) Feelings of relief, reassurance, and surprise around early mobilization, where mobilization was seen as proof of recovery but faster than expected; and (3) Feelings of worry, nervousness, and hesitancy, where caregivers expressed concern that early movement might be too soon or cause harm.

Subtheme 3.1: Knowing to Expect Mobilization

Prior healthcare experiences shaped whether caregivers expected early mobilization. For many, familiarity through previous hospitalizations or healthcare backgrounds (e.g., nurse and healthcare aid) meant early movement was not surprising. One explained, "My dad was in St. Boniface years ago and had a double bypass, so I kind of knew what to expect" (CG07). Another reflected, "I was a nurse, but not in the cardiac unit. I retired quite a while ago, but I knew they would get him moving quickly" (CG08).

Some caregivers also drew on medical knowledge in their household. One caregiver shared, "I knew that it was necessary…you need to sit up to cough and do things for healing. We knew right away it would get him started on the journey to leave the hospital. My mom was a GP [general practitioner], so it wasn't surprising" (CG16).

Still, caregivers described an element of surprise. One said, "Maybe surprised might be a better word…yesterday I was like, oh, they already want him to sit in the chair. I guess that's

better for him" (CG14). CG06 shared feeling surprised to see their loved one sitting so soon after surgery, explaining, "I was just surprised that after only how many hours, and then, yes. Like around, I think 5 a.m., they asked him to sit already." They reflected that this reaction may have stemmed from their experiences in another healthcare context, noting, "In the Philippines, the patients are like a baby. But here, after less than an hour, they ask the patient to sit and then start to walk. Because back home, it's totally different."

Subtheme 3.2: Feelings of Relief, Reassurance, and Surprise Around Early Mobilization

Caregivers described feeling relief when they saw their loved one mobilizing. "I was sitting here, thinking, oh, *I've* survived this surgery. And I was thankful to see him walking, so yeah." (CG15). Others echoed this sense of relief and reassurance, calling it "a sign things were okay" (CG01). For some, relief was expressed with gratefulness: "[It is] very important that he can recover for his family, for us... it's a miracle…we're grateful, happy…to see him after the surgery moving like that" (CG11).

Caregivers also described surprise and amazement at how quickly these moments came. The contrast between the immediate post-operative state to early mobilization was striking: "Yesterday afternoon, he had surgery…he wasn't really responsive yet…then you come back and they're like, 'Woah,' he's wide awake, sitting up" (CG08). Another said, "I wasn't expecting, two days later, for him to reach for a glass of water" (CG05). Others expressed disbelief: "I couldn't believe it. It was like, from having open heart surgery to walking in two days? It was like amazing" (CG12).

Subtheme 3.3: Feelings of Worry, Nervousness, and Hesitancy Around Early Mobilization

Alongside relief and surprise, caregivers also described worry when they saw their loved ones mobilizing. One said, "Yes [I was initially worried to see him move.] It was less than 24 hours… I thought [walking was] going to be after two or three days, but it's too soon. But I think it's okay… I trust the nurse. Because I know what they're doing [with early mobility] is also good for my husband" (CG09). Similarly, CG14 acknowledged a sense of worry but felt reassured by staff, explaining, "Unless I saw them in excruciating pain right out there, I guess for any loved one, you worry for them, but they [nurses and doctors] would know best."

Others spoke about feeling nervous in those early moments. "You're nervous at first because you're going, okay, you just had your chest opened. And so you're going to, don't move [them]. But you know the movement is good too" (CG13). One caregiver described pushing past these initial feelings of hesitancy to mobilization: "I was kind of hesitant but then I thought you know this has to be – you have to move on. You have to start going at it" (CG12).

Theme 4: Experiencing Caregiving— Roles and Emotions in Early Mobilization

This theme explores how caregivers positioned themselves in their loved one's recovery during early mobilization, balancing their intuition to help with respect for independence, while also navigating the emotions that came with being in that role Adopting the caregiving role and becoming directly engaged in early mobilization elicited a range of feelings like confidence, worry, and uncertainty. Many caregivers were also eager to understand how to connect their role in-hospital to recovery at home. Four subthemes captured these experiences: (1) Knowing when to support early mobilization, where caregivers balanced helping with encouraging independence, (2) Willingness to support, shaped by relationships, experience, and confidence,

(3) From ICU to home, where mobilization was seen as preparation for post-discharge recovery, (4), Fear and worry of their role, where concerns about causing harm or doing something incorrectly created hesitation.

Subtheme 4.1: Knowing When to Support Early Mobilization

When asked how they supported or envisioned supporting early mobilization, caregivers framed their role through the relationship they shared with their loved one. A common theme was balancing their instinct to help with respect for independence. In the first days after surgery, some described offering small forms of assistance, "Yesterday he wasn't really able to do anything for himself… so I would assist him with that. Give him the cup, like the straw, what have you" (CG16). But as one caregiver explained, "Well, if he needed help with anything, yes, I would be there… but I feel that he should do it himself if possible" (CG02). Others expressed similar thoughts, describing their role as "letting him drive the bus" (CG16) or stepping in only "to a certain degree" when needed (CG04).

Caregivers emphasized how much independence mattered to their loved one. "Most anybody…does not like feeling dependent on other people so much" (CG05). Caregivers noted their loved ones' determination: "He's really independent… even with all the pain. He wants to show everybody, I can do this" (CG06). Others added, "He's tough. He tries everything on his own. He doesn't want to be helpless" (CG19).

Some described easing off gradually: "Initially she would ask me to pass the water… but then she decides 'I'd rather do this myself'" (CG13). Others were more direct: "I don't follow him like a mother goose" (CG15). Yet CG01 admitted how difficult it was to step back: "It's going to be hard for me to step back and make him try first… But I think it's important for him

to try". Even those with healthcare backgrounds recognized the challenge: "Being that I was a healthcare provider, you want to overreach sometimes… But he's not three; he's a grown adult man. So, I just wait and watch" (CG08).

Subtheme 4.2: Willingness to Support Early Mobilization

Willingness to support mobilization was shaped less by the specific activity and more by how confident and comfortable caregivers felt in their role. That confidence often came from their relationships and the closeness built over many years together. CG10 connected this sense of commitment directly to their marriage: "When you take your wedding vows it's in sickness and in health, so you know I'm going to step up the plate." Others described how time together gave them trust in their abilities. "We've been married for 25 years so… I have confidence in myself completely" (CG07). CG15, who has shared many years with their partner, described how knowing them well helped her understand when support during mobilization was welcome: "Just knowing him… knowing where his boundaries are too. So, we know each other enough that we don't encroach on those things."

Prior caregiving or healthcare experience also influenced how comfortable they felt helping with mobilization: "I've just been doing it so long… it's my past career as a healthcare aide" (CG07). Similarly, CG08 described caregiving as part of their identity: "All that caregiving is part of who I am… I don't really get worried." And for another, building that sense of comfort involved asking and being engaged. As CG09 explained, "Because maybe that's what I'll have to do [ask the nurses to learn], and if I learn how to do it [supporting my loved one to mobilize] and I'm comfortable that means my husband will be comfortable."

Subtheme 4.3: From ICU to Home

Thinking about going home shaped caregivers' understanding and expectations of early mobilization and recovery, extending beyond the hospital to how mobility skills, independence, and shared routines might carry into life after discharge. CG16 described this forward-looking perspective: "Because what we're establishing here is going to translate to going home, right? So I want him to be as independent as recovery allows. Because that's where I want to get back to that. I want back to him being independent, I want to go back to work and see my girls, that kind of stuff. So yeah. Get back on track that way." As CG03 shared, when imagining what their support looked like, they envisioned it primarily at home: "Even like once they transition from the hospital back to home, then it's supporting, cooking meals, picking them up, or if she needs to be somewhere."

Subtheme 4.4: Fear and Worry of their Role in Supporting

Concerns about causing harm influenced how caregivers engaged in mobilization and their role. Many spoke about the possibility of hurting their loved one, dislodging medical equipment, or doing something incorrectly. CG11 shared, "Maybe he falls off [the wheelchair] or maybe I'm not pushing right… so I hurt him like that." CG05 avoided assisting with transfers because she "didn't want to do something incorrectly… you don't want any of that [tubing] coming out."

Uncertainty about their own abilities also contributed to this worry. CG03 reflected, "I'm not a nurse or a doctor, so you're kind of always questioning yourself, am I doing the right thing? Putting too much on the spoon to feed her? I don't want her to choke. So there's… but you ask the questions and just make sure you're doing it properly." For some, the concern extended to

their own safety, as injuries could affect their capacity to help. CG01 explained, “I had no issue in helping him. Now I just have to be a little more careful in not putting myself in harm's way to injure my healing process. But yes, I would be able to help with that.” CG14 also described a dual concern for both patient and caregiver safety: “Well, I think everybody does. I don't know about that. Depends on, like you're just worried of hurting them and not doing it the right way. It's like, you don't want to hurt them or hurt yourself. If you're not doing it properly, you're going to injure yourself. So, there's that always in the back of your mind.”

Theme 5: Staff Partnerships Shape Caregiver Engagement

This theme looked at how caregivers viewed themselves in relation to hospital staff during early mobilization in the CS ICU. Communication with hospital staff often offered reassurance and a sense of safety, yet caregivers frequently deferred to staff for permission before engaging, sometimes holding back to avoid getting in the way. This dynamic often left them waiting for direction or hesitant to take a more active role. Two subthemes captured these perspectives: (1) Communication and permission, where caregivers described asking questions, seeking guidance, and checking that they were supporting safely; and (2) Deference, where caregivers emphasized staff as the ones who “knew best,” sometimes restricting their involvement to minor tasks or stepping back entirely.

Subtheme 5.1: Communication and Permission

Interactions with hospital staff were often described as positive, helpful, and informative. CG09 called their experience “amazing,” adding, “The staff has been exceptional. I’m really impressed.” CG12 described the support they received, saying, “The support we got from them

was really — they really were great because [they] came and explained everything, what happened and stuff. It was nice to hear that, so it was good." CG10 shared a similar impression: "The whole team here just blows me away... how they motivate her to want to do better."

Communication and seeking permission seemed central to how caregivers engaged. Arriving with questions was common, and many felt their questions were welcomed and addressed. CG05 remembered coming with "a list of questions" and said the nurses "answered every single one." CG15 shared, "I think the nurses upstairs in ICU were very willing to answer my questions and stuff like that… they certainly were informative and answered all my questions", yet at the same time CG15 reflected "No, I don't think [the nurses invited me to support] I, no, they never invited me, but they certainly were informative and answered all my questions." CG12 said, "I didn't ask [to walk with my loved one]. I figured that we tried the first time, but as it goes, the next walk I will be walking with him, encouraging him." This suggested that communication between hospital staff and caregivers may be focused on staff answering caregivers' questions, rather than the hospital staff encouraging caregivers in supporting their loved one to mobilize.

Caregivers emphasized asking before providing support during mobilization, both to ensure it was appropriate and safe, and to avoid overstepping. CG03 explained, "You ask the questions and just make sure you're doing it properly. And usually, the nurses will help guide us in the right direction." CG08 described seeking permission: "Otherwise it's like you're taking over. But if I ask permission, I usually get it." And "The hospital staff are great by saying, 'Don't touch here, don't touch there. You can touch there with no problem'... But they were like, 'Just stand there. We got this.'" (CG05). Perceptions of staff workload also shaped these conversations. CG12 shared, "I even offered to help today... I'm onboard with helping because

they're overwhelmed and they're busy. Like I say I encourage – I couldn't believe how much they do. I think sometimes they should get paid more."

Subtheme 5.2: Deference to Hospital Staff

Deference to the hospital staff shaped how many caregivers understood and approached their engagement. Nurses and doctors were often described as the ones who "know better" (CG09), and caregivers positioned their decisions and actions around that. Some limited their involvement to very small tasks unless, As CG01 explained, "I wouldn't do anything on my own unless it was an itch. 'Can you itch this? I can't reach it,' type thing..." CG09 also deferred decisions to staff, particularly around when their loved one could begin drinking: "As soon as the staff says he can have water, yeah. I'd have to defer to them because that's what they do. They know better than I do... I have to step back and just let them do their thing." Others expressed this more broadly: "I'm not a nurse or a doctor, so you're kind of always questioning yourself" (CG03); "I'm not a professional… a nurse would know better [how soon walking should occur]" (CG06).

Some caregivers described offering help but stepping back when staff indicated they were not needed. CG12 shared, "The nurses were [repositioning] and they said they've got it, so I was just letting them do their thing... Until I ask the nurses; I want to get reassurance. Be sure it's OK." CG15 said they would participate "if it's something that I could do," but felt "the professionals in this case were more important for them to help than me." CG10 also described certain tasks as outside their role, explaining, "I would [help with the bed bike] but I don't think that would ever happen... I think that kind of scenario, they would probably frown against that because that's – you're outside the realm of a visitor, so to speak."

Chapter IV: Discussion and Conclusion

This research focused on caregiver engagement in early mobilization in the CS ICU at St. Boniface Hospital. Through behavioral mapping and interviews, it explored the state of caregiver engagement in early mobilization, how caregiver's made sense of early mobilization, and how their perspectives and engagement intersected to shape their overall role. The study met its objectives by capturing how caregivers both participated in and made sense of early mobilization. Behavioral mapping showed that caregivers were consistently present yet often remained on the periphery of early mobilization, with 79% of their engagements being passive. Even when hospital staff were present and assisting with mobilization, caregiver engagement was largely passive, occurring in 71% of those instances. This finding aligns with past reports that caregivers engagement in early mobilization is typically passive (Cussen et al., 2024; Olding et al., 2016). Although caregivers expressed willingness to be more involved in care (Garrouste-Orgeas et al., 2010; Najjar et al., 2021), they were often uncertain about how to do so, particularly early in recovery, often before observing staff-led mobilization or feeling confident in their role. Such uncertainty frequently led caregivers to defer to staff for direction or permission before being willing to support mobilization.

Contexts Shaping Caregiver Engagement in Mobilization

Attempts to make post-surgical care more family-centered have often focused on including caregivers in ward rounds or decision-making discussions, but these remain passive forms of engagement (Calderone et al., 2022; Kydonaki et al., 2021; Olding et al., 2016). Much of the literature still equates family or caregiver involvement with presence, where the family or caregiver is at the bedside or observing procedures, rather than actively participating in care

(Olding et al., 2016). In one ICU study, only 14 of 101 family members (13.8%) spontaneously provided or requested to assist with patient care, which encompassed a range of post-surgical tasks beyond early mobilization, as recorded by nurses, though the protocol for documenting family involvement was not specified. (Garrouste-Orgeas et al., 2010). In the present study, which focused specifically on early mobilization, caregivers were present during 173 of 372 mobilization instances (47%), closely aligning with Phillips et al. (2025a) who observed caregiver presence in 48% of all mobilizations. Within those caregiver-present events, however, engagement was most often passive, with few active supports. Caregiver engagement in early mobilization or post-surgical care in the ICU may be more common than reported in prior studies (Garrouste-Orgeas et al., 2010), though it continues to occur in primarily passive forms congruent with previous literature (Cussen et al., 2024; Olding et al., 2016).

Caregivers were found to contribute to mobilization in informal and often unacknowledged ways, which was reflected in the observation data. Caregivers were present during 47% of all mobilizations, including the two most common activities: sitting in a chair and actively eating or drinking. Sitting in a chair accounted for 292 instances (78%) and caregivers were frequently present during these events. Eating and drinking, although not identified as early mobilization in the literature, occurred 45 times (12%), and caregivers were often engaged in these moments as well. Caregivers mainly supported low-intensity movements that accompanied movement, even when those contributions were not part of formal early mobilization practices in literature.

Caregivers described assisting with activities such as eating and drinking, encouraging movement, and adjusting pillows—actions they viewed as part of daily care rather than structured early mobilization (Theme 4). In contrast, clinical protocols define early mobilization

as a planned approach to patient mobilization (Phillips et al., 2025a). For example, St. Boniface Hospital's postoperative mobilization protocol outlines specific expectations, like sitting within 12–24 hours post, assisted walking by day 1–2, and independent hallway ambulation by day 4 (Phillips et al., 2025a). However, these structured timelines did not reflect how the caregivers themselves understood or defined early mobilization. The Caregivers also associated "any movement" with reassurance, progress, and connection, emphasizing that it supported both health and recovery (Theme 1 & 2). Caregivers frequently included eating and drinking in their understanding of early mobilization, linking these activities to the belief that "any movement" counted as mobilization. At the same time, there was no clear consensus regarding caregivers' awareness of St. Boniface Hospital's early mobilization protocol, as accounts varied in whether the CS education package, they received addressed mobilization or movement after surgery. Together, these findings suggest that caregiver engagement in early mobilization often occurred within the ordinary rhythms of caregiving, rather than through structured mobilization practices.

However, caregiver engagement in early mobilization was often shaped by how hospital staff guided or permitted caregiver engagement. Many caregivers deferred to staff authority, waiting for direction or reassurance before engaging, which positioned their engagement as conditional on professional approval (Theme 5). Caregiver engagement was not only an expression of care but may reflect the hierarchical nature of hospital routines, where opportunities to engage were shaped by staff communication and relationships and the extent to which caregivers were invited to engage.

Recognizing and validating caregiver engagement in early mobilization may be an important step toward strengthening family-centered care. Integrating caregivers into daily ICU workflows, such as St. Boniface Hospital's structured early mobilization protocol, through clear

communication, clarification of caregivers' roles in supporting patients' early mobility after cardiac surgery, and real-time collaboration between hospital staff, patients, and caregivers could help ensure that their everyday acts of care are acknowledged and supported within clinical routines. Doing so would align mobilization practices more closely with the principles of family-centered care, emphasizing collaboration rather than hierarchy in patient recovery (Burns et al., 2018; Schwartz et al., 2022).

Understanding Early Mobilization

Caregivers were unfamiliar with the term early mobilization and were therefore prompted with a broad definition during interviews (e.g., "Early mobilization is getting patients moving or doing some kind of physical activity soon after their surgery.") (Themes 1& 2). Following that prompt, caregivers often described early mobilization in general terms such as "any movement" or "any movement is good." Their understanding appeared to be shaped by what they observed in the ICU and included the everyday activities they associated with home recovery, rather than the clinical definitions tied to postoperative day or exercise intensity (Themes 1-3). This perspective of early mobilization including ADL's contrasts with the literature, where early mobilization is typically defined by measurable parameters such as walking distance or time to ambulation (Phillips et al., 2025b) and justified by outcomes like reduced delirium, ICU-acquired weakness, or shorter hospital stay (Borges et al., 2022).

For caregivers, movement carried both functional and symbolic meaning. It was seen to prevent complications such as blood clots, pneumonia, or stiffness, while also representing visible progress, independence, and "getting back to normal." Immobility, by contrast, was linked to decline, stiffness, slower healing, or low mood, positioning movement as both

prevention and recovery (Theme 2). Their sense of timing reflected this idea: mobilization began when patients seemed ready and capable, rather than at prescribed intervals (Theme 2). Some believed mobilization should begin as soon as the patient seemed able, while others deferred to clinician judgment about when it was appropriate to start. These findings point to a disconnect between caregivers' relational, readiness-based understandings of early mobilization and the more structured, outcome-driven definitions commonly used in research and clinical practice, which emphasize patient readiness and capability versus time-bound initiation.(Phillips et al., 2025b).

Few studies within the CS ICU context have incorporated patient-reported outcome measures (PROMs) or patient-reported experience measures (PREMs) (Phillips et al., 2025b). No published studies appear to explore family-centered priorities of early mobilization. However, Phillips et al. (2025b) advocate for defining early mobilization using a patient-centered approach. The findings of my research extend this call by suggesting that any definition of early mobilization should instead be patient- and family-centered, as caregivers are central in supporting patient-mobilization and recovery following CS. Based on my findings, a definition of early mobilization should encompass the "any movement" concept described by caregivers while emphasizing functional, capability-based activities rather than prescriptive timelines or intensity levels. It should also frame early mobilization as a shared process involving clinicians, patients, and caregivers, recognizing that caregiver engagement and patient readiness evolve together throughout recovery. Drawing from these findings, this thesis would define early mobilization as: "*Early mobilization refers to any active or supported physical or functional activity initiated following CS in the ICU, either independently by the patient or, preferably,*

facilitated through collaboration between the patient, their caregivers, and clinicians in ways that support patient safety, comfort, recovery, and independence".

Interaction with Hospital Staff and System-Level Factors

Hospital staff were present during fewer than one-quarter of all caregiver-engaged mobilizations, most often during larger activities such as walking (100%), wheelchair use (100%), and edge-of-bed sitting (67%). Smaller mobilizations, such as sitting in a chair (18%) and eating or drinking (5%), occurred much less with staff assistance. Possible explanations for this include that some early mobilization events occurred outside the 15-minute observation snapshots or when visibility was limited by closed privacy curtains, meaning staff-supported movements may not have been observed. Activities such as bed-to-chair transfers may have been completed by staff earlier in the day before patients were later observed sitting in a chair without staff present. St. Boniface Hospital's early mobilization protocol specifies that patients are to be assisted into a chair within 12–24 hours post-operatively, after which chair sitting is expected to occur regularly, including multiple times per day and for all meals as recovery progresses. If the initial staff-assisted transfer to the chair occurred at times that were not observed, subsequent chair-sitting events could appear caregiver-supported or independent, even though clinical staff had facilitated the earlier. Although the observation protocol could not determine whether this sequence occurred, this progression provides a plausible explanation for why chair sitting was frequently recorded without staff involvement.

Caregivers were most actively engaged when staff were assisting, with all walking and wheelchair activities involving active engagement. From the interviews, caregivers mentioned that they deferred the larger movements to hospital staff because they knew what they were

doing or caregivers not wanting to be a distraction. Although, regardless of the mobilization mode, there was a large consensus amongst participants about a willingness to learn but a need for more knowledge and reassurance to do so safely (Themes 3 & 5). Caregivers were more engaged, both passively and actively, during eating and drinking, where staff assistance was rarely observed. The interviews did not directly clarify this discrepancy, though, existing literature suggests that clinicians are more comfortable with caregivers supporting lower-risk, less intensive postoperative tasks (Crooks et al., 2024; Garrouste-Orgeas et al., 2010; Wang et al., 2024).

Many caregivers still expressed concern about "doing something wrong," even during smaller tasks like supporting with eating, suggesting that caregiver comfort or confidence and limited understanding of early mobilization could be potential barriers to their engagement in supporting their loved ones to mobilize (Themes 3 & 4). Caregivers also shared that they deferred to clinicians' expertise or felt that they needed to seek permission before becoming engaged in mobilization. These perspectives indicate that opportunity alone is insufficient to encourage caregiver engagement in mobilization. Instead, there is an opportunity to develop educational interventions that strengthen caregiver engagement and promote a shared approach, one where clinicians and caregivers could work together based on if caregivers expressed a desire to be more engaged. This requires identifying safe, appropriate ways for caregivers to support patients during early mobilization, coupled with ongoing education and communication that clarifies their role (Theme 4). Such guidance can help caregivers understand how they can contribute to mobilization and recovery while clinicians manage other responsibilities.

Clinicians tend to hold moderately positive yet cautious views toward family engagement in ICU care but are often uncertain about how or when to involve them effectively. Clinicians comfort with caregiver engagement in the ICU care tends to center on low-risk, hygiene-related tasks rather than active engagement in clinical activities (Garrouste-Orgeas et al., 2010). This suggests that engagement is viewed by clinicians as supplementary rather than integral to the delivery of care and patient recovery processes. At the same time, some clinicians perceive families as potential barriers to early mobilization (Crooks et al., 2024) or assume caregivers are disinterested in engaging in post-surgery care (Naef et al., 2021). Caregivers' tendency to defer to hospital staff functions as both a symptom and a reinforcer within the family–clinician relationship. Rather than reflecting caregiver disinterest in engaging in early mobilization, this deference to clinicians may arise in environments where family-centered care is not prioritized or implemented, leaving caregivers uncertain about when or how to engage in early mobilization and post-surgical care. In the present study, caregivers often hesitated to engage independently during mobilization, particularly when clinicians were present, as they did not want to interfere with clinical care or disrupt ongoing tasks. Many waited for directions or reassurance from hospital staff before engaging, even when they felt capable of helping (Theme 5). This hesitation reflected uncertainty about when and how to assist, which may have contributed to their more passive engagement during mobilization (Theme 3 & 4). This hesitation creates a feedback loop where caregivers wait for instruction while hospital staff interpret their restraint as passivity or disinterest (Naef et al., 2021). The pattern likely reflects not disinterest to engage, but the absence of clear expectations and consistent modeling of caregiver engagement within the unit.

A shift in unit culture may be required to meaningfully integrate family-centered care principles into daily practice within the CS ICU. Family-centered care emphasizes open

discussion of information and care goals between healthcare professionals and families, mutual respect for diverse values and beliefs, and collaborative decision-making in both routine and critical aspects of care (Schwartz et al., 2022). It also encourages negotiation of roles so that caregivers can contribute according to their strengths while maintaining respect for healthcare team members (Schwartz et al., 2022). These principles are primarily directed toward guiding clinician behavior, yet they offer limited guidance on how family members themselves can engage in care activities such as mobilization. These principles primarily guide clinician behavior, with limited attention to family engagement in care activities such as mobilization. The St. Boniface Hospital early mobilization protocol likewise does not include a role for family or caregivers. Within the ICU, fostering family-centered care also depends on communication practices that invite active listening, acknowledgment of family emotions, and recognize each person's individuality (Schwartz et al., 2022). Approaches such as the VALUE framework, which centers on valuing family input, acknowledging emotion, listening, understanding, and eliciting questions, may support this type of dialogue and promote more consistent collaboration between caregivers and hospital staff (Curtis & White, 2008; Schwartz et al., 2022). Family-centeredness and practices that encourage open communication and collaboration can strengthen relationships between families and healthcare teams (Azoulay et al., 2024; Schwartz et al., 2022). Effective implementation, however, depends on addressing organizational and resource-related barriers. Embedding family-centered care within routine practice, supported by staff education, clear communication processes, and shared decision-making frameworks, can help sustain meaningful collaboration with families (Azoulay et al., 2024; Schwartz et al., 2022).

Practice-Oriented Interpretation of Findings

Together, interpretive description and a pragmatic orientation shaped an analysis that emphasizes practice-relevant understanding while remaining grounded in caregiver experience. Consistent with a pragmatic orientation, this analysis extends beyond description to consider how findings may inform feasible, context-sensitive approaches to supporting caregiver engagement in early mobilization.

Education that includes both caregivers and hospital staff may promote shared understanding of safe ways caregivers can engage and foster open dialogue about comfort levels, boundaries, and preferred communication during early mobilization. Practical opportunities to engage caregivers could build on ADL's they already support and view as meaningful (Theme 4), such as bedside teaching during routine care, including how to safely assist with sitting up for meals, adjusting position for comfort, or encouraging light movement during personal care. Alternatively, visual tools with hospital staff outlining appropriate caregiver tasks based on patient condition and caregiver readiness may support engagement. Interprofessional discussions may further help staff learn how to invite caregiver input and adapt communication between caregivers and hospital staff to reflect caregivers' priorities and comfort levels. Although these findings do not represent a tested intervention, they provide a foundation for developing approaches aimed at strengthening communication between clinicians and caregivers, enhancing caregiver confidence and comfort in engaging in early mobilization, and improving role clarity for both groups through consistent modeling of family-centered care principles, particularly given caregivers' expressed desire to be engaged (Themes 4–5).

Strengths and Limitations

To my knowledge, this study is among the first to explore caregiver engagement in early mobilization within the CS ICU. Its mixed-methods design, integrating behavioral mapping and semi-structured interviews, is a further strength that enabled a comprehensive understanding of caregiver engagement. Direct observation provided objective, contextual data about when and how caregivers engaged, while interviews offered insights into the motivations, meanings, and relational factors shaping that understanding and engagement of early mobilization. Combining these approaches enabled comparison of findings generated from different approaches, strengthened credibility, and allowed behavioral patterns to be interpreted within the lived experiences of caregivers. The research also builds on prior behavioral mapping conducted in the same ICU (Phillips et al., 2025a), providing continuity, and extending understanding of early mobilization to include the role of caregivers.

Several limitations should also be acknowledged. Since behavioral mapping in this study involved fixed 15-minute observations, any mobilization or caregiver activity occurring between intervals was not fully captured. Likewise, clinician involvement in mobilizations throughout the observation periods were not fully captured. That limitation likely resulted in an under counting of total mobilizations, engagement, contributions of specific roles (caregivers or hospital staff) to mobilizations, and/or the total count of mobilizations throughout the day. As with all observational research, the presence of a researcher in the unit may have influenced behavior among staff or caregivers, though this effect was minimized by conducting multiple, non-consecutive observation days. Both datasets were drawn from a single CS ICU, limiting generalizability to other locations and settings. However, most caregiver participants were women, reflecting caregiving trends in this setting but limiting the diversity of perspectives

included in the interviews. Voluntary participation may have introduced self-selection bias and conducting interviews post-discharge introduced potential recall bias. As all participants were recruited from a one CS ICU, findings may not mirror experiences in other settings.

Conclusion

Taken together, the findings of this thesis suggest that early mobilization is best understood not as a uniform, time-bound intervention, but as a flexible and relational process grounded in caregiver priorities. Behavioral mapping showed how caregiver engagement occurred in practice, revealing that most involvement centered on low-intensity movements such as chair sitting and eating or drinking, and was most often passive. While the literature often defines early mobilization by postoperative day or measurable activity intensity (Phillips et al., 2025b), caregivers in this study described it through an intuitive, functional lens. For them, "any movement" represented visible progress toward recovery and independence. Their focus on readiness, safety, and confidence contrasts with the clinical emphasis on physiological outcomes such as ambulation distance or length of stay (Phillips et al., 2025b), highlighting a clear disconnect between lived and clinical conceptualizations of early mobilization.

Semi-structured interviews provided insights into how caregivers understood early mobilization, what it meant to them, and how they perceived their role. Caregivers emphasized functional readiness and safety, and described early mobilization as progress that could be seen and felt during recovery. They also explained why their engagement often appeared passive: uncertainty about what was appropriate, concerns about causing harm, and a reliance on direction or permission from hospital staff.

Integrating the observational and interview findings offered a more complete understanding of caregiver engagement. Behavioral mapping showed how caregiver engagement occurred on the unit through direct observation; whereas, the interview approach identified caregivers' understanding of early mobilization. Together, the findings show that caregiver engagement is shaped by both the structure of ICU routines and protocols and the relational dynamics between caregivers and hospital staff. Most mobilizations were low-intensity activities, with sitting in a chair (78%) and eating or drinking (12%) accounting for 90% of all observed mobilizations. Caregivers were present for 45% of these events and were usually passive, particularly during chair sitting where passive support occurred in 91% of caregiver-present instances. Staff were rarely involved in these smaller mobilizations. Higher-intensity mobilization activities—such as walking, sitting at the edge of the bed, repositioning, and active limb movements—were uncommon. When these activities occurred, staff were involved in all instances. When caregivers were present, they were more likely to provide active support during these events. Walking, for example, always included active caregiver support, alongside staff involvement in every walking event observed. These observations show that during higher-intensity mobilization, both staff and caregivers (when present) contributed actively.

Caregiver engagement in mobilization, while often passive, stemmed not from disinterest but from uncertainty about what was appropriate or safe (Cussen et al., 2024). My data extends that understanding by identifying that caregivers report that they defer to health care provider expertise or want permission from health care providers before the caregiver is willing to support patient mobilization. This relational dynamic, where engagement depends on clinical guidance, permission, and confidence, shows that early mobilization is co-constructed through interaction between patients, caregivers, and healthcare staff. Building on (Garrouste-Orgeas et al., 2010)

who described the adaptability of early mobilization definitions across ICUs, the present study extends this work by identifying opportunities for educational interventions that enhance caregiver engagement. Such efforts could advance a more patient- and family-centered understanding of early mobilization, one that better reflects how mobilization unfolds in practice.

Accordingly, early mobilization should be initiated when patients are ready (functionally) supported by caregivers who have received education from hospital staff about their role in supporting their loved one to initiate mobilizations. There is an identified need for hospital staff to share information about what early mobilization is and to help the caregivers to develop an understanding of the goals and safety of early mobility and how it can support patient recovery. This research has clear implications for practice. Education and intervention strategies should engage caregivers, helping them build the confidence, knowledge, and the reassurance needed to engage their loved ones to initiate early mobilization. Structured teaching on safe mobilization techniques, clear and agreed upon explanations of early mobilization goals, and opportunities for engagement could empower caregivers to move from peripheral observers to confident partners in recovery.

Therefore, this thesis defines early mobilization using observational data and perspectives gained through caregiver interviews as: *Early mobilization refers to any active or supported physical or functional activity initiated following CS in the ICU, either independently by the patient or, preferably, facilitated through collaboration between patients, caregivers, and clinicians in ways that support patient safety, comfort, recovery, and independence.* This definition reframes early mobilization as a shared and relational practice, one that bridges clinical objectives with the lived realities of recovery. Future research should develop and test an educational intervention that helps caregivers to more fully understand their role in supporting

their loved one to initiate early mobilization in the ICU after CS. This intervention should provide clear, practical guidance on how caregivers can support safely and confidently during mobilization, in coordination with clinicians. If demonstrated to be effective, this caregiver education approach should then be integrated into standard clinical practice to promote consistent, family-centered support for patient recovery.

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Appendices

Appendix A. STROBE Checklist for Cross-Sectional Studies

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	7-21
Objectives	3	State specific objectives, including any prespecified hypotheses	22-23
Methods			
Study design	4	Present key elements of study design early in the paper	23
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	27-32
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	27-32
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	27-32
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	29
Bias	9	Describe any efforts to address potential sources of bias	29-32
Study size	10	Explain how the study size was arrived at	n/a
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	33
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	33
		(*b*) Describe any methods used to examine subgroups and interactions	33
		(*c*) Explain how missing data were addressed	33, 79-80

		(*d*) If applicable, describe analytical methods taking account of sampling strategy	33
		(*e*) Describe any sensitivity analyses	n/a
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	43-46
		(b) Give reasons for non-participation at each stage	n/a
		(c) Consider use of a flow diagram	n/a
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	43-36
		(b) Indicate number of participants with missing data for each variable of interest	43-36
Outcome data	15*	Report numbers of outcome events or summary measures	43-46
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	n/a
		(*b*) Report category boundaries when continuous variables were categorized	n/a
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	43-46
Discussion			
Key results	18	Summarise key results with reference to study objectives	69-78
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	78-79
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	69-78
Generalisability	21	Discuss the generalisability (external validity) of the study results	78-79
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for	7-8

	the original study on which the present article is based	

Appendix B. Standards for Reporting Qualitative Research (SRQR) Checklist

No. Topic	Item	Page No.
Title and abstract		
S1 Title	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
S2 Abstract	Summary of key elements of the study using the abstract format of the intended publication; typically includes objective, methods, results, and conclusions	2-3
Introduction		
S3 Problem formulation	Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	7-23
S4 Purpose or research question	Purpose of the study and specific objectives or questions	24-25
Methods		
S5 Qualitative approach and research paradigm	Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., positivist, constructivist/interpretivist) is also recommended	26-27, 38
S6 Researcher characteristics and reflexivity	Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, or transferability	27
S7 Context	Setting/site and salient contextual factors; rationale[a]	36
S8 Sampling strategy	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale[a]	36-37
S9 Ethical issues pertaining to human subjects	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	36

S10 Data collection methods	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale[a]	37-38
S11 Data collection instruments and technologies	Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	37-38
S12 Units of study	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	36-38
S13 Data processing	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/deidentification of excerpts	38
S14 Data analysis	Process by which inferences, themes, etc., were identified and developed, including researchers involved in data analysis; usually references a specific paradigm or approach; rationale[a]	38-42
S15 Techniques to enhance trustworthiness	Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale[a]	42
Results/Findings		
S16 Synthesis and interpretation	Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	54-68
S17 Links to empirical data	Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	54-68
Discussion		
S18 Integration with prior work, implications, transferability, and contribution(s) to the field	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	69-79
S19 Limitations	Trustworthiness and limitations of findings	78-79
Other		

S20 Conflicts of interest	Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	42, 79-80
S21 Funding	Sources of funding and other support; role of funders in data collection, interpretation, and reporting	7-8

Appendix C. Observation Data Collection Form

Time Period: _____

1.Patient Early Mobilization Activity

_____

(e.g., repositioning, transfers, sitting up, marching in place, walking, etc.).

Current Time:

2. Caregiver Present?

Yes [ ] No [ ]

Stop #:

3. Type of Support

Passive [ ] Active [ ] None [ ]

4. Caregiver Receiving Staff Support?

Yes [ ] No [ ]

4a. Type of Caregiver Support

Passive [ ] Active [ ]

1.Patient Early Mobilization Activity

_____

(e.g., repositioning, transfers, sitting up, marching in place, walking, etc.).

Current Time:

2. Caregiver Present?

Yes [ ] No [ ]

Stop #:

3. Type of Support

Passive [ ] Active [ ] None [ ]

4. Caregiver Receiving Staff Support?

Yes [ ] No [ ]

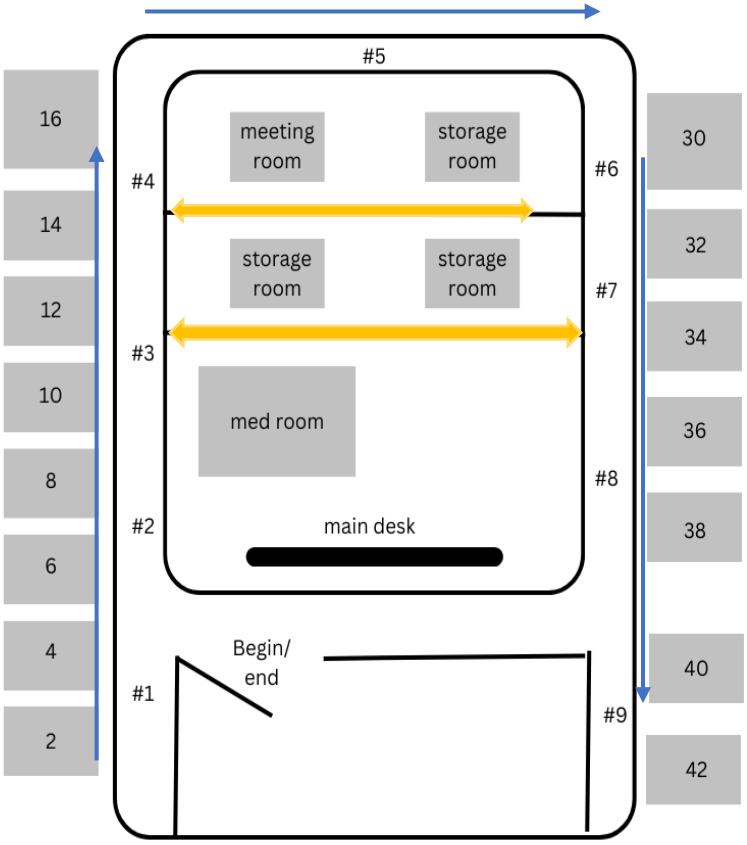
4a. Type of Caregiver Support

Passive [ ] Active [ ]

This was the data collection tool, also referred to as the observation tree checklist. It was designed to follow a logical flow of the observations I captured. The sheet began by identifying whether early mobilization was taking place and, if so, detailing what activity was being performed. Observations were recorded as short answers to allow for easier notetaking in the moment, with coding and aggregation completed during data analysis. This approach avoided the need to scramble for a category during observations.

If no early mobilization was occurring, I moved on to the next room. If early mobilization was observed, I first determined whether a caregiver was present. If no caregiver was present, I recorded this and proceeded to the next room. If a caregiver was present, I recorded their presence and assessed the type of support they were providing, if any. I then observed whether caregivers were receiving support from staff, documenting the type of support provided while staff were present. The sheet also recorded the time period (e.g., 1000–1059, 1100–1159), the exact time of the observation, and the corresponding stop number to allow for organization.

Appendix D. Observation Route in the CS ICU



This map illustrates the layout of the CS ICU and my observation traversal pattern. The 'begin/end' markers indicate where I intend to start and conclude my observations. The gray boxes on the far left and right represent each bed. The numbered stops (#1, #2, #3, etc.) indicate my observation points, where I will observe two beds at each stop before moving on to the next designated number. The yellow arrows represent the hallway connecting the med room to the storage room, as well as the storage room to the meeting room.

Appendix E. Description and Definitions of Observational Variables

#1 Patient Early Mobilization Activity: These are the early mobilization activities commonly performed in the CS ICU and what I expect to observe (later organized and referred to as "codes"). The descriptions detail the activities I anticipated seeing and how they were coded. If I was unsure how to label an activity during observations, I wrote brief description in the short-answer section and assign a code during the analysis phase.

- **Actively eating or drinking:** The patient is actively eating or drinking, meaning they are moving their utensils or bringing food or water to their ingest.
- **Repositioning:** The patient adjusts their position in bed or a chair.
- **Transfers:** The patient moves from the bed to a chair or from a chair to the bed.
- **Sitting Up:** The patient is either in the process of sitting up in bed or statically sitting up in a bed or chair.
- **Marching in Place:** The patient is standing and lifting their legs alternately in a marching motion.
- **In a Wheelchair:** The patient is in the wheelchair.
- **Walking:** The patient is walking, typically in the hallway but possibly within their room.
- **Standing:** The patient is standing still. If a patient pauses while walking, this will still be coded as walking rather than standing.
- **Activities of Daily Living:** ADL's that can be observed from the observer's location, such as brushing their hair, brushing their teeth, or having a sponge bath.
- **Use of Mobility Equipment:** The patient utilizes mobility aids, such as a bed bike or MOVEO (a device assisting the patient in standing up).

#2 Caregiver Present: If a caregiver is present within the observer's line of sight while their loved one is engaging in mobilization. This could occur either in the patient's room or the ICU hallway.

#3 Type of Support:

- **Passive:** This refers to situations where the caregiver is not actively involved in hands-on early mobilization efforts, but their attention is on the patient. For example, the caregiver may be present in the room watching the patient or providing comfort by holding the patient's hand, rubbing their back, or offering other gestures of reassurance without directly assisting in mobilization. If the patient is walking and the caregiver is observing from a distance or remaining stationary to watch, this would be classified as passive.
- **Active:** This refers to situations where the caregiver is actively involved in providing hands-on support. For example, if the patient is repositioning, the caregiver may help adjust pillows. If the patient is transferring, the caregiver may hold their hand or press on their back to assist with balance and guidance. If the patient is walking down the hallway, the caregiver may walk alongside them, push their wheelchair, or manage devices connected to the patient.
- **None:** This indicates that the caregiver is present during mobilization activities but is not engaged or paying attention. For instance, the caregiver may be on their phone, reading, or watching TV, with their attention clearly not focused on the patient.

#4 Caregiver Receiving Staff Support: If there is a hospital staff supporting in mobilization while the caregiver is present.

- **#4a Type of Support:** If there is a hospital staff supporting in mobilization while the caregiver is present then I will record how caregivers are receiving staff support.
    - **Passive:** The caregiver is present and attentive to the patient but not directly assisting in mobilization efforts. For example, the caregiver may watch the patient or provide comfort by holding their hand, rubbing their back, or offering other gestures of reassurance while the staff takes the lead in mobilization activities.
    - **Active:** The caregiver is actively involved in hands-on support alongside the staff. For example, during repositioning, the staff may adjust the patient's bed to an incline while the caregiver helps arrange pillows. During a transfer, the staff might move furniture or assist with the patient's legs, while the caregiver supports by holding the patient's hand or stabilizing their back for balance. If the patient is walking down the hallway, the staff might hold the patient's arms, and the caregiver may walk beside them, push a wheelchair, or manage connected devices.
    - **None:** The staff is supporting early mobilization, but the caregiver is not focused on the patient. For instance, the caregiver may be on their phone, watching TV, or reading, with their attention clearly not on the patient or their mobilization efforts.

Appendix F. Observation Schedule

		Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2	**Week 1** April 20th					Observation Day #1		
3	**Week 2** April 27th				Observation Day #2			
4	**Week 3** May 4th			Observation Day #3				
5	**Week 4** May 11th	Observation Day #4						Observation Day #5

This visual shows how observations were scheduled across the four weeks. Each observation day was separated by about five days, except between observation days 3 and 4, which were closer together based on how the weeks fell.

Appendix G. Interview Guide

Thank you for agreeing to participate in this interview. The recording has started. I want to remind you that you can leave the discussion at any time and can withdraw from the study at any time until June. Please let me know if you wish to withdraw.

The purpose of our conversation today is to explore your perspectives and experiences related to supporting the early mobilization following your loved one's heart surgery. Throughout the discussion, please respect the confidentiality of your loved one, and try to avoid using their names when sharing stories. If you do share a name, we will ensure it is not included in the transcripts created from this interview.

There are no right or wrong answers, only your perspective and your voice. To help with this, I may ask "silly" questions—this is just to ensure that I am not making any assumptions and that I fully understand what you mean.

Your responses are valuable, and I encourage you to share as much or as little as you're comfortable with. Let's begin.

1. When I say "early mobilization" what comes to mind?
    a. Follow up statement: Early mobilization is getting patients moving or doing some kind of physical activity soon after their surgery.
2. Do you think early mobilization is important for your loved one as they recover from heart surgery? If so, why? If not, why?
3. What does early mobilization look like for your loved one after their surgery?
4. How do you feel about your loved one being encouraged to move shortly after their surgery?
5.

I would like to ask you about different situations, and I just want you to tell me if you think this is early mobilization based off the definition I gave before. Please keep in mind these situations are likely already happening or likely to happen during your stay in the ICU.

- **a. Your** loved one reaches for a cup of water on the table.
    1. Do you think that counts as mobilization? Why?
    2. How do you support your loved one during this?
    3. How comfortable do you feel in helping with that? Why?
    4. How confident do you feel in helping with that? Why?
    5. How soon do you think this should happen after your loved one's surgery? Why?
        1. How many hours or days?
- **b. Let's say** your loved one is eating a meal with utensils while sitting up in their chair. Do you think that counts as mobilization? Why?
    1. How do you support your loved one during this?
    2. How comfortable do you feel in helping with that? Why?
    3. How confident do you feel in helping with that? Why?

4. How soon do you think this should happen after your loved one's surgery? Why?
    1. How many hours or days?

c. Now imagine...your loved one is walking down the hallway.

1. Do you think that counts as mobilization? Why?
2. How do you support your loved one during this?
3. How comfortable do you feel in helping with that? Why?
4. How confident do you feel in helping with that? Why?
5. How soon do you think this should happen after your loved one's surgery? Why?
    1. How many hours or days?

d. What if... A nurse is moving your loved one's legs in a cycling motion without any effort from your loved one.

1. Do you think that counts as mobilization? Why?
2. How do you support your loved one during this?
3. How comfortable do you feel in helping with that? Why?
4. How confident do you feel in helping with that? Why?
5. How soon do you think this should happen after your loved one's surgery? Why?
    1. How many hours or days?

e. Now, your loved one is repositing in bed.

1. Do you think that counts as mobilization? Why?
2. How do you support your loved one during this?
3. How comfortable do you feel in helping with that? Why?
4. How confident do you feel in helping with that? Why?
5. How soon do you think this should happen after your loved one's surgery? Why?
    1. How many hours or days?

f. **Lastly...Your loved one** is lying in bed.

i. Do you see that as mobilization? Why or why not?
ii. How do you support them during this 3time?
iii. How comfortable do you feel helping with that? Why?
iv. How confident do you feel in supporting during this task?
v. How soon do you think this should happen after your loved one's surgery?
    1. How many hours or days?

5. Prior to heart surgery were you given an information package? Or did you receive any information regarding your cardiac surgery?

a. If yes….

i. Can you tell me what it said about early mobilization?
ii. Did you find this package helpful?
iii. Were there any aspects you liked or disliked?
iv. What type of training would make you feel comfortable or confident?

6. Is there anything else about early mobilization you'd like to share that we haven't talked about today?

Appendix H. Script/ Form for Approaching Potential Participants

Greeting the Caregiver: Hello, do you have a moment to chat?

No: No worries, thank you!

Yes: – My name is Amy, and I am a Masters' Student in Kinesiology at the University of Manitoba.

Introducing the Research:
I am conducting a study focused on caregiver involvement in early mobility or early movement practices for their loved one in the cardiac surgery intensive care unit here at St. Boniface Hospital. I'd like to understand your perceptions of mobilization and how you support your loved one during recovery.

Explaining the Interview Process:
Would you be interested in participating in an interview? It would consist of several questions and should take less than an hour of your time. This can be an opportunity for you to share your thoughts and experiences related to early mobilization and the recovery of your loved one. The interview can be conducted in this room or in a nearby office space, depending on your preference.

I understand that this is a sensitive time for you and your loved ones, so please know that there is no pressure to participate. If you are willing, I can provide you with a letter that explains the study in detail. If now is not a good time, that's perfectly okay; you can reach out to myself or David Kent later if you're interested.

Appendix I. Demographic Questionnaire

Thank you for your participation in this study. Please take a moment to complete the following demographic information. Your responses will remain confidential and will be used solely for research purposes.

What is your age? _____

Highest Education Level Completed:
Less than high school
High school diploma or equivalent
Some college experience
Bachelor's degree
Master's degree
Doctorate or professional degree

Gender Identity:
Female
Male
Non-binary
Prefer not to say
Other: _____

Relationship to Patient:
Wife
Husband
Common Law Partner
Daughter
Son
Parent
Sibling
Friend
Primary caregiver
Other: _____

Occupation: _____

Appendix J. Notice of Study Poster

We are conducting research observations at a unit level in this area.

Research staff will not be collecting personal health information or information that can identify people.

If you would like more information, have any questions, or prefer not to be observed, please contact:

Amy Abegglen (PI)
351 Tache Avenue
Winnipeg MB
R2H 2A6

OR

David Kent
351 Tache Avenue
Winnipeg MB
R2H 2A6

This research has been approved by Research Ethics Board 1 at the University of Manitoba, Fort Garry campus. Any concerns or complaints can be directed to the Human Ethics Coordinator at Human Ethics Coordinator at (204) 474-7122 or email: **humanethics@umanitoba.ca**

Appendix K. Debriefing Poster

On , researchers conducted a unit level observational study to better understand how caregivers support early mobilization in this area. The observations did not collect personal health information or information that can identify people. Rather the research observed:

- Mobilizations
- Repositioning
- Transfers
- Walking
- Caregiver support

If you would like a summary of what the research learned, please contact:

Amy Abegglen (PI)
351 Tache Avenue
Winnipeg MB
R2H 2A6

OR

David Kent
351 Tache Avenue
Winnipeg MB
R2H 2A6

UM

This research has been approved by Research Ethics Board 1 at the University of Manitoba, Fort Garry campus. Any concerns or complaints can be directed to the Human Ethics Coordinator at Human Ethics Coordinator at (204) 474-7122 or email: humanethics@umanitoba.ca

Appendix L. Opt-Out Master List (Observations)
(The master list will be locked and stored in a separate cabinet from the Data Collection)

Date	Observation Day	Time	Room #