

A Qualitative Descriptive Study: Older Adults'  
Postoperative Pain Medication Usage  
After Total Knee Arthroplasty

by

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## Abstract

Postoperative pain is a major concern to patients undergoing surgical procedures but little research has been conducted on pain management after hospital discharge for orthopaedic patients. Since pain medication is a key component of pain management, it is important to study medication usage from a patient's perspective, for greater patient–health care provider concordance. A qualitative descriptive approach was taken to investigate the experience of 14 participants with managing pain at home immediately after total knee arthroplasty. Most participants limited their consumption and weaned themselves off prescription analgesics and used over-the-counter pain medications. The participants adapted their regimens in response to several factors and generally were content to self-manage their pain but required access to professional support. The study suggests that when developing postoperative pain management plans, health care providers may need to increase the time they spend addressing patients' concerns and considering patients' preferences.

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## Dedication

This thesis is dedicated to my family, particularly to my parents, grandmothers and brother, who provided unconditional support and encouragement throughout this undertaking.

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## List of Acronyms

HBM	Health belief model
HCP	Health care provider
NRS	Numerical rating score
MSK	Musculoskeletal
NSAIDs	Nonsteroidal anti-inflammatory drugs
OA	Osteoarthritis
ODB	Ontario Drug Benefit Program
OMA	Ontario Medical Association
OTC	Over-the-counter
PCP	Primary care provider
RA	Rheumatoid arthritis
SES	Socioeconomic status
SHSC	Sunnybrook Health Sciences Centre
TJA	Total joint arthroplasty
TKA	Total knee arthroplasty

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# Chapter 1

## Introduction

One of the major challenges for individuals who have recently undergone surgery is pain management. A high proportion of patients experience moderate-to-severe postoperative pain (Apfelbaum, Chen, Mehta, & Gan, 2003; Warfield & Kahn, 1995; Watt-Watson, Chung, Chan, & McGillion, 2004). Effective postdischarge pain management is important for patients who have undergone surgical procedures, because earlier discharge is becoming more common (McDonald, 1999; Memtsoudis, Della Valle, Besculides, Gaber, & Lasken, 2009). However, most research has focused on investigating in-hospital postoperative pain management; few qualitative studies have focused on patients' experience of managing pain at home after discharge.

Lily's case illustrates the multiple dimensions of postdischarge pain management after total knee replacement.

Lily was a retired administrative secretary in her 70s who had been diagnosed with osteoarthritis (OA) and rheumatoid arthritis (RA). She was interviewed five weeks after she had undergone total knee arthroplasty (TKA). She explained that she had had very good postoperative pain control when in the hospital but described her pain since being discharged as "awful." She was not prepared for the amount of pain she experienced at home and said, "At night it just aches and aches and aches and aches."

Lily adapted her pain medication regimen in response to several factors. She was nervous about taking too much pain medication because of the risk of becoming

“hooked,” she said, and because of her experience with adverse effects (e.g., constipation). She had been taking one Percocet<sup>®1</sup> every four to six hours to manage the pain, but recently had reduced her consumption to the equivalent of four tablets a day by splitting them in half. When she required a renewal of her prescription she decided to ask her family physician for Tylenol #3<sup>®</sup> because she did not think he would be comfortable prescribing Percocet. However, the Tylenol #3 did not manage her pain effectively and she asked her surgeon to renew the Percocet at her follow-up appointment. Prior to undergoing her TKA, Lily thought of herself as having a “strong threshold of pain,” but following surgery, she thought of herself as less tolerant to pain.

In this thesis, the researcher explores pain medication usage among a group of 14 participants during the first five to eight weeks after hospital discharge following TKA. The background section focuses on three specific areas: the prevalence and severity of postoperative pain; the importance of adequate postoperative pain control; and the role of medications in postoperative pain management for people at home.

## 1.1 Background

The percentage of people reporting postoperative pain varies by study and surgical procedure. In a national (U.S.) telephone survey, Warfield and Kahn (1995) found that 77 percent of participants had experienced postoperative pain after undergoing a variety of

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<sup>1</sup> Patients mostly referred to their pain medication by its brand name, so the brand names of the medications will be used in this thesis.

inpatient or outpatient procedures. In a more recent study, modelled after Warfield and Kahn's (Apfelbaum et al., 2003), 82 percent of respondents reported postoperative pain. Both studies included participants who had undergone surgical procedures in the previous five years. Watt-Watson, Stevens, et al. (2004) interviewed participants while they were still in the hospital and found that 80 percent of those who had undergone coronary artery bypass graft surgery rated their pain in the moderate-to-severe range on postoperative Day 2. Sixty-nine percent of participants continued to rate their pain as moderate-to-severe on postoperative Day 5. Of patients who have undergone primary TKA, up to 36 percent experience daily pain four months after the procedure (Puolakka et al., 2010). Qualitative research has found that many TKA recipients continue to experience pain six months—and even two to five years—after the procedure (Jeffery, Wylde, Blom, & Horwood, 2011; Woolhead, Donovan, & Dieppe, 2005). These findings indicate that significant numbers of patients experience moderate-to-severe postoperative pain despite differences in the surgical procedures and timing of the surveys.

Adequate postoperative pain management may help improve surgical outcomes. Mobilizing after surgery is easier for individuals with better pain management. Faster mobilization helps limit loss of muscle tissue, inability to excrete fluids, thrombosis, and respiratory complications (Rosenberg & Kehlet, 1999). Additionally, evidence suggests an association between the severity of acute postoperative pain and the development of chronic postsurgical pain (Katz & Page, 2010; Katz & Seltzer, 2009). The rate of chronic postsurgical pain ranges from 10 percent to 50 percent depending on the type of procedure (Kehlet, Jensen, & Woolf, 2006). Up to 44 percent of TKA recipients report experiencing persistent postsurgical pain three to four years after the procedure (Wylde, Hewlett,

Learmonth, & Dieppe, 2011). Patients who experience moderate to intolerable postoperative pain in the first week after TKA are more likely to go on to develop persistent pain (Puolakka et al., 2010). It is not known if the development of chronic postsurgical pain is directly related to inadequately managed acute postoperative pain.

Currently there are three major pain management techniques: psychological modulation (e.g., relaxation); sensory modulation (e.g., physiotherapy); and medication (e.g., analgesics; Melzack & Wall, 1991). Medication is often prescribed to manage postoperative pain. Warfield and Kahn (1995) found that 71 percent of patients were provided with pain medication during the postoperative period.

In the existing literature, medication usage usually has been conceptualized as an issue of compliance or adherence. This thesis uses the definition of compliance provided by Pound et al. (2005): “Doctors’ desire for patients to comply with their instructions about taking medication.” In patients with chronic pain, the rates of noncompliance with pain medication regimens have been reported between 7.7 and 52.9 percent (Broekmans, Dobbels, Milisen, Morlion, & Vanderschueren, 2009). While it has been established that chronic pain patients often do not comply with their medication prescription, there is little research on patients’ experience of taking analgesics at home for acute postoperative pain.

A few qualitative studies have investigated patient postoperative pain medication usage<sup>2</sup> after hospital discharge. Leegaard, Naden, and Fagermoen (2008) interviewed women one

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<sup>2</sup> In this thesis the medication-taking behaviours of patients will be referred to as *medication usage*. This term was selected because it positions patient behaviours more neutrally than *medication compliance* or *medication adherence*, which imply that the patient is supposed to follow a medication regimen as prescribed.



to two weeks after they were discharged following elective cardiac surgery. They found that the women avoided pain medication, often waiting until the pain was unbearable before taking it. None of the women used the maximum amount of pain medication prescribed, and many of them limited their activity to avoid taking more pain medication. Older, Carr, and Layzell (2010) investigated postoperative pain medication usage in patients who had undergone a variety of day-case surgical procedures and found that many had avoided pain medication despite experiencing high levels of pain. Older et al. suggested that participants tried to endure pain because of the value they placed on stoicism and because of their previous experience with pain. They found that participants worried about taking new analgesics, and used nonpharmacological strategies to cope with pain. Watt-Watson, Chung, et al. (2004) found that half of day-case surgery patients had discontinued taking opioids 72 hours after discharge. Watt-Watson, Chung, et al. suggested that adverse effects associated with taking opioids may have explained the limited pain medication consumption.

Participants in all three studies limited their pain medication usage when managing postoperative pain at home, yet there has been little research on patients' experience of managing pain at home during the postoperative period. This study investigates pain management after discharge in a population of TKA recipients.

Total joint arthroplasty (TJA) is a common procedure performed on older adults. Between 2005 and 2006, 140,000 orthopaedic surgeries were performed in Canada (Canizares, MacKay, Davis, Mahomed, & Badley, 2009), of which half were surgical procedures to treat arthritis or related conditions (Canizares et al., 2009). TJA accounted for 25 percent of these procedures; knees were the most common joint replaced in patients with arthritis

(Canizares et al., 2009). The peak volume of orthopaedic procedures to treat arthritis occurred in patients who were 64 years of age (Canizares et al., 2009).

Effective postoperative pain management continues to be a concern for patients undergoing total joint arthroplasty (Hunt et al., 2009). A study conducted at the same hospital as this current study reported patient pain intensity using the numerical rating score (NRS).<sup>3</sup>

Participants were asked to self-assess their pain three times daily between postoperative Days 5 to 9. The mean pain intensity of TKA recipients during the first five days after discharge was between 3.5 and 4.4 (Ramlall, Archibald, Pereira, Sawhney, & Ramlall, 2010). Respondents reported moderate-to-severe pain at home during their first week after discharge but did not use the maximum amount of pain medication they had been permitted. In another study, Andersen et al. (2009) found that 52 percent of participants reported moderate pain and 16 percent experienced severe pain one month after TKA. Of these participants, 36 percent continued to take strong opioids (defined as morphine or equivalent) one month after surgery compared to the 4 percent of participants who took opioids preoperatively.

In summary, postoperative pain continues to be a problem that patients must contend with after surgical procedures. Medication is often prescribed to help manage this pain at home. However, there is little knowledge of pain medication usage at home during the recovery period immediately following hospital discharge. There is evidence that patients avoid taking pain medication and endure high levels of postoperative pain at home because of

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<sup>3</sup> The NRS is an 11-point pain intensity scale. Patients select a number from 0 to 10 to describe their pain intensity, where 0 = no pain and 10 = worse possible pain (Farrar, Young, LaMoreaux, Werth, & Poole, 2001).

experience with adverse effects, stoicism, previous experience with pain, and the desire to avoid medications (Leegaard et al., 2008; Older et al., 2010; Watt-Watson, Chung, et al., 2004). Similarly, studies of people with chronic pain have found that patients do not always take their medication as prescribed (Broekmans et al., 2009, 2010). To supplement current research, this thesis explores the postoperative pain medication usage of TKA recipients at home in the period following hospital discharge. TKA recipients were selected because knee replacement is known to be an acutely painful procedure, after which a significant number of patients go on to develop chronic pain.

## 1.2 Research Objective

The purpose of this study was to investigate patients' pain medication usage during the early postoperative period after hospital discharge using a qualitative approach. Most of the existing literature has considered medication usage as an issue of patients' compliance or adherence (Broekmans et al., 2009; Coombs et al., 1995; Svensson, Kjellgren, Ahlner, & Saljo, 2000; Wu et al., 2008). Epidemiological studies have identified the prevalence of patients' noncompliance and several patients' characteristics influencing medication usage. Some researchers have critiqued this model of compliance because of the assumption that the patient should follow physician's orders (Conrad, 1985; Donovan & Blake, 1992).

Qualitative studies have provided new insights into patients' experience of taking medications at home (Chen, Wu, Yen, & Chen, 2007; Svensson et al., 2000; Wu et al., 2008). Few qualitative studies on pain medication usage have been conducted with patients suffering acute or chronic pain; however, there is some evidence that patients generally try

to avoid taking pain medications (Ersek, Kraybill, & Du Pen, 1999; Leegaard et al., 2008; Older et al., 2010; Sale, Gignac, & Hawker, 2006).

The following research question guided this investigation:

How do older adults who have undergone total knee arthroplasty practise and understand pain medication usage at home during the first five to eight weeks after their surgical procedure?

It is hoped that an increased understanding of patients' experience of taking medication at home will lead to the development of pain management treatment plans that increase patient and health care provider (HCP) concordance. The definition of concordance used here is that put forward by Pound et al. (2005): "Anticipated outcome of consulting between doctors and patients about medicine taking, if both parties can be encouraged to work together as partners."

## 1.3 Chapter Outline

The contents of this thesis are presented as follows.

This background chapter focuses on three specific areas: first, the prevalence and severity of postoperative pain; second, the importance of adequate postoperative pain control; and third, the role of medications in postoperative pain management. The second chapter is an in-depth review of the literature on patients' medication usage. This review covers relevant epidemiological and qualitative studies published in the medical and social science literature. The third chapter examines the methodological framework and research design guiding this study. The fourth chapter presents the main findings of the study, including

three main aspects of participants' medication usage at home after discharge. The fifth chapter examines the study's central theme and the influences of postoperative pain medication usage. The central theme is that participants followed medication guidelines when possible and adapted their regimens as necessary. The sixth chapter presents the secondary theme of this thesis, which is that participants preferred to self-manage their pain but sought professional support after discharge. The final chapter concludes by summarizing the thesis, describing the study's limitations, and suggesting future research directions.

## Chapter 2

### Literature Review: Approaches to Studying Patients' Medication Usage

This selective review explores the theoretical approach used to study patients' medication usage in both the epidemiological and qualitative literature. The implications of each approach on patient care are examined. Five main topics are covered: (a) historical context—the evolution from patients' compliance to concordance; (b) epidemiology contribution—identifying the problem of noncompliance; (c) critiques of epidemiological studies of compliance; (d) qualitative research—exploring patients' experience of taking medication; and (e) moving beyond compliance and supporting patients' self-management.

Several electronic databases (e.g., Web of Science, Medline, and CINAHL) were searched using key words including *pain medication compliance, adherence, concordance, and self-management*. Of the vast quantity of epidemiological articles resulting from these searches, those pertaining to acute or chronic pain and medication usage outside the hospital setting were retained for this review. Studies on people with chronic pain were included because few studies of medication usage for patients with acute pain after hospital discharge were found. Few qualitative articles were captured in this initial search but a hand search of several key social science and health journals, such as *Social Science and Medicine* and the *Sociology of Health*, uncovered several more studies of patients' medication usage. The qualitative literature review was expanded to include all types of medications because only four qualitative articles pertained to patients' experience of taking pain medication at home. After the study was completed, a

literature review on patient self-management was undertaken because it manifested itself as a prominent theme in the interview data.

The literature review demonstrated that the study of patients' medication usage is evolving, from a focus on compliance towards a patient–health care provider concordance. Most of the research published in the epidemiological literature continues to evaluate patients' compliance when studying medication usage (Berndt, Maier, & Schutz, 1993; Broekmans et al., 2010; Coombs et al., 1995; McCracken, Hoskins, & Eccleston, 2006). However, several researchers have criticized the study of compliance for failing to consider patients' experience of taking medications (Conrad, 1985; Donovan & Blake, 1992; Trostle, 1988). Capturing patients' experience of taking medication may help incorporate their values and preferences into treatment plans. Patients who are included in medical decision making may have improved compliance and better clinical outcomes, compared to patients treated in a more clinically directed manner (Hays et al., 1994; Joosten et al., 2008; Wilson et al., 2010).

Many researchers have employed qualitative methods to capture the patient's perspectives on medication usage at home (Chen et al., 2007; Erlen & Mellors, 1999; Ersek et al., 1999; Leegaard et al., 2008; Older et al., 2010; Sale et al., 2006). Despite the move towards understanding patients' experience of taking medications, the findings and clinical recommendations in many qualitative studies are presented as they apply to the concept of compliance/adherence. Some qualitative researchers have moved beyond this, towards positioning patients' modifications to medication regimens as self-management (Conrad, 1985; Roberson, 1992; Trostle, 1988). This review examines the transition from a patients' compliance to a patient–health care provider concordance perspective.

## 2.1 Historical Context: Evolution From Patients' Compliance To Concordance

Studies of patients' compliance first appeared in epidemiological literature, which in the 1950s considered patients' compliance with tuberculostatic agents. In the early 1970s, compliance with antihypertensive medication was examined (Vermeire, Hearnshaw, Van Royen, & Denekens, 2001). The terms *compliance* (Coombs et al., 1995), *adherence* (Banning, 2008), and *concordance* (Badger & Nolan, 2006) are used to describe patients' uptake of medical advice, yet these terms have subtle differences in meaning (Banning, 2008; Pound et al., 2005). This chapter examines the terminology and key concepts guiding research on patients' medication usage.

### 2.1.1 The Terminology of Compliance

Some researchers have argued that the terms *compliance*, *adherence*, and *concordance* are used interchangeably in the literature, despite their different meanings and implications (Banning, 2008; Pound et al., 2005), and have put forward interpretations of the meanings of these three concepts. Pound et al. (2005) defined compliance, adherence, and concordance in a recent review of qualitative studies of patients' medication usage.

Compliance, in their view, was "doctors' desire for patients to comply with their instructions about taking medicine" (Pound et al., 2005, p. 134). Adherence was a more neutral, but still prescriptive, way of describing patients' uptake of physicians' orders. The authors' preferred term, concordance, was the "anticipated outcome of the consulting between doctors and patients about medicine taking, if both parties can be encouraged to



work together as partners” (Pound et al., 2005, p. 134). Pound et al. believed that concordance encourages shared decision making between patients and physicians. The authors suggested a temporal evolution in terminology, from compliance to adherence to concordance, and distinguished subtle differences among these concepts.

In contrast, Banning (2008) argued that these terms described different aspects of patients’ medication usage. She reviewed the epidemiological and qualitative literature that focused on the medication usage of older adults, and suggested that adherence was the central aim, concordance was the process of reaching adherence, and compliance was the outcome of patients’ medication usage. According to Banning, adherence was the most common terminology used in the current literature. She suggested that compliance, adherence, and concordance referred to three aspects of one process; this differs from Pound et al. (2005) who viewed these terms as three distinct concepts describing one phenomenon.

In this thesis, the term *compliance* is used when discussing adherence or compliance, since both terms pertain to the degree to which a patient follows a prescription.

### 2.1.2 Progress Towards Concordance

Some recent publications have used the term *concordance* instead of compliance or adherence in describing patients’ medication usage (Hobbs, 2006; Johnell, Lindstrom, Sundquist, Eriksson, & Merlo, 2006). However, Heath (2003) has argued that researchers working with the concept of concordance still often assume that patients should obey medical orders, despite the concept’s encouragement of shared decision making between the physician and patient. Heath (2003) stated that the ideology behind the concept of

concordance maintains the basic assumptions of the compliance model and studies using the concept of concordance rarely differ from studies of compliance or adherence.

Concurrent with a shift towards patient–health care provider concordance is a movement in the Canadian medical system towards patient-centred care. The Ontario Medical Association (OMA; 2010) asserts that patients need to be the centre of the health care system and define patient-centred care in *Patient-Centred Care* as follows:

A patient-centred care system is one where patients can move freely along a care pathway without regard to which physician, other health care provider, institution, or community resource they need at that moment in time. The system is one that considers the individual needs of patients and treats them with respect and dignity. (p. 34)

The OMA (2010) described patient-physician shared decision making as one of the key components of patient-centred care; however, it acknowledged that different patients will want to be included to different extents in the decision-making process. Including patients in the decision-making process requires that health care providers understand patients' experiences and values. Evidence suggests that involving patients in medication decision making can increase compliance and improve health outcomes (Hays et al., 1994; Joosten et al., 2008; Wilson et al., 2010). The aims of patient–health care provider concordance as defined by Pound et al. (2005) align well with the key objectives of patient-centred care set out by the OMA.

For the purposes of this thesis, patients' usage of pain medication at home after TKA will be qualitatively examined with the aim of understanding patients' experience. The thesis examines patients' experience of taking medication as an issue of concordance, not

compliance. The concept of patient–health care provider concordance as defined by Pound et al. (2005) has guided this exploration of patients’ medication usage.

## 2.2 Epidemiological Contribution: Identifying the Problem of Noncompliance

In the epidemiology literature, patients’ medication usage is usually thought of as an issue of compliance. Rarely does it critique the concept of compliance. Studies of compliance are underpinned by several theoretical frameworks, such as the Traits Model, Health Belief Model, and Theories of Reasoned Action and Planned Behaviour (Coombs et al., 1995). This chapter reviews the epidemiological literature on patients’ compliance with pain medication. This literature reports that patients’ noncompliance is a significant problem and associates several traits and health beliefs of patients with their medication usage.

Most of the research in this literature was conducted on patients with chronic, noncancer pain as opposed to those in acute postoperative pain. Studies of chronic pain patients were included because few studies have investigated patients’ compliance with analgesics prescribed for acute pain. The main difference between acute and chronic pain in patients is the duration of treatment, a factor that may affect the concerns each population has of taking analgesics. Nonetheless, the literature on medication compliance for patients with chronic pain does provide insight into factors influencing analgesic usage for acute pain.

## 2.2.1 Theoretical Frameworks Guiding Compliance Research

Most articles explored in the epidemiology literature evaluated patients' compliance with a prescribed regimen. A brief review of the key models guiding compliance research is presented preceding the review of literature on pain medication compliance. Coombs et al. (1995) attributed the underlying assumptions of compliance studies to three theoretical frameworks: (a) the Traits Model, (b) the Health Belief Model (HBM), and (c) Theories of Reasoned Action and Planned Behaviours.

### 2.2.1.1 Traits Model

Coombs et al. (1995) argued that the Traits Model commonly guided earlier compliance research and considered that noncompliance resulted from a lack of self-discipline in patients. The model emphasized the relationship between patients' characteristics and compliance rates. Age, gender, race, marital status, socioeconomic status (SES), and education were often associated with patients' compliance rates. However, a review conducted by Haynes (1976, as cited in Coombs et al., 1995) on the determinants of patients' compliance did not identify consistent associations between sociodemographic characteristics and compliance. Coombs et al. critiqued the Traits Model for assuming that noncompliance arose from patient shortcomings and from considering all patients with common traits as a homogeneous group.

### 2.2.1.2 Health Belief Model (HBM)

The Health Belief Model, which emerged in the early 1970s, sought to explain the role of patients' beliefs on health decision making (Coombs et al., 1995). It originally was developed to explain patients' uptake of preventative actions, such as vaccinations (Rosenstock, Strecher & Becker, 1988). The Health Belief Model was later adapted by Becker (as cited in Conrad, 1985) to account for compliance behaviours. The Health Belief Model posits that patients undertake a cost-benefit analysis of a treatment based on their perceived susceptibility to illness and seriousness of the disease (Coombs et al., 1995). Their analysis is mediated by demographic barriers, the threat of disease, and cues of action (e.g., media campaigns and advice from others; Coombs et al., 1995).

The Health Belief Model was modified to account for acute and chronic illness (Coombs et al., 1995). For acute illness, readiness to undertake the sick role, and modifying and enabling factors were incorporated into the model. The modifying and enabling factors included: demographic factors (e.g., age); structural variables (e.g., complexity of the regimen); situational variables (e.g., satisfaction with clinic visit); interactional variables (e.g., patient assessment of physician-patient consultation); and prior experience. For chronic conditions, the age of an individual played a stronger role in compliance because older adults were more likely to forget or misunderstand their medication regimen (Coombs et al., 1995).

### 2.2.1.3 Theories of Reasoned Action and Planned Behaviour

Coombs et al. (1995) stated that compliance studies have been guided by both the Theory of Reasoned Action and the Theory of Planned Behaviour. Both theories asserted that individual behaviour depends on motivation. The Theory of Reasoned Action assumed that an individual has full control over his actions; whereas the Theory of Planned Behaviour assumed an individual's actions are restricted by his perceived level of control over his actions. The Theory of Reasoned Action suggested that individuals with stronger behavioural intentions are more likely to perform that action. Behavioural intentions are dependent on attitudes and social influences (e.g., health care providers, friends, and family; Coombs et al., 1995). The Theory of Planned Behaviour added an additional predictor of patients' compliance, which is the perceived behavioural control of the individual. Coombs et al. suggested both of these theories have contributed to the study of compliance.

These three models limit the study of medication usage to patients' traits, beliefs, and decision-making processes. The underlying assumption is that patients' characteristics associated with noncompliance can be identified and modified. Each of these models placed the onus for compliance on the patient and failed to consider how the characteristics of a prescribed regimen influenced medication usage. Studies that are guided by these models often considered patients' experiences only in terms of their effect on compliance, thereby restricting the type of analysis that could be conducted on the data.

## 2.2.2 Rates of Compliance and Noncompliance

Evaluating rates of compliance and noncompliance is a key component of the epidemiological literature. Researchers have classified patients' behaviours as compliant or noncompliant prior to examining compliance rates. Labelling patients places the onus of compliance on the patient instead of on the medical system. Several studies have outlined criteria that indicated patients' noncompliance but the definition presented by Coombs et al. (1995) encompasses most of these criteria. They defined noncompliant patients as: (a) failing to fill their prescription, (b) taking too much or too little medication, (c) taking erratic doses (e.g., adjusting time intervals), (d) discontinuing medication too early, (e) using medication without a prescription, (f) combining prescription medication with over-the-counter (OTC) or illicit drugs, and (g) mixing prescription medication with alcohol. Noncompliance has been differentiated as intentional or unintentional. Intentional noncompliance has been reported as deliberate, knowledgeable, or intelligent and refers to purposeful alterations of medication regimens (Knight, Campbell, Williams, & Clark, 1991). Unintentional noncompliance is considered to be a result of patient confusion or forgetfulness (Coombs et al., 1995).

Several studies have examined the rates of patients' compliance with pain medication regimens. A variety of techniques have been employed to explore patients' compliance with pain medications including: patient questionnaires, urine screening, database statistics, and self-report (Berndt et al., 1993; Broekmans et al., 2009, 2010; Fischer et al., 2010; McCracken et al., 2006). Broekmans et al. (2009) reported a rate of noncompliance between 7.7 and 52.9 percent after reviewing the pain medication compliance literature for

chronic pain patients. In addition, Fischer et al. (2010) found that pain medication prescriptions were not filled 34.5 percent of the time. This was noticeably higher than for drugs treating diabetes and high blood pressure. Few studies assessed patients' rates of compliance with medications prescribed to manage acute pain. However, McIntosh and Leffler (2004) investigated the rate of primary pain medication noncompliance in patients who had received a prescription prior to being discharged from an emergency department following treatment for an orthopaedic injury. They defined primary noncompliance as failure to fill a prescription. McIntosh and Leffler reported that 17 percent of patients did not fill their prescriptions and listed several concerns patients had with analgesics, such as fears of taking opioids and experiences of adverse effects. Patients who did not adhere to their pain medication prescriptions usually limited analgesic consumption rather than overused medication (Broekmans et al., 2010; Lewis, Combs, & Trafton, 2010; McIntosh & Leffler, 2004).

These findings have established that patients' noncompliance with pain medication prescriptions is common. From a medical standpoint, the high rates of patients' noncompliance are of concern because it may indicate that patients have inadequately managed pain. This leads to an assumption that rates of compliance should be maximized to better manage patient pain. The emphasis in this research has been on identifying patients' traits, beliefs, and decision-making rationales that contribute to noncompliance so intervention can be developed to increase compliance. Few studies in the epidemiology literature considered that high rates of noncompliance may indicate a problem with the pain management plans prescribed to patients as opposed to characteristics of the patients.



### 2.2.3 Factors Contributing to Compliance and Noncompliance

Factors associated with noncompliance identified in the epidemiology literature pertain to patients' characteristics, health beliefs, and pragmatic limitations. These findings are reviewed here because they provide insight into what is currently known about patients' usage of pain medication.

Only a few studies have been conducted on patients' compliance with analgesics prescribed for acute pain. McIntosh and Leffler (2004), for example, contacted patients who had received pain medication prescriptions seven to 14 days after they were discharged from the emergency department following treatment for orthopaedic injuries. Patients who did not fill their medication prescription said they did not want to take opioids; lacked pain; had medication at home from a previous prescription; had no time to pick up their medication; did not want to experience unintended outcomes;<sup>4</sup> or did not think the pain medication prescribed was potent enough. Patients who did not take pain medication as prescribed were less satisfied with pain management than those who had filled their prescription for analgesics.

Many studies identified predictors of pain medication usage in patients with chronic pain. Among compliance predictors were: accepting pain as a chronic condition, pressure from family or friends to take medication, higher affective pain scores, lower psychological

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<sup>4</sup> Unintended outcomes were reported as side effects and adverse effects in the literature. For the purposes of this thesis, the terminology used within each study will be retained.

distress, fewer concerns about side effects, lower concerns about withdrawal, fewer prescriptions, better patient-physician communication, and understanding of the function of pain medication (Broekmans et al., 2009, 2010; Dobkin, Sita, & Sewitch, 2006; Lewis, Combs, et al., 2010; Knight et al., 1991; Nicklas, Dunbar, & Wild 2010). Those who self-medicated with over-the-counter medication were more likely to underuse prescription analgesics (Broekmans et al., 2009, 2010). Unintentional noncompliance, such as patients' forgetfulness or carelessness, reportedly contributed to pain medication noncompliance (Dobkin et al., 2006). Nonmodifiable patients' traits of being younger, non-White, and female were associated with prescription medication underuse (Broekmans et al., 2010; Lewis, Combs, et al., 2010). The majority of the predictors identified in the epidemiology literature focused on patients' traits associated with compliance and only a minority of the findings pertained to characteristics of the medication regimen.

Several concerns patients had about taking pain medications were identified in the epidemiology literature. Lewis, Combs, et al. (2010) investigated the reasons for underuse of pain medication in a group of veterans who had been prescribed analgesics for any pain problem in the 12 months preceding the study. They found that patients wanted to reduce their medication intake to decrease adverse drug reactions and the risk of addiction, make regimens more acceptable, reduce costs, take medication strategically for symptoms, and substitute nonprescription methods of pain control. Patients' concerns with taking pain medications included fears of addiction and drug tolerance, short- and long-term side effects, withdrawal, and being criticized by others for taking analgesics (McCracken et al., 2006; Monsivais & McNeill, 2007).

The literature frequently cited patients' fears of addiction as a predictor of noncompliance; however, the meaning and use of "addiction" is not clear to medical professionals or to the general public. The definitions of and use of the terms *addiction* and *dependence* have been debated within the medical community (Maddux & Desmon, 2000; O'Brien, Volkow, & Li, 2006; West & Miller, 2011). O'Brien et al. (2006) defined addiction as a "compulsive drug-taking condition" (p. 764) and physical dependence as "normal and can occur in anyone taking medications affecting their central nervous system" (p. 764). The patients interviewed for this thesis described a risk of becoming "hooked" to medications; it is unclear whether they were concerned about addiction, dependence, or both. In this thesis, patients' concerns with becoming "hooked" on medication will be labelled as "fears of addiction."

The factors associated with compliance cover many areas of concern. Pain medication compliance was associated with intensity of pain; fears of adverse effects, addiction, and tolerance; judgments of others; characteristics of the regimen; personal traits; and aspects of the physician-patient relationship. The majority of the research was conducted with patients suffering chronic as opposed to acute pain, so the transferability to the acute patient population is not known. However, some of the patients' concerns with pain medications (e.g., tolerance) identified in chronic pain patients were not presented in the acute pain literature. This could be a result of the limited number of studies that have investigated acute pain medication usage, or it could reflect the difference in the duration of medication usage and severity of illness between these two patient populations.

## 2.2.4 Summary of the Epidemiology Literature

The aims of the epidemiology studies were to identify accurate methods of evaluating compliance and describe factors associated with medication compliance. Patients' noncompliance with pain medication was established as a common problem influenced by several patients' characteristics and beliefs. The concept of compliance was central to this literature; the majority of findings were interpreted as they related to the concept of compliance. This limited the clinical recommendations to increasing patients' education and improving health care provider–patient interactions.

An alternative way to interpret these findings would be to assess the factors influencing patients' usage of pain medication relative to current medication prescribing practices. For example, patients listed fears of addiction and concerns with adverse effects, which could indicate the need for the development of medications that do not cause these adverse effects. An increase in the amount of information given to patients about medication's function and preventing and managing adverse effects may relieve some of the concerns about adverse effects. Furthermore, patients' concerns with pain medications may indicate that nonpharmacological options of pain management should be considered. The type of analysis that could be conducted was restricted, since many of the epidemiology studies were bounded by the concept of compliance.

## 2.3 Critiques of Epidemiological Studies of Compliance

Several prominent social science researchers have critiqued the concept of compliance by asserting that the underlying assumptions of compliance create a power dynamic between the physician and patient and fail to consider patients' experience and values in taking medications. This section examines a few critiques of compliance.

Conrad (1985) suggested that the concept of compliance is medically centred because it assumes that the doctor provides a command that the patient is expected to obey. He described the underlying paternalistic assumptions associated with the concept of compliance, asserting that much of the literature on noncompliance places the main responsibility for compliance on the patient rather than on the physician. Conrad noted common findings among compliance studies were that the clarity of information presented to patients needed to be improved, and that patients' expectations needed to be met. He critiqued the Health Belief Model because it assumed that patients prioritize health beliefs above other life experiences. Conrad pointed out that usually people are in the role of patient for only a small proportion of their lives, and suggested that other life experiences needed to be taken into account when considering medication usage.

Trostle (1988) argued that the concept of compliance was actually about power and control. He suggested that most compliance studies focused on patient behaviours or physician-patient interactions, and asserted that patients' education, behavioural reinforcement, and better patient-health care provider communication had often been put forward as solutions

to improve adherence. However, Trostle felt that this placed the physician in a dominant position and the patient in a dependent position. He suggested that medication usage studies should move away from the concept of compliance to obtain a more comprehensive understanding of patients' medication usage.

Like Trostle, Donovan and Blake (1992) argued that the concept of compliance suggested that patients were expected to obey the orders of a physician. The authors stated that noncompliance was often assumed to be unintentional, due to patients' forgetfulness or ignorance. However, they argued that noncompliance, considered irrational from the medical perspective, would represent reasoned decision making if medication usage were explored from the patient's perspective. Donovan and Blake argued that decisions to take medication are made after patients conduct a cost-benefit analysis of the treatment. They asserted that the concept of compliance is irrelevant from the patient's perspective and that the personal circumstances of the patient contribute to the decision to take medication.

These critiques influenced the analysis to move beyond the concept of compliance in this thesis. In alignment with Conrad (1985), Trostle (1988), and Donovan and Blake (1992), the aim of this thesis is to consider the patient's perspective as equal but different from the medical perspective. While the medical perspective is based on scientific evidence and clinical knowledge, the patient's perspective is influenced by patients' experiences and knowledge of their own bodies. It is important to understand this patient's perspective in order to move towards patient–health care provider shared decision making or concordance. Qualitative research methods permitted the exploration of the patient's perspective on taking medication.

## 2.4 Qualitative Research: Exploring Patients' Experience of Taking Medication

Qualitative research uses naturalistic approaches to gain knowledge of participants' perspectives (Patton, 2002), and several researchers have employed qualitative research techniques to explore medication usage. Qualitative methods include observation, interviews, and focus groups (Patton, 2002). Qualitative researchers have presented patients' experience of taking medications and provided more in-depth accounts of medication usage than traditional epidemiology studies. The researcher found few qualitative studies of pain medication usage so the qualitative literature review was expanded, to include patients' usage of all types of medications. As with the epidemiology literature, most qualitative studies dealt with patients taking medication to treat chronic conditions. The literature on medication usage for chronic conditions is useful because many of the factors influencing long-term medication usage are also relevant for short-term usage.

### 2.4.1 Factors Influencing Patients' Medication Usage

Qualitative research methods have been used to examine patients' medication usage for a variety of conditions. Most of the studies investigated usage for chronic illnesses, such as heart failure and hypertension (Chen et al., 2007; Johnson, Williams, & Marshall, 1999; Svensson et al., 2000; Reid et al., 2006; Wu et al., 2008) and HIV (Erlen & Mellors, 1999; Stone et al., 1998). These studies went beyond the concept of compliance and explored patients' experience of taking medication. Several of the factors identified as influencing

patients' medication usage that are relevant to this study on pain medication usage are summarized below.

#### 2.4.1.1 Patients' Concerns With Unintended Outcomes

One of the most common concerns patients had was unintended outcomes, including adverse effects and fears of addiction. Concerns about adverse effects were voiced by patients taking medication to treat HIV (Erlen & Mellors, 1999), heart conditions (Svensson et al., 2000), and pain (Ersek et al., 1999; Older et al., 2010). Some patients were concerned about short-term adverse effects, while others were concerned with long-term consequences to their health, such as liver or kidney damage (Ersek et al., 1999). Patients identified being fearful of addiction when taking pain medications (Ersek et al., 1999; Older et al., 2010; Sale et al., 2006). Concerns with addiction and adverse effects were reported by patients taking medication for both acute and chronic conditions.

#### 2.4.1.2 Perceived Need and Effectiveness of Medication

Both the perceived need and the effectiveness of medications influenced medication usage in patients with heart conditions (Chen et al., 2007; Johnson et al., 1999; Wu et al., 2008), HIV (Erlen & Mellors, 1999; Stone et al., 1998), and pain (Ersek et al., 1999; Knight et al., 1991; Sale et al., 2006). Patients who believed their heart condition was acute had higher long-term noncompliance than those who considered their condition chronic (Chen et al., 2007). The asymptomatic nature of hypertension led to patients' noncompliance with blood pressure medications, and the presence of deteriorating health and improvements in evaluative tests led to increased motivation to take medication in HIV patients (Erlen & Mellors, 1999; Stone et al., 1998; Svensson et al., 2000). Patients being treated for pain



often took their nonsteroidal anti-inflammatory drugs (NSAIDs) only when symptoms were present (Knight et al., 1991). Patients justified limiting their consumption of medication by explaining that the medication was not effective or necessary. For example, they sometimes stated that they did not take analgesics because they had a high tolerance to pain or waited until pain was unbearable (Ersek et al., 1999; Leegaard et al., 2008; Sale et al., 2006). The perceived need of patients to take medication influenced medication usage for a variety of conditions.

#### 2.4.1.3 Pragmatic Issues of Medication Usage

Many studies identified practical issues that influenced medication usage. High costs were cited as a reason for noncompliance (Ersek et al., 1999; Lewis, Askie, Randleman, & Shelton-Dunston, 2010). Patients who developed routines and memory cues were more likely to adhere to their regimens (Johnson et al., 1999; Lehane, McCarthy, Collender, & Deasy, 2008; Lewis, Askie, et al., 2010). Complex medication regimens led to forgetfulness and noncompliance (Chen et al., 2007; Reid et al., 2006; Wu et al., 2008). Competing demands of life, such as daily chores, were also associated with greater noncompliance (Svensson et al., 2000).

#### 2.4.1.4 The Role of Family and Health Care Providers

Family and health care providers were found to influence patients' medication usage. Positive patient–health care provider relationships motivated individuals with HIV (Stone et al., 1998), high blood pressure (Chen et al., 2007), and heart failure (Wu et al., 2008) to comply with their medication regimens. Another study found that patient–health care provider relationships that involved trust and paternalism promoted patients' compliance

with pain medication after day surgery (Older et al., 2010). A few studies suggested that increased medication compliance resulted from positive family reinforcement, such as reminders or encouragement (Chen et al., 2007; Lehane et al., 2008; Lewis, Askie, et al., 2010; Wu et al., 2008). There is some evidence that patients' acquaintances have discouraged them from taking antidepressants (Badger & Nolan, 2006). The advice of family and health care providers both increased and decreased patients' medication usage.

#### 2.4.1.5 Factors Beyond Concerns With the Medications Themselves

Several factors influencing medication usage go beyond patients' concerns with medications. Qualitative research has linked patients' identity work<sup>5</sup>, cultural background, and issues of control with medication usage (Adams, Pill, & Jones, 1997; Badger & Nolan, 2006; Conrad, 1985; Kaljee & Beardsley, 1992; Morgan & Watkins, 1988). A study conducted with asthma patients found that acceptance or denial of the condition by sufferers influenced their medication usage (Adams et al., 1997). Adams et al. (1997) concluded that identity work conducted by asthmatics affected the use and understanding of medication. Another study of patients taking antidepressants found that the stigma associated with depression influenced medication usage (Badger & Nolan, 2006). Similarly, Older et al. (2010) suggested that the negative perceptions of people taking pain medication influenced analgesic usage. People's cultural traditions were associated with medication usage in patients of West Indian and British descent living in the U.K. who were being treated for high blood pressure (Morgan & Watkins, 1988). Morgan and

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<sup>5</sup> *Identity work* was the phrase used by Adams et al. (1997) to describe an individual's acceptance or denial of the diagnosis of being an asthmatic.

Watkins (1988) found that individuals of British descent were more likely than those of West Indian descent to take their medications as prescribed and suggested the traditional cultural beliefs of the patients from the West Indies influenced their medication usage. Some evidence suggested that patients' desire to gain control over their condition or medication usage can affect medication usage (Conrad, 1985; Kaljee & Beardsley, 1992). These findings indicate that factors beyond concerns and experiences with medications influenced patients' medication usage.

The findings described in this section provide insight into patients' perspective on taking medication. Among patients taking medications for a variety of conditions, several of the findings overlapped. As in the epidemiology literature, the findings mostly focused on patients' concerns with the medications themselves, but broader influences of medication usage, such as patients' identity work, cultural background, and issues of power, were identified in the qualitative literature. The findings outlined above were selected because of their relevance to the findings of the present study on pain medication usage after TKA.

## 2.4.2 Summary of Qualitative Research

The qualitative studies provided insight into patients' experience of medication usage. While these studies considered medication usage in a broader sense than the epidemiology literature, remnants of the concept of compliance were retained in the presentations of the findings and clinical recommendations.

Several of the qualitative studies labelled participants as compliant or noncompliant and then conducted an analysis of each subgroup. For example, Johnson et al. (1999) presented their findings in two categories: factors influencing compliance, and factors influencing

noncompliance. Compliant patients perceived their medication as necessary, effective, and safe; they had access to medications and an established routine with reminders. Participants labelled as noncompliant had the opposite characteristics. A study conducted by Svensson et al. (2000) explored the reasons patients provided for complying or ignoring antihypertensive medication guidelines. Svensson et al. classified 19 of the 33 participants in their study as compliant; they had faith in their physician, a fear of disease complications, a desire to control their blood pressure, and were less involved in their care. Svensson et al. found that patients made an active decision to be noncompliant when they experienced side effects, were asymptomatic, misunderstood their conditions, disapproved of the medication, or were busy with the activities of daily living. These examples reveal that the concept of compliance influenced the presentation of findings in many of the qualitative studies, which served to restrict the analysis of patients' accounts to predetermined categories.

Other qualitative studies presented findings as barriers to or facilitators of compliance. Chen et al. (2007) constructed a model of medication-taking behaviour in elderly individuals with cardiovascular conditions. The authors interviewed 19 such patients and identified several circumstances influencing their readiness to comply with a prescribed medication regimen. Chen et al. suggested that readiness to comply was influenced by the perceived effectiveness of the medication, partnership with the health care provider, and reality of the condition. They asserted that patients' acceptance of illness as chronic or acute influenced their compliance. Patients' readiness to comply was further impacted by media and family influences. Chen et al. identified several barriers to compliance including memory deficit, complex dosage schedules, and competing aspects of patient lives. Family

support, straightforward regimens, and memory aids facilitated compliance with medication regimens.

Presenting findings as barriers and facilitators of compliance makes sense from a medical perspective; however, it fails to capture patients' experience of taking medication.

Furthermore, many of the qualitative studies provided clinical recommendations to promote patients' compliance with medication regimens. For example, Johnson et al. (1999) and Svensson et al. (2000) recommended assessing patients for their beliefs about taking medications and then adjusting their treatment and education appropriately. Wu et al. (2008) recommended increasing patients' education and facilitating a positive patient–health care provider relationship to improve compliance. Making recommendations to increase compliance may improve health outcomes, but it may also prevent findings from being interpreted from the patient's perspective.

The qualitative literature presents several aspects of patients' experience of taking medications. While the concept of compliance was less central in qualitative studies than in the epidemiology literature, many qualitative studies still incorporated the concept of compliance into their analysis and clinical recommendations. Many of these qualitative studies took a medical approach to studying patients' medication usage, thereby, as noted above, restricting analysis to predetermined categories of compliance and noncompliance. Few of the qualitative studies made recommendations to change the regimen or increase patients' involvement in the development of treatment plans. If the aims of qualitative research are to encourage patients' involvement in their own medical decision making, it is important to use these findings to create treatment regimens that meet patients' needs. Several qualitative researchers did move beyond the concept of compliance, instead

suggesting that patients were self-managing their usage of medication. The next section describes patients' self-management of medication.

## 2.5 Moving Beyond Compliance and Supporting Patients' Self-Management

The majority of the epidemiology and qualitative literature considered patients' medication usage as it relates to the concept of compliance (Broekmans et al., 2010; Johnson et al., 1999; Svensson et al., 2000). However, some researchers have argued that labelling individuals as compliant or noncompliant is an oversimplification, which does not reflect the patient's perspective on medication usage (Kaljee & Beardsley, 1992). It has been argued that patients do not experience medication usage in terms of compliance but in terms of self-management of their medication regimens (Conrad, 1985; Dowell & Hudson, 1997; North, Davis, & Powell, 1995; Pound et al., 2005; Roberson, 1992). Health care providers may need to move beyond trying to increase patients' compliance to supporting patients' self-management of medication regimens.

### 2.5.1 Patients' Self-Management of Medication

Conrad (1985) and North et al. (1995) described patients' modification of medication regimens as self-regulation. Conrad found the majority of the participants in his study reduced, skipped, increased, or discontinued their medication for epilepsy. He asserted that side effects and medication efficacy did not account for the high rate of self-management. He argued that participants altered their medication to test the severity of their illness, gain control over their dependence on medication, and avoid the stigma associated with

epilepsy. Some of the people in his study took their medication strategically, for example when they were going through a stressful period, to prevent seizures. Similarly, North et al. classified patients' modification of their benzodiazepine usage as self-regulation. The authors argued that patients weighed the cost and benefit of taking medication and that their medication usage reflected this analysis. Conrad and North et al. concluded that self-management was a form of active management.

Roberson (1992) also posited that patients self-managed their medications. The author interviewed African Americans with a variety of health conditions to gain an understanding of the meaning of compliance for patients, and found that patients and health care providers have a different understanding of the definition of compliance as well as different goals surrounding treatment. Patients felt a medication regimen that constituted compliance was one that produced good health, was manageable, effective, and in accord with their lifestyle; yet many of these patients would be labelled as noncompliant from a medical perspective. Roberson concluded that patients adjust, or self-manage, medication regimens to fit their lifestyle.

Dowell and Hudson (1997) labelled patients who modified regimens as active acceptors. Dowell and Hudson interviewed patients taking a variety of medications. Some of them were recruited on the advice of primary care physicians who felt these individuals were using their medication in a destructive manner. The authors developed a therapeutic decision making model that described a five-part process of medication usage from the patient's perspective: (a) starting medication, (b) testing medication, (c) types of medicine users, (d) accepting illness, and (e) practical problems. Patients' knowledge of their disease, their medication, and the faith they placed in their physician motivated them to

commence a medication regimen. Participants evaluated medications prior to accepting a regimen, and tested the medication using the dosage on the label as an upper limit. After testing the medication, participants became one of three types of medication users: passive acceptors, active acceptors, or rejectors. Passive acceptors took their medication as directed, active acceptors modified their regimens, and rejectors discontinued taking their medication.

After reviewing 37 qualitative studies published between 1991 and 2001, Pound et al. (2005) presented a model similar to that of Dowell and Hudson (1997). They identified four types of medication users: active acceptors, active modifiers, passive acceptors, and rejectors. Active users were defined as those who took their medications symptomatically or strategically. These patients modified their regimens to limit adverse effects, and sometimes used nonpharmacological treatments to augment or replace their prescription medication. Passive acceptors did not question the medication and took it as prescribed. Rejectors bypassed testing medication and refused to take it altogether.

Each of these researchers questioned ascribing the label of compliant or noncompliant to patients who modified their medication regimens. These studies represented a move beyond the concept of compliance and argued that patients self-managed their conditions. This literature assessed some of the benefits and drawbacks of patients' self-management of medical conditions. The next section will explore some of the key findings of this literature as they pertain to patients' medication usage.



## 2.5.2 Features of Self-Management

The medical work patients do for themselves was often labelled as self-care in the literature. There are several definitions of self-care but Dean (1986, as cited in Health Canada, 2002) provided a comprehensive explanation:

Self-care involves the range of activities individuals undertake to enhance health, prevent disease, evaluate symptoms, and restore health. These activities are undertaken by lay people on their own behalf, either separately or in participation with professionals.

Patients' self-management of medical conditions has been described as a "two-edged sword" by Hickey, Dean, and Holstein (1986); it may improve patient health, but it sometimes fails to meet patients' needs.

Kielmann et al. (2010) studied the patient's perspective on self-care in patients afflicted with respiratory illnesses. They presented their findings in three categories: patients' self-care, the relationship between patients and health care providers, and negotiating professional care. Patients considered advantages and disadvantages associated with self-managing their conditions, and listed regaining control over their condition and avoiding medical care as advantages of self-management. However, patients sometimes felt abandoned by health care providers and felt they lacked necessary support. For self-management of medical conditions to be effective, Kielmann et al. asserted that patients must have access to open communication with health care providers. Patients believed that having medical knowledge provided them with bargaining power to negotiate treatments with their health care providers, but they recognized the limits of their personal knowledge

and their need for professional advice. Kielmann et al. asserted that this area between self-management and professional care could be considered as a boundary. Research of patients with musculoskeletal (MSK) disorders found that patients accepted responsibility for managing their condition but needed to be supported by social and medical systems (Larsson, Nordholm, & Ohrn, 2009).

Use of over-the-counter (OTC) medications represents one aspect of self-management (Chewning & Sleath, 1996). Forty-two percent of patients attending a general practitioner clinic reported taking OTC analgesics in the previous month but only 59 percent of patients taking OTC medications discussed these with their physicians (Sleath, Rubin, Campbell, Gwyther, & Clark, 2001). Sleath et al. (2001) recommended that OTC medications be discussed during medical consultations to create a better partnership between patients and physicians.

Self-management encompasses a broad spectrum of activities that patients do to improve or maintain their health. Many features of self-management pertain to medication usage, such as interactions with health care providers and the use of over-the-counter medications. Patients' preference for self-managing their medications may mean that medical professionals need to find ways to increase the support they provide patients who take medications at home.

## 2.6 Summary of the Literature

Medication usage is often studied as an issue of patients' compliance with physicians' orders. The concept of compliance first appeared in the epidemiological literature, which

established that patients' noncompliance was a common problem. Several factors influencing patients' medication usage have been identified in this literature but the interpretations of these findings have been bounded by the concept of compliance. Some researchers have critiqued epidemiological studies for failing to account for the patient's perspective.

There is evidence suggesting that increased patients' involvement in medical decision making can lead to better compliance and improved clinical outcomes (Hays et al., 1994; Joosten et al., 2008; Wilson et al., 2010). Many researchers have employed qualitative methods to investigate patients' experience of taking medication. This qualitative literature has identified several patients' concerns with medications; however, many of the interpretations put forward in these studies were presented with the aim of increasing patients' compliance. Some of the qualitative researchers moved beyond the concept of compliance and labelled patients who modified medication regimens as self-managers. The self-management literature provides insight into the benefits and drawbacks of patient management of medications. One key finding is that, for self-care to be effective, patients require access to professional support.

This literature review supports the need for increased studies of patients' experience of taking medication. The predominance of the concept of compliance in studies of patients' medication usage has often limited the findings and clinical recommendations to modifications that can be made to increase patients' compliance. The purpose of this thesis is to investigate postoperative pain medication usage in TKA recipients after they have been discharged from the hospital. The aim of the study is to use qualitative methods to develop a patient-centred analysis of pain medication usage that is not confined by the

concept of compliance. It is important to increase understanding of patients' usage of pain medications during the postoperative period because medications are the primary method of pain management after hospital discharge, yet there is evidence that patients limit their consumption of analgesics. An increased understanding of patients' experience of taking pain medication at home after hospital discharge may identify areas of patient concern that can be addressed by health care providers and facilitate the development of pain management regimens that align with patient values.

## Chapter 3

### Methods

Qualitative methods are best suited to answer “Why?” and “How?” questions such as those involved in exploring patients’ pain medication practices. In contrast to experimental methods, qualitative research is practised within a paradigm of naturalistic enquiry (Patton, 2002). Guba and Lincoln (1981) described ideal naturalistic enquiry as the study of a phenomenon without modifying the environment of the participant or placing restrictions on the outcomes of the research. Consistent with the naturalistic approach, this study aimed to obtain the patient’s perspective on taking pain medication at home during the postoperative period without restricting the analysis to the concept of compliance. Qualitative interviewing techniques were used to collect data; thematic analysis facilitated analysis of the data collected. Several qualitative methodologies exist. A qualitative descriptive framework was used for this research, allowing for a summary of the phenomenon to be constructed (Sandelowski, 2000). It is hoped that this summary will provide insight into patients’ experience of taking pain medication at home during the postoperative period.

### 3.1 Methodological Framework

Three prominent qualitative research methodologies were considered, prior to selecting a qualitative descriptive approach: phenomenology, ethnography, and grounded theory. Phenomenological studies seek to describe the lived experience and “essence” of a phenomenon (Starks & Trinidad, 2007; Wertz, 2005). Ethnographies construct accounts of culture by using observational methods to study how subjects make sense of their world

(Patton, 2002). Grounded theory studies aim to produce theory from data and emphasize the procedures of data collection and analysis (Patton, 2002; Starks & Trinidad, 2007; Turner, 1981). Summarizing patients' experience of taking pain medication did not align completely with any of these three traditions. A phenomenological approach would have been more amenable to a research question such as: What is the lived experience of taking pain medication after surgery? An ethnographic approach would ideally have included an observational component, while a grounded theory study would have required that a theory be produced. While aspects of each of these traditions are taken up in the following analysis, this study cannot be categorized neatly within any one of these traditions.

The qualitative descriptive approach provided a name and framework to guide this research. Sandelowski (2000) originally presented qualitative description as a categorical alternative to other qualitative research traditions. However, she has recently (2010) modified this interpretation and classified qualitative description as a "distributed residual category" within qualitative research. She suggested that approaches that do not fit neatly within the categorical alternatives can be labelled as qualitative description. In this current study, the researcher used a qualitative descriptive approach informed by grounded theory techniques to produce a descriptive account of patients' pain medication usage at home after TKA.

The qualitative descriptive framework guiding this study permitted the preliminary investigation of pain medication usage at home after hospital discharge. Sandelowski (2000) asserted that a qualitative descriptive analysis produces a "comprehensive summary of an event in the everyday terms of those events" (p. 336). She argued that most researchers agreed on the facts of a qualitative descriptive account, yet different

researchers might highlight different features of the data. Kvale (1996) helped clarify how the facts of an account can be agreed upon without all researchers choosing to highlight the same aspect of the data. He suggested that data interpretation is related to the research questions asked of interview transcripts. The notion that multiple interpretations are possible within one data set made it important to set the parameters of this study to focus on data pertaining to pain medication usage because several other aspects of the data could have been analyzed.

Qualitative description does not use a specific set of methods to guide analysis. The researcher borrowed and used several concepts and procedures from grounded theory to facilitate data collection and analysis, including saturation, coding, and constant comparison (Turner, 1981). Sandelowski (2000, 2010) recommended conducting a content analysis on data collected for qualitative descriptive studies. However, she did not outline any specific guidelines for conducting a content analysis, so the steps outlined by Braun and Clarke (2006) directed analysis in the present study. The combination of the grounded theory concepts of saturation, coding, and constant comparison with thematic analysis helped generate a descriptive account of pain medication usage. Scholars support combining aspects of different qualitative research techniques so long as internal congruency is maintained in the research (Carter & Little, 2007; Sandelowski, 2010). Carter and Little (2007) suggested that one way of ensuring congruency was to have method and methodological congruency. In this thesis, coding and thematic analysis were the methods used to facilitate production of a summary of a phenomenon, which is the aim of qualitative descriptive studies.

Some qualitative descriptive studies have been critiqued for lacking a strong theoretical basis. For Sandelowski (2010), qualitative descriptive studies are both interpretive and theoretical, but are less theoretical than other qualitative methods because they are not based on a disciplinary tradition. Elsewhere, Sandelowski (1993) has argued that theory always has a role in qualitative research and may have a variety of sources, levels of centrality, temporal placements, and functions within any study. The findings of this study on pain medication usage are presented as a descriptive account that remains close to the surface of the patients' accounts. At the same time, the study is not without interpretation, because theoretical decisions were made throughout the research process. This interpretation of pain medication usage was approached from a qualitative descriptive standpoint, guided by a particular research question, and drew upon several bodies of literature during analysis.

## 3.2 Theoretical Position

Qualitative research acknowledges that the theoretical position of the individual conducting any study influences the interpretation of data (Patton, 2002). Acknowledging one's theoretical position and the impact this position can have on an interpretation of data is considered a strength of qualitative research because it allows researchers to be critical of their own interpretations (Green & Thorogood, 2009).

My theoretical position has shifted during this research process. My academic background was located within a scientific, or positivist, paradigm of enquiry at the outset of the project. The scientific paradigm assumes there is a truth that is obtainable and verifiable through experimentation (Guba & Lincoln, 1981). The original literature review and my



proposed research question reflected this position. I reviewed the compliance literature and proposed the following research question: What are the barriers and facilitators to patients' compliance with pain medication guidelines following discharge from the hospital after knee replacement? I viewed patients' pain medication usage as an issue of compliance; that is, from the medical perspective.

As I became immersed in data collection and familiar with qualitative research methods, I realized that in the naturalistic paradigm multiple "truths" are possible (Guba & Lincoln, 1981). I began to adopt a more critical theoretical standpoint. I found that my research question was medically centred and based on the assumption that only the concept of compliance was relevant to the study of pain medication usage. I adjusted the research question part way through the study, to allow pain medication usage to be investigated from the patient's perspective. The revised question that emerged permitted a more inductive approach: How do older adults who have undergone TKA practise and understand pain medication usage at home during the first five to eight weeks after their surgical procedure?

My location as a graduate student within the medical field further influenced the compliance interpretation of pain medication usage. The literature review revealed that most studies on medication usage are presented relative to the concept of compliance. As I became aware of my own position within this field, I attempted to interpret the data without limiting the findings to barriers and facilitators of compliance. This thesis demonstrates that patients do consider medical guidelines when making decisions about taking medication; but these guidelines are only one of several factors influencing medication usage.

My theoretical perspective has been influenced by my location as a student conducting clinical research within the health care field, my positivist educational background in basic science, and my growing knowledge of qualitative enquiry. As my theoretical perspective evolved, I questioned and reinterpreted the data and literature in ways that would not have been possible at the outset of this project within my original research question.

### 3.3 Research Design

#### 3.3.1 Ethical Considerations

This study was reviewed and approved by local ethics boards (Appendix A; Appendix B).

Maintaining participant anonymity was an important aspect of this study. The release of data collected could have been embarrassing to participants even though the material was not sensitive. To protect anonymity, only the primary researcher (SB) reviewed patients' medical information and audio recordings of the interviews. These remained in a locked filing cabinet in the hospital for the duration of the study. During transcription the researcher removed any information that could identify individuals, and ensured that the transcription was completed in a timely manner so as to limit the use of audio recordings that revealed participants' identities. Each participant was assigned a pseudonym<sup>6</sup> before members of the advisory committee reviewed the data.

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<sup>6</sup> These pseudonyms have been used for the purposes of reporting in this thesis.

The audio recordings and participants' information will be destroyed upon completion of the study.

### 3.3.2 Research Question

This following research question guided the majority of the study: How do older adults who have undergone TKA practise and understand pain medication usage at home during the first five to eight weeks after their surgical procedure?

### 3.3.3 Sample

Fourteen participants were recruited from an urban, university-affiliated hospital situated in southern Ontario. The hospital had a specialized orthopaedic department that focuses on elective procedures. Surgeons performed over 870 primary knee replacements at this site between 2007 and 2008. Adults  $\geq 65$  years of age comprised the majority of the patients. Patients at this site remained hospitalized for an average of four days after TKA, and were recruited for the study from two separate wards of this facility during the in-hospital postoperative period.

### 3.3.4 Sampling Strategy and Size

Purposeful sampling techniques were employed to recruit participants for this study.

Purposeful sampling techniques are consistent with the aims of qualitative research (Patton, 2002). Specifically, the sampling strategy used in this study involved recruiting a homogeneous group of participants (Patton, 2002). Patton (2002) described a homogeneous sample as a particular subgroup of participants who have undergone a similar experience.

The participants in the study were older adults who had experienced similar surgical procedures, lengths of hospital stay, and postoperative pain management, and they had recently been discharged after TKA. A convenience sample of participants was selected from within this homogeneous group (Patton, 2002). The participants' information necessary for study inclusion (such as age, date of surgery, discharge plans, surgeon, and procedure) was most accessible during the postoperative period. As a result, participants were recruited sequentially with convenience sampling. Maximum variation sampling would have been employed if it had been possible to identify potential participants preoperatively, but this was not possible because of the small sample size and selection criteria.

The sample size for this study was based on the grounded theory concept of saturation and the sample size criteria outlined by Sandelowski (1995). According to Sandelowski, the total number of participants required in a qualitative study tends to be smaller than the number needed for a quantitative study and is guided by the sampling method and study design. Sandelowski advised that researchers should interview enough participants to obtain sufficient material to gain an understanding of the phenomenon under study, and not so many as to prevent an in-depth analysis. The concept of theoretical saturation further influenced the sample size. Theoretical saturation requires that enough data be generated to sufficiently explore the themes under investigation. Saturation is reached when a researcher is confident in classifying new examples within existing categories (Turner, 1981). Coding and analyzing interviews in an iterative manner made it possible to identify when saturation was reached. Once theoretical saturation was suspected, two further interviews were conducted for confirmation. The final sample consisted of fourteen participants, eight

male and six female; gender analysis was not included since it was beyond the scope of this particular study.

### 3.3.5 Recruitment of Participants

Potential participants were approached between postoperative Days 2 and 4. The main inclusion criteria were that participants must be 65 or older and have undergone a primary TKA. Additionally, participants had to be fluent in English and have sufficient cognitive ability to participate in an interview. Participants' fluency in English and their cognitive function levels were not assessed using any specific measures; the discretion of the nursing staff was considered sufficient for the purposes of an interview. Only individuals being discharged directly home, as opposed to assisted-living or rehabilitation facilities, were approached. Selecting participants who lived at home likely restricted the study population to individuals with fewer comorbidities and greater social support. In addition, individuals discharged to a rehabilitation unit prior to discharge might experience greater pain or mobility issues than the participants included in this study. All participants were drawn from the patient populations of four orthopaedic surgeons who had indicated their support of this research project.

Potential participants were identified from the patients' information sheets located at the nursing station on each floor. These sheets contained the age, surgeon, type of procedure, surgical and discharge dates, and postdischarge destination (e.g., home) of each patient. Participants were recruited multiple times each week between July and December 2010. On four occasions the nursing staff suggested that an individual should not be approached. Reasons provided by the nurses for not approaching these four individuals were: (a) the

patients were in a significant amount of pain; (b) they were part of another study; (c) they had difficulty speaking English; or (d) they had comorbidities that affected their cognition. This may have led to an underrepresentation of participants experiencing severe pain who might have reported different analgesic usage than the sample in this current study.

Once identified, the name and room number of the individual was provided to one of the acute-pain nurse practitioners working in the department. It is hospital policy that a member of a patient's primary circle of care must obtain the patient's consent to hear about a study before a researcher may approach the individual. The nurse practitioners understood the aims of the study and had agreed to ask potential participants for such permission. The nurse practitioners introduced the study to potential participants as one on pain and pain medication usage after discharge following TKA. All those approached consented to hearing more about this study.

After permission was granted by the patients, the researcher approached potential participants in their hospital rooms and provided them with an introductory letter and letter of consent (Appendix C; Appendix D). The key components of the consent were discussed with each patient at this time. All of those approached expressed interest in the study and provided a telephone number where they could be reached two weeks after their discharge to confirm their interest and set an interview date. Nine of the potential participants could not be reached or declined to participate at the two-week follow-up. Participants who provided a reason for declining said they were too busy, unwell, or not interested in taking part in an interview. This may have resulted in the participants in this study being healthier or in less pain than the general population of TKA recipients. Participants chose between an in-person or telephone interview scheduled at their convenience. Interview appointments

were scheduled during this follow-up call. Those who elected to take part in an in-person interview were provided with a \$25 reimbursement to cover a portion of their parking and transportation costs.

### 3.3.6 Data Collection

The main method of data collection for this study was in-depth qualitative interviews conducted in person or by telephone by the researcher, which she subsequently transcribed. These texts became the primary focus of analysis. Self and expert critique of interviewing and transcribing skills occurred throughout the process of data collection to ensure the quality of the data. A patients' educational booklet provided to all total joint arthroplasty patients at the hospital was reviewed after the interview phase of this study because four participants had referenced this resource.

#### 3.3.6.1 Interviews

Pilot interviews were conducted with two volunteers to determine if the flow of questioning and language employed were appropriate. One of these interviews was with a woman in her 70s, who had recently been prescribed a new medication to manage diabetes; the other was with a woman in her 40s, who had recently undergone TKA and was taking prescription pain medication. Minor modifications were made to the order of interview questions after the pilot interviews so that participants could speak sequentially about their experience, prior to their TKA, during their hospital stay and after hospital discharge. It also was determined that less time could be allocated to asking the participants what had led to their decision to have a knee replacement. The data from the pilot interviews were excluded from this analysis since the participants did not meet the inclusion criteria.

Interviewing for this study occurred between August 2010 and January 2011 and all interviews were conducted by the same researcher. The time between surgery and the interviews ranged from 16 to 61 days. With the exception of three interviews, all were conducted between five and eight weeks postoperatively. Participants interviewed earlier in their recovery reported taking prescription medication more often than those interviewed later, a tendency that was noted and considered during analysis. The time between the surgery and the interview was listed at the top of each transcript to ensure this was incorporated into the analysis. Eight of the interviews were conducted in a private room at the hospital prior to or after follow-up appointments with the surgeon. The literature suggests that telephone interviewing is comparable or in some instances preferred to face-to-face interviewing in qualitative research (Sturges & Hanrahan, 2004; Holt, 2010). Six interviews were conducted by telephone. The interview duration ranged from 16 to 38 minutes. The average length and content of the interviews was similar for the telephone and in-person interviews. At the time of the interviews the researcher had already met the participants (during recruitment), which helped establish rapport.

During recruitment, the researcher had been introduced to participants as a student without a clinical background; this likely influenced the type of information shared during the interviews, since the perceived professional role of the researcher can affect the responses participants provide (Richards & Emslie, 2000). In several instances the participants made comments that demonstrated that they considered the interviewer's level of medical knowledge when answering interview questions, and that they were aware of the researcher's lack of medical knowledge. For example, one participant was describing his medication regimen and then asked the researcher if that seemed reasonable. Before the



researcher could respond he said, “You don’t know, I don’t know.” It is possible that the participants provided more general descriptions of pain and medication usage than if they had been speaking with a clinician.

The interviews were semistructured and based on an interview guide that had been developed in advance (Appendix E). Its function was to provide open-ended questions to guide the conversation and it included prompts that encouraged participants to elaborate. This interview guide was developed after reviewing the epidemiology and qualitative literature on patients’ medication usage, and after receiving feedback from expert clinicians and researchers who worked in the fields of pain management and sociology. The interview guide explored participants’ experiences with pain and pain management since being home with an emphasis on pain medication usage.

Following each interview, the researcher self-critiqued her questioning style using techniques Seidman (2006) suggested for interviewing in qualitative research. The techniques that were particularly helpful included asking open-ended questions, following up using prompting, listening more than talking, and asking reconstruction questions. Reconstruction questions are formatted so that participants reconstruct an experience rather than recall it from memory. An experienced qualitative researcher reviewed a subset of the transcripts throughout the study to provide feedback on the interviewing style. Most of this feedback focused on appropriately following up on participants’ statements and avoiding missed opportunities for prompting. Developing proper interviewing techniques was important because the quality of the data collected in qualitative research is dependent on the skill of the researcher (Patton, 2002). The time spent training in qualitative

interviewing was an important aspect of ensuring the quality of this study because a poor quality interview would be reflected in the transcription and subsequent analysis.

### 3.3.6.2 Transcription

Each audiorecorded interview was transcribed verbatim into a Microsoft Word 2007 document. Transcription represents one step in the tape-transcribe-code-interpret cycle (Lapadat & Lindsay, 1999). These transcribed documents were the primary source of data during analysis.

The researcher decided to transcribe the interviews in standard written format because that aligned with the aims of a thematic analysis. The standard written format is referred to as *naturalized transcription* because it adheres to written versus oral standards (Bucholtz, 2000). No colloquial spelling of words—for example *'cuz* instead of *because*—were used in the transcripts. Colloquial spellings were avoided because some researchers have suggested that colloquial language can cause readers to make assumptions about the educational and socioeconomic status of the participants (Bucholtz, 2000). Bucholtz also posited that the colloquial form of words be used only when participants pronounce words differently from the interviewer. It has been suggested that the purpose of the transcript must be considered when transcribing (Lapadat & Lindsay, 1999). Since a thematic analysis was going to be conducted on the data collected in this study, information about the length of pauses and emphasis was excluded. This information may have been important if a discourse or conversational analysis was being conducted on the transcripts. It was possible to add contextual information (such as participants' hand gestures) to the transcripts, because the same researcher both conducted and transcribed the interviews.

The researcher first became immersed in the interview data through this process of transcription and interview critique. This early immersion permitted improvement of interviewing skills, coding of data, and assessment of theoretical saturation prior to conducting subsequent interviews.

### 3.3.6.3 Context: Sources of Medication Guidelines

The sources of medical guidelines provided to participants were reviewed after all the interviews had been conducted, transcribed, and coded. These sources were threefold: surgeons, labels on medication bottles, and a patients' education booklet (Sunnybrook Health Sciences Centre, 2007). Participants used medication labels to determine the maximum safe dosages of both prescription and over-the-counter pain medications. One participant demonstrated this by reading the medication labels aloud and then contrasting his use with the labels' recommendations during the interview. Others cited the patients' education booklet or surgeon's advice when asked about their pain medication usage.

Four participants referred to the patients' education booklet (SHSC, 2007) they were given prior to their TKA. This booklet was not part of the original study design, but since some of the participants referenced it, it was incorporated into the study. Entitled "A Guide for Patients Having Hip or Knee Replacement," it was created and distributed by the orthopaedic facility. It contained advice on aspects of the total joint arthroplasty process such as preparation for surgery, the hospital stay, and postdischarge aspects. After completing the interviews, the booklet was assessed to determine the advice on postdischarge pain management it provided. The section on pain control (SHSC, 2007, p. 88) offered information relevant for informing patients' interpretation of pain medication

usage. For example, it provided insight into the clinical instructions participants were given. It was not used to verify participants' accounts but to assess whether participants' concerns identified in this study were being addressed by health care providers.

The booklet's information on in-hospital pain management was quite detailed. It explained multiple techniques of available pain control, such as multimodal analgesics, nerve blocks, and patient-controlled analgesia. Patients were advised to tell their nurse if they were experiencing any difficulties managing pain while in hospital. The postdischarge guidelines advised patients to take medication as directed and provided advice on managing such adverse effects as upset stomach, sleepiness, and constipation (SHSC, 2007, p. 89). Patients received no specific direction about the timing of taking or discontinuing medication but were advised to contact their pharmacist or primary care provider (PCP) for advice on reducing medication usage. Patients also were advised to contact the surgeon for managing uncontrolled pain, and a pharmacist or PCP for help managing adverse effects. The booklet did not address the use of over-the-counter analgesics.

Because surgeons usually prescribe pain medication to patients before they are discharged from hospital, two surgeons<sup>7</sup> at this facility were informally contacted at the end of the interviewing phase of the study to discuss the verbal advice they would give to patients at the time of prescription. The two surgeons provided different guidelines when prescribing analgesics. One recommended that his patients take enough pain medication to allow sleep, and enough exercise to ensure they had mobility in their knee even if that meant taking

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<sup>7</sup> Since the surgeons most often prescribed pain medication to patients prior to their discharge, they will be referred to as acute-care physicians in this thesis.

more pain medication. This surgeon did not advise patients on when to discontinue their pain medication. The other surgeon advised his patients to take pain medication “as needed,” and to take over-the-counter analgesics once their prescription medication became stronger than required for the level of pain they were experiencing. Neither surgeon provided patients with specific guidelines on when to take and discontinue their pain medication.

### 3.3.7 Data Analysis

Several techniques were used during analysis to explore the data. Each contributed to the final analysis by allowing the data to be viewed from different perspectives. Interview summaries, coding, and thematic analysis facilitated the analysis. For the purposes of clarity these will be presented in a linear fashion in this thesis, although the actual process of data analysis was iterative.

#### 3.3.7.1 Interview Summaries

A one-page summary of the transcript was created after each interview was transcribed. These summaries were written within a week of the interview and highlighted aspects of the data considered relevant to the research question. The researcher frequently referred to the summaries during analysis, as a reminder of the overall story that each participant had told. This was important when working with fragments of coded data from across all the interviews.

### 3.3.7.2 Coding

An iterative approach to analysis, consistent with qualitative description, was employed; each transcript was coded as it was completed (Sandelowski, 2000). For this study codes refer to segments of data that can be grouped together and pertain to the research question.

Transcripts were coded manually and then using NVivo 8.0 software. Summaries and multiple readings of the interviews were conducted to increase familiarity with the data prior to coding. Codes were generated from within the data using the on-the-fly technique described by Miller and Crabtree (1999). A combination of sociologically constructed codes (e.g., interaction with family physician) and in vivo codes (e.g., playing doctor) were used during coding (Strauss, as cited in Coffey & Atkinson, 1996). For purposes of aiding the analysis, consistent with the recommendations of Coffey and Atkinson (1996), attempts were made to balance codes so that they were neither too general nor too specific.

The researcher met with her two supervisors (a sociologist and an anaesthesiologist) a number of times after each had reviewed the transcripts independently, in order to gain multiple perspectives of the interview data and provide her with the opportunity to be reflexive about her own analysis. During these sessions the coding framework (Appendix F) and relationships among codes were discussed.

The coding framework was kept as a Microsoft Excel 2007 file and modifications were tracked to demonstrate the evolution of the codes. Management of the coded data was facilitated by NVivo 8.0. This allowed time during analysis to focus on comparing codes

rather than on the process of collating the data. The coding scheme was continually modified throughout the analysis.

### 3.3.7.3 Thematic Analysis

To examine the study participants' pain medication usage, a thematic analysis was conducted using the procedure outlined by Braun and Clarke (2006). Braun and Clarke defined a theme as a prevalent pattern in the data that related to the research question. The authors stated that a positivist or constructivist approach to thematic analysis could be taken; when conducting a thematic analysis from a constructivist standpoint, social conditions influencing participants' reports should be considered. For this study, a standpoint that aligned with the constructivist approach was taken because it was in keeping with the notion of multiple interpretations presented by Kvale (1996). Braun and Clarke also asserted that thematic analysis was accessible for newer researchers. Their guidelines supported the objectives of a qualitative descriptive study.

Braun and Clarke proposed six phases for a thematic analysis: (a) familiarize oneself with the data; (b) generate initial codes; (c) search for themes; (d) review themes; (e) define and name themes; and (f) produce a report. While their approach provided useful guidance to thematic analysis, it was not possible to undertake analysis as linearly as they described. Instead, an iterative approach was used during analysis and the steps outlined were not necessarily taken in sequential order. For example, producing the report occurred simultaneously with searching for and naming the central theme. However, the steps did provide a starting point for the analysis.

The researcher became familiar with the data by conducting the interviews, transcribing the audio recordings, and creating summaries. Each interview was coded as it was completed. The coding scheme was continually updated throughout the analysis. Themes were identified by comparing the extracts within and between coding categories. During this process, summaries and memos such as rough concept maps, written throughout the research process, were used to assist in developing themes. The literature and the patients' education booklet (SHSC, 2007) provided insight into the developing themes. Once the central theme had been constructed it was presented to experts in the fields of pain and qualitative research to elicit feedback about the strength of the argument. The central theme was adjusted a number of times throughout the research process based on feedback and the evolving interpretation of the data.

### 3.3.8 Criteria to Ensure Quality

Ensuring quality in qualitative research is a controversial issue. Some researchers have tried to take a checklist approach to evaluating qualitative work; however, those with a purist view of qualitative research argue that it is inappropriate to judge qualitative work by a checklist (Mays & Pope, 2000). A critique put forward by Eakin and Mykhalovskiy (2003) argued that instead of using a checklist of criteria to judge qualitative research, a more substantive judgment of the analytic content should be made. They maintained that checklists usually judge a work by assessing whether the research techniques were performed correctly, and that they might not be appropriate for judging qualitative research that placed value in having a flexible method. Eakin and Mykhalovskiy argued that a substantive judgment—one that assesses not only whether the procedures were good or bad



but the way they were used to make sense of the data—is more appropriate for qualitative research.

Consistent with the more holistic approach of assessing quality put forward by Eakin and Mykhalovskiy (2003), the researcher took several steps during this study to ensure quality. The researcher maintained an audit trail throughout the research process, including creating personal memos after interviews and meetings, and she read relevant literature. Several key memos have been discussed in this thesis including changing the research question and the coding frameworks throughout the research process. Most memos contributed to the final analysis put forward in this thesis. They provided a paper trail of the evolution of the project and allowed the final analysis to be assessed based on decisions made throughout the study.

## Chapter 4

### Findings: Patients Modify Pain Medication Regimens

When interviewed, participants were asked to describe their experience with pain medications during the five to eight weeks after undergoing their TKA. They also were asked what they currently were taking to manage pain. Each of them described a unique pain medication regimen, and employed a variety of techniques to manage their pain. The techniques included reducing the dosage and frequency of prescription pain medication, weaning themselves off pain medication, and using nonprescription methods of pain control. Those who took part in the current study spoke openly about modifying their pain medication regimens and did not seem to consider themselves noncompliant when they made adjustments to their medication. This chapter describes each of those who took part in this study and explores their pain medication usage.

#### 4.1 Summary of Participants

Fourteen people agreed to be interviewed for this study. Their ages ranged from 66 to 80 years. All were White. Thirteen of them lived in Ontario; one was from out of province. They lived in rural and urban communities both. Most were retired and had previously worked in the arts, health care, education, or business.

The participants reported vastly different experiences with postoperative pain and medication usage. Most of them described their postoperative pain as well managed at the time of the interview and did not experience severe pain during recovery. However, two of

the women described having more pain during recovery than they had expected. Since purposive sampling was used to recruit participants for this study, the finding that most participants did not experience severe pain cannot be considered representative of all TKA patients. During recruitment a couple of potential participants were not approached or were lost at follow-up because they were experiencing severe pain. Other researchers have found that a significant proportion of patients undergoing TKA experience early postoperative and persistent pain following the procedure (Andersen et al., 2009; Jeffery et al., 2011; Ramlall et al., 2010; Wylde et al., 2011). The majority of the study participants were no longer taking prescription medication at the time of the interview. The duration of prescription analgesic usage varied greatly. For example, three participants took prescription medication only once after discharge, while five others were still taking their medication at the time of the interview.

## 4.2 Pain Medication Prescription

According to the participants, most had received prescriptions for Percocet prior to their hospital discharge. Some received prescriptions for Tylenol #3 in addition to or as an alternative to Percocet. NSAIDs such as Celecoxib<sup>®</sup> and Naproxen<sup>®</sup> were prescribed to a subgroup of patients in this study. Participants frequently cited the guidelines written on the pain medication labels—typically saying to take one or two tablets every four to six hours— and considered these guidelines to be the recommended dosage. Some described modifying their pain medication dosages from this recommended dosage but none reported meeting or exceeding the prescribed amount of pain medication at the time of the interviews.

## 4.3 Reducing Dosage and Frequency of Prescription Pain Medication

Participants described trying to limit the amount of pain medication they took during recovery. To reduce their consumption of analgesics, they might take half a tablet or one tablet at a time and might lengthen the time between dosages. A few participants discontinued their prescription pain medication completely within a few days of being discharged from the hospital.

Two participants discussed splitting their Percocet tablets in half in an effort to manage adverse effects and mitigate the possibility of becoming dependent on pain medication:

Yes I cut [the Percocet tablet]. I cut it in half. It's so constipating, I just feel I can't take the whole thing, so I try the half, and it lasts probably half the time so then I take the other half. – Lily

I still have bits of the OxyContin<sup>®</sup> but my wife split them into halves. And I've still got that many left of the halves [shows the interviewer the bottle containing halved Percocet]. And I only use those now, when I'm about to do my exercises . . . [*Why did you decide to split those in half?*] . . . Because everybody tells you that they're terribly, terribly, terribly, you know, habit-forming, those pills. – George

These comments are representative of concerns several participants had with taking pain medication. Lily experienced adverse effects as a result of taking her analgesics and felt

taking a half tablet reduced the side effects' severity. George wanted to limit his consumption of opioids because he was fearful of becoming "hooked."

Many participants took only one tablet at a time instead of the two they were permitted, and also lengthened the time between dosages. Some with mild pain only found it necessary to take one tablet, while others used the pain medication to reduce rather than eliminate pain:

You know, sometimes after I've taken the medication but it hasn't quite helped, I didn't want to take two. . . . I stuck to just one pill, so I still had a bit of pain there and achiness there, so I took the ice pack from the freezer and put that on the leg, and that seems to help. – Margo

I think it said every four hours, when needed, sort of thing. And I basically took one, when I first came home, in the morning and then I took one at night. . . . I just had figured in my mind, I really didn't need it because I didn't have any pain. – Max

These examples reveal that pain was not the only factor influencing analgesic usage. Margo was aware she could consume two tablets per dosage but chose to take only one despite continuing to experience some pain. Max took one tablet in the morning with physiotherapy and one in the evening because the metal knee brace he was required to wear caused discomfort. Max reported very little pain.

Three participants avoided prescription pain medication completely following hospital discharge. Two had severe adverse reactions that they attributed to their prescription pain medication and discontinued taking the medication within a few days of discharge. John

had heartbeat irregularities after taking Naproxen and had to be rehospitalized a day after he was first discharged. Physicians told John that the Naproxen had interacted with one of his other medications so after being discharged John did not take anything for pain relief. It is unclear if he was offered an alternative pain medication after having this drug interaction. Sue had an allergic reaction to her pain medication while she was in the hospital. Given a choice of three types of pain medication prior to her discharge, she had the nurse select one for her, which was Percocet. Sue took Percocet once at home when her pain was quite severe but had another reaction and decided to discontinue using prescription pain medication. Another participant discontinued his usage of prescription pain medication shortly after discharge because he did not like the cognitive adverse effects he was experiencing. All three of these participants chose to discontinue prescription pain medication usage soon after hospital discharge because they experienced adverse effects.

Only Karen reported taking more medication than the label directed. She described taking Percocet every four hours for the first few days after leaving the hospital, along with a number of other pain medications including Tylenol Extra Strength<sup>®</sup>, Tylenol #3, and Aleve<sup>®</sup>. She had kept detailed notes of her medication usage, and although she said she had taken Percocet every four hours, her notes indicated she sometimes had actually taken it more frequently. She reported experiencing high levels of pain during the first few days after discharge. However, within a few days following hospital discharge, she began to reduce her dosage. Karen did not describe taking any prescription pain medication at the time of her interview.

The participants demonstrated that they were informed about their medication by citing the guidelines they were provided and then describing the modifications they made to their

regimen. As mentioned above, participants split tablets, lowered medication dosages and frequencies, and in some cases discontinued prescription medication altogether. Some elected to take lower dosages than permitted because they did not find the pain medication necessary since they were experiencing little pain. Others reported experiencing pain but limited their pain medication usage because of other factors, such as adverse effects or fear of becoming hooked on opioids. They did not report exceeding the guidelines they were provided for taking analgesics. These findings agree with previous studies indicating that patients have a tendency to limit their consumption of pain medication after surgical procedures (Leegaard et al., 2008; Older et al., 2010; Watt-Watson, Chung, et al., 2004). Participants' pain medication regimens were not static throughout recovery and participants often described a process of weaning themselves off prescription pain medication.

## 4.4 Weaning Off Prescription Pain Medication

Nine of the fourteen participants were no longer taking any prescription pain medication when interviewed. A number described a process of testing themselves following discharge from the hospital to see whether they could wean themselves off their prescription medications by trying to reduce their usage or taking over-the-counter analgesics as an alternative:

I'd take two Tylenol #3 at night when I went to bed, and one every five or six hours, and it was doing the job. So I decided if it's not that bad, maybe I can switch down to Aleve and see what it does, and it seemed to do the trick. So as soon as I can get off of [Aleve], then I'll quit taking one of them before I go to bed. – Eric

I would say when I came home, I was probably taking [Percocet]—it says here that I can have one to two tablets every four to six hours. [Holds Percocet bottle and reads label]. I was probably having one tablet every four hours pretty regularly when I got home. I'd have said I kept that up probably for maybe for 10 days, and then we began to get onto the half thing. And I was not taking one to two tablets every four to six hours at that stage, I was probably taking one tablet every eight hours by the time we got to thinking about halves. So it's been a slow deescalation of use with [Percocet]. – George

In the beginning when I was at home, I was using [Percocet] pretty well. I would use it maybe twice a day, like the first thing in the morning and then before I go to bed at night. But in, in the last three, four weeks or so, I only use it when I'm coming for exercise unless I really need it, but I just like to stay off. – Laura

The interviewees tended to decrease the amount of prescription pain medication they were taking as time went on, and to relate this reduction to the amount of pain they were experiencing, which generally declined with the passage of time. Only a few mentioned taking prescription pain medication prior to their TKA and most viewed their prescriptions as temporary. These findings align with the results of a recent survey that found most TKA patients were no longer using opioid medications one year after their procedure (Franklin, Karbassi, Li, Yang, & Ayers, 2010).



Participants described weaning themselves off their medication by gradually decreasing the dosage and frequency. Their decision was sometimes guided by health care providers (e.g., surgeons or pharmacists) and sometimes self-directed. For example, Jack decided that he wanted to discontinue his analgesic, so he consulted a pharmacist and then weaned himself off his medication according to the pharmacist's advice. Others decided to reduce and wean themselves off their prescription medications alone or with family members.

## 4.5 Employing Nonprescription Methods of Pain Control

Participants used many nonprescription methods of pain management to augment or replace their prescription pain medication. Nonprescription methods of pain control included over-the-counter analgesics, herbal remedies, resting, and hot and cold compresses.

Without being prompted during the interview, more than half of the participants volunteered that they had used over-the-counter (OTC) pain medication since being home. They spoke about OTC medications when asked about "their pain medication usage" or "other methods used to control pain." A variety of OTC pain medications were mentioned, Tylenol Extra Strength most frequently. A few mentioned taking Aleve, Advil<sup>®</sup>, and ibuprofen.

The findings of this current study highlight the role of OTC pain medications in postoperative pain management. Participants described using OTC pain medications to augment or replace their opioid prescription. Some, such as Eric, used OTC medication as part of the process of weaning themselves off prescription pain medication. He took Aleve

to wean himself off Tylenol #3. Others, such as Jack, used OTC medication as their primary method of pain control. Jack stopped taking Percocet three days after being discharged from the hospital and began taking ibuprofen. He took six ibuprofen tablets each day at the beginning of his recovery. At the time of the interview he reported using two ibuprofen tablets every second day.

Participants' reports of OTC analgesics effectiveness varied. They were not always viewed as effective. Eric stated that "Aleve has done a good job." In contrast, George said, "I don't think [Tylenol Extra Strength] is terribly effective. I think it's more, sort of a . . . placebo. For me, I'm taking a pill, therefore, I feel better." Tom said, "Well, especially at night, I think [Tylenol Extra Strength] helps. When you're lying in bed . . . it eases the pain." There is a notable difference between the participants' assessment of the strength of their prescription pain medications and OTC medications. Percocet in particular was perceived as being a "strong" medication (Eric, George, Lily, Margo, Tom), and Eric commented that it "did the trick" (Eric). Despite describing OTC medication as being less strong than their prescription pain medication, they often preferred to use OTC medications for pain management. Participants electing to take OTC pain medications instead of prescription analgesics often had leftover prescription medication, suggesting that lack of access to prescription medication was not the main factor in the decision to take OTC medications.

Herbal remedies and nonpharmacological methods were also used to ease pain. Sue described being allergic to prescription pain medications and instead used a combination of herbal ointments and supplements to manage her pain. However, she attributed her insomnia to the herbal supplements she was taking and so switched to Tylenol Extra

Strength. She took herbal or prescription medication to help her sleep because she was in pain at night.

Participants described using nonpharmacological methods of pain management such as ice, warm compresses, exercises, leg elevation, self-massage, and distraction (e.g., reading). These accounts highlight the active role the participants took in modifying their pain management regimens. Most described the strength of their prescription pain medications as greater than over-the-counter pain medication. This reduces the likelihood that participants elected to use nonprescription methods of pain management because prescription analgesics did not provide adequate pain relief. All of the participants in this study were over the age of 65 and most qualified for the Ontario Drug Benefit Program (ODB; Ministry of Health and Long Term Care, 2011). This program covers the costs of most prescription pain medications, so it is unlikely that the participants opted for nonprescription methods of pain control for financial reasons.

## 4.6 Summary of Findings

Participants described complex pain medication regimens that evolved over the course of their recovery. All modified their medication regimens and the majority took less medication than directed. The one exception was Karen, who described using her medication quite frequently the first few days after hospital discharge. However, she was trained as a nurse and seemed to be self-managing her medication to treat pain that was not being managed with the prescribed dosage. Some participants associated recovering well with taking less medication. Margo articulated this when she said, “I’m on very little medication and I’m doing good.” Without being prompted, seven of the participants

reported having leftover prescription medication at home because they had decided to discontinue its use before the prescription was finished. The participants in this study did not hesitate to discuss their modifications to pain management regimens and described several factors that influenced their medication usage.

## Chapter 5

### Central Theme: Participants Adapted Regimens

#### When Necessary and Followed Prescription

#### Guidelines When Possible

In the previous chapter, participants' modifications of their pain medication regimens were explored. Patients described limiting dosage and frequency, weaning themselves off prescription medication, and using nonprescription methods of pain management to augment or replace prescription analgesics. Among the factors that influenced modifying pain medication regimens at home after TKA were intensity of pain, tolerance of pain, desire to preempt pain, discomfort taking opioids, experience with adverse effects, and general dislike of medication. The advice and opinions of family and health care providers further influenced postoperative medication usage. A central theme was constructed after analysis of the participants' accounts of pain medication usage: participants adapted their regimens when necessary and followed prescription guidelines when possible.

### 5.1 Factors Influencing Postoperative Pain Medication Regimens

#### 5.1.1 Intensity of Pain

Approximately 10 of the participants described having mild pain that decreased over time after their TKA. The tendency to report mild pain may be due to the sampling method that

permitted those in severe pain to be excluded. Alternatively, they simply may have been reluctant to speak about the pain they experienced. Participants in another qualitative study initially reported the outcome of their total knee replacement as good but acknowledged later in the interview that they did continue to experience pain and mobility issues six months after the procedure (Woolhead et al., 2005). Woolhead et al. (2005) suggested that the participants were providing a socially desirable answer because they were grateful to have received a TKA and were in the early stages of the recovery process. It is possible that in this current study people were reluctant to report pain for similar reasons.

Interviewees commonly stated that they had “very, very little pain” (Jack), “almost no pain” (Karen), and “no pain” (Max). They explained that they experienced “aches” (Lily), “soreness” (Peter), or “discomfort” (Laura, Jack) rather than pain. However, there was a high variability in pain medication regimens among participants who described their levels of pain similarly.

The medication regimens of those reporting low pain levels at the time of the interview ranged from taking no pain medication to taking prescription pain medication every four hours. Those who described higher levels of pain also followed a variety of different medication regimens. One who reported a higher level of pain stated, “I had lots of surgeries but this one is – pain-wise it is the worst.” Sue described rubbing her knee constantly to ease the pain after discharge and said, “On a scale of 1 to 10, [the pain] was about 15.” Lily, who also experienced severe pain during recovery, said, “At night [my knee] just aches and aches and aches and aches.” The pain prevented Lily from sleeping and she was exhausted during the day. She spent several days after hospital discharge in bed. Sue and Lily both reported experiencing severe pain during recovery but their pain

medication regimens were quite different. Sue relied on over-the-counter analgesics and herbal remedies while Lily took Percocet daily. These reports suggest that the degree of pain experienced was not the only factor influencing medication usage.

Although comparing participants' reports revealed that pain intensity did not relate directly to medication usage, several interviewees connected the sensation of pain and taking medication. For example, Max stated, "I really didn't need [pain medication] because I didn't have any pain" and Karen said, "The pain started to really increase so I took two straight Extra Strength Tylenol." Margo commented, "I only take [pain medication] when I absolutely need it, and not because my four hours are over." These participants described taking medication in response to the degree of pain they experienced. This supports a study by Knight et al. (1991) that suggested patients modified their NSAID regimens symptomatically and only took medication when pain was present. Knight et al. concluded that patients treat NSAIDs differently than other medications used to treat asymptomatic illnesses, such as hypertension. Medication usage for a variety of HIV and heart conditions has also been shown to be influenced by the presence or absence of symptoms (Erlen & Mellors, 1999; Stone et al., 1998; Svensson et al., 2000).

Although participants reported an association between the degree of pain and medication usage, the variability in pain medication usage among those experiencing similar degrees of pain suggests that the intensity of pain was not the only influence leading to regimen modification. There are contradictory findings in the literature about the association between pain intensity and medication usage. One study reported that patients with higher affective pain scores on the McGill Pain Questionnaire are more likely to comply with their pain medication prescription (Dobkin et al., 2006). However, qualitative studies on

postoperative pain medication usage found that patients often endured high levels of pain rather than take their pain medications (Leegaard et al., 2008; Older et al., 2010; Sale et al., 2006).

The patients' education booklet (SHSC, 2007) and the medical guidelines provided by surgeons focused on treating the sensation of pain and did not acknowledge the other factors influencing pain medication usage. Participants provided several reasons for modifying their pain medication regimens other than the degree of pain experienced.

### 5.1.2 Tolerance to Pain as a Moral Good

Many acknowledged experiencing pain during recovery but described trying to endure it. They maintained that they had a high tolerance to pain. Jack said, "I hate taking pills, and so I didn't, I tried to persevere to get by it." Margo stated, "If I can cope with one pill, right, why would I need a cupful of medication?" Both Jack and Margo described limiting pain medication despite having to "persevere" or "cope with" pain.

After her knee replacement, Lily ended up questioning her tolerance for pain. She was taking opioid pain medication daily at the time of the interview and stated, "I thought I had a strong threshold of pain, but clearly with this one I don't." She had to balance her avowal of pain tolerance with her need for pain medication after her knee replacement surgery. When she was recruited she said she had a high tolerance for pain but had changed her opinion by the time of the interview some five weeks later.

These examples show that participants placed value on enduring pain. Without being prompted, they described themselves as having high thresholds of pain tolerance, but most



did not articulate why they tried to endure pain even when prompted. However, George provided a clear response:

So you can't divorce pain from individual people's mindsets. You can't. And in my case, I say probably it might have something to do with my age, my upbringing, this kind of thing. Nobody in my family was pill-ish. . . . I may be wanting to endure a bit more pain and make it seem small to you rather than be seen to be dependent upon [Percocet]. Dare I say I'm proud that I'm not dependent on that? I'm telling you with pride that I'm not dependent on this. – George

George limited his use of prescription pain medication and explained that he would try to “ignore” pain. Participants did not have an absence of pain but described tolerating or ignoring the pain they experienced. This supports quantitative and qualitative research that suggests some postoperative patients accept higher levels of pain to avoid taking pain medication (Kerr & Kohan, 2008; Leegaard et al., 2008; Older et al., 2010; Sale et al., 2006).

Participants discussed not wanting to become reliant on medication. George explained that he was not a “pill guy” and said he never wanted to go on a “pill diet” like his mother-in-law who was on numerous medications. He went on to say that he was proud that he was able to limit his pain medication consumption after his TKA. Margo, too, said she did not want to rely on medications stating, “Don't forget, I'm one of those who very rarely takes medication, okay?” Many who took part in this study did not want to become dependent on analgesics and consequently tried to limit their consumption of pain medication.

Patients' preference for enduring pain and the value our society places on stoicism have been cited as two reasons that patients try to limit their analgesic consumption (Ersek et al., 1999; Older et al., 2010; Sale et al., 2006). Taking pain medications might conflict with the identity of an individual if they view themselves as having a high tolerance for pain. Identity work is believed to impact medication usage in asthmatics as well (Adams et al., 1997). Furthermore, the value society places on stoicism may make it socially undesirable to consume analgesics since this is an admission of pain.

Most participants described a preference for avoiding pain medication even if it meant they had to endure pain. When prescribing analgesics to manage postoperative pain, physicians may need to consider patients' preferences for enduring some pain. Alternatively, nonpharmacological options for pain management may need to be presented to patients. It may also be important for physicians to advise patients about the consequences of unmanaged pain at the time of prescription. The current practice of prescribing analgesics to all patients may not align with their individual needs.

### 5.1.3 Preempting Pain

Several participants spontaneously described taking pain medication before physiotherapy, exercise, or when they knew they had to run errands or had a busy day. Three of the five participants taking prescription pain medication at the time of the interview were only using it before exercise. Not all participants discussed pain medication usage in relation to physiotherapy because they were not specifically asked about the rehabilitation aspects of their recovery.

However, seven of the participants explained that they took their pain medication to facilitate exercise. Peter reported having little pain yet took prescription pain medication daily before exercising because he felt it would improve his outcome. Laura took her medication before exercising to “settle things down” despite being concerned it might cause constipation. Some described taking pain medication prior to exercise because they were advised to do so by the patients’ educational booklet (SHSC, 2007) or their physiotherapists. George articulated this when he said, “Funny enough, the book says, you know, use your pain killer half an hour before the exercises.” Of those who discussed exercise, only one stated intentionally not taking pain medication before physiotherapy, and he did so because he felt that the pain caused by exercise was not harmful. This likely relates to the patients’ preference for enduring some pain, as discussed above.

Other participants took their pain medication prior to sleeping and activities such as shopping or social events. George explained that he would take over-the-counter analgesics in the evening to “quiet things down” for sleep. Sara explained that she had a luncheon to go to one day so took medication before leaving home. Each of these actions demonstrates that the participants tried to preempt pain.

Most participants took medication prior to situations expected to cause pain. Evidence suggests that patients strategically modify medication regimens to meet other demands of life, such as the desire to consume alcohol, avoid seizures during stressful times, and treat the symptoms of disease (Conrad, 1985; Lewis, Combs, et al., 2010; Knight et al., 1991; Pound et al., 2005). The patients in this study were given few specific guidelines for taking pain medication. One guideline they were provided with was to ensure they took pain medication prior to physiotherapy and many followed this instruction. It is not possible to

discern from the interview data whether the one person who avoided medication prior to physiotherapy was aware of this guideline. His rejection of this advice may have been intentional or unintentional. The tendency to take medication prior to exercise suggests that the participants were making reasoned decisions when it came to pain management. When they believed taking pain medication aided their recovery, their belief superseded their desire to avoid analgesics. This demonstrates that participants followed medication guidelines that resonated with their personal preferences and experiences.

#### 5.1.4 Fear of Addiction to Opioids

Nine of the participants commented on the potency of opioids and the risk of becoming addicted to (“hooked on”) opioids although they were not asked about addiction or dependence during the interview. Eric commented that he wanted to take a milder pain medication and so began using over-the-counter medication instead of opioids. He stated, “Percocet, or whatever the pill is they gave you the first time, they’re quite strong.” George explained that he had slowly been deescalating his use of prescription pain medication and elaborated, “[Opioids] are very powerful pills as I understand it.” Margo explained, “Your brain will easily get hooked on [opioids].”

Many participants limited their use of opioids, preferring over-the-counter (OTC) medications to manage their pain. They seemed to view OTC pain medications as milder than prescription opioids. This belief influenced their pain medication usage, indicating that health care providers should consider this belief when prescribing analgesics in order to achieve true concordance with patient values. Participants only discussed the risk of becoming “hooked” in relation to opioid prescriptions not OTC analgesics. According to

Eric, “[I] didn’t want to be on [prescription pain medication] too long, [I] wanted to go to something that was milder and not hurting [me] as much.” Similarly, Jack preferred OTC medications because “[I] had just as good results with the ibuprofen as [I] had with the, with the [prescription pain medication].”

Some participants described a general discomfort with taking prescription pain medication. Jack articulated this, saying “[Prescription pain medication] was affecting me in a way I wasn’t comfortable with so I decided I would wean myself off.” Jack, and three others, described experiencing adverse cognitive effects after taking prescription pain medication. Jack felt that he was not able to think linearly and felt as though he was looking through a kaleidoscope when he was taking prescription pain medications. He also commented on the street use of opioids when he said, “These people that buy this stuff on the street and pay big bucks for it, I don’t know what they are using it for.” Others joked about the street-value of opioids or made comments about media coverage of the illicit use of these medications. This influenced several participants to wean themselves off and discontinue taking opioids, replacing Percocet with over-the-counter medications.

It is not clear whether participants were aware of the medical distinction between addiction and dependence and so it is difficult to assess whether addiction or dependence concerned the participants as they used the terms “hooked” and “habit-forming.” They did not seem concerned about medication tolerance and subsequently decreased medication efficacy. Those with chronic pain caused by osteoarthritis or other nonmalignant conditions have described limiting their use of pain medication because of concerns about tolerance (McCracken et al., 2006; Sale et al., 2006). Patients with chronic pain have been concerned that tolerance to pain medication would prevent adequate pain management in the later

stages of their illnesses. The participants in this study did not share this concern, possibly because they expected to be taking medication for a short period of time.

The participants did not seem comfortable discussing the possibility of becoming addicted despite discussing the “strength” and “habit-forming” nature of opioids. Two interviewees (Sara and Margo), following comments about the strength of the pain medication, were asked whether they were afraid of becoming addicted. Both responded adamantly. One said “I wouldn’t take [Percocet] again if you paid me,” while the other simply said “No.” The researcher decided to ask these two interviewees a follow-up question because the literature frequently associates fears of addiction with pain medication noncompliance (Lewis, Combs, et al., 2010; McCracken et al., 2006; Sale et al., 2006). However, in both instances the tone of the conversation was altered after the question was asked. Both participants stated firmly that they were not at risk of addiction despite citing concerns about the potential of becoming hooked on pain medication.

Nine of the 14 participants commented on the risk of addiction associated with opioids without being prompted. Participants discussed the potential of becoming hooked on pain medication but did not describe themselves as being at risk of addiction. This may indicate that discussing addiction to opioids was not socially desirable. Building on the theory put forward by Goffman (1959), that people use speech as a performance and try to position themselves as morally good, Collins, Shattell, and Thomas (2005) suggested that there may be a response bias towards socially desirable statements in qualitative interviews dealing with unethical, immoral, or illegal issues. However, Collins et al. conducted a secondary review of transcripts that had been used in three previous phenomenological studies and concluded that it is uncommon for participants to provide statements that suggest “social

desirability response bias.” Nonetheless, it is possible that the participants’ reluctance to discuss becoming addicted to pain medication is a result of social desirability response bias.

Neither the patients’ education booklet (SHSC, 2007) nor the surgeons addressed the risk of addiction despite half the participants raising this concern. From a medical perspective, the risk of patients becoming addicted to pain medications taken as directed is very low (Fishbain, Cole, Lewis, Rosomoff, & Rosomoff, 2008). Yet participants modified their pain medication regimen in response to their concerns about addiction. This concern could be addressed by providing accurate information on the risk of addiction to opioids. To help patients make more informed decisions, and help them adapt their regimens appropriately, it would be appropriate to provide such information. Patients’ fears of addiction might be disproportional to the actual risk. Providing this information is an important step in involving the patient in medical decision making; however, it is possible that even after seeing data on the risk of addiction patients may elect not to assume this risk. To meet patients’ needs, health care providers may need to present patients with pain management options that are not based on opioids.

### 5.1.5 Advice From Family and Health Care Providers

Participants explained that the attitudes and opinions of their family and health care providers affected their pain medication usage, and mentioned having family members who encouraged them to stop taking their pain medication:

But one day the pain was so bad I took one, and when [my husband] saw what was happening to me, he said, “What’s the matter with you?” and I said,

“I took one of the Percocet.” He said, “Well, you don’t take them anymore” and he took it back to the drugstore. – Sue

[My wife] didn’t want me to take these pills any longer. . . . She kept saying “Get off of this,” and “Get off of that,” and “Do you really need it, or are you just taking it because you want to take it or is the pain real bad?” So I thought, “Geez, if she’s going to keep harping, I’ll just stop taking them.” – Eric

When explaining their spouses’ positions, both Sue and Eric commented on the adverse effects and potency of prescription pain medications.

Family members may share participants’ concerns about prescription pain medication. Family members were often described as being supportive of aspects of recovery such as physiotherapy, yet they wanted participants to limit consumption of prescription medication, perhaps fearing their loved ones could become addicted to opioids or experience some other adverse effect. In this study, family members of three participants encouraged them to discontinue or limit their pain medication consumption; the participants adapted their pain medication regimens to accommodate these opinions. The participants relied on their families for several aspects of recovery, and seem to have placed significant value on their opinions about pain medication usage. This may highlight the importance of including family members in pain management consultations, along with patients. This contradicts the findings of the study by Lewis, Combs, et al. (2010), in which family members often pressured participants to comply with pain medication regimens, particularly when they were experiencing pain. The participants, 92 percent of whom were



male, were veterans. They had received opioid prescriptions to treat a variety of pain conditions, both acute and chronic, within the previous 12 months. Their average age was 62.5, making them slightly younger than the participants in this study. It is possible that the reason for pain and the expected course of treatment influences whether family members encourage or discourage the use of opioids.

In addition to family members, the advice and opinions of health care providers influenced medication usage. Participants described modifying their medication regimens on the advice of surgeons, primary care providers (PCPs), physiotherapists, and pharmacists. When Jack decided to discontinue his medication he contacted a pharmacist to determine whether he could suddenly stop or needed to stop his pain medication gradually. Jack was advised to go off gradually; he followed this advice. Similarly, Peter described taking his medication prior to physiotherapy despite experiencing limited pain because he had been advised to do so by his physiotherapist.

Some participants modified medication regimens to align with their perceived idea of the opinion of their health care provider. For example, Lily assumed that her primary care provider (PCP) would not prescribe Percocet, so she waited to ask for a renewal until her follow-up appointment with the surgeon. Between finishing her prescription and getting a refill, she asked her PCP to prescribe Tylenol #3 because she felt he would approve of this medication; but Tylenol #3 was not as effective as the Percocet. Lily modified her regimen to align with the perceived opinion of her PCP. Joe also believe that his primary care physician would not renew Percocet. He weaned himself off Percocet and asked his physician for a prescription of Tylenol #3. Others mentioned that their surgeons would be happy that they were no longer taking prescription pain medication. For example, Tom

explained that he was going to tell his surgeon at the follow-up appointment that he was no longer taking prescription pain medication. Tom felt that his surgeon would be happy to hear this because he believed the surgeon did not want him to be taking this medication.

Other researchers have also cited the interaction between health care providers and patients as an important influence on medication compliance (Broekmans et al., 2009; Chen et al., 2007; Stone et al., 1998; Wu et al., 2008). Researchers who have studied medication usage from the patient's perspective have suggested that patients should be encouraged to take part in designing medication regimens with their health care providers (Donovan & Blake, 1992). In the present study, participants often had to seek medical advice to inform their regimen choices because they felt they were given limited advice on over-the-counter analgesics and when to take or discontinue prescription pain medications. Participants incorporated medical advice into their decisions regarding medication regimens. Jack's decision to discontinue his Percocet exemplifies this process. He decided to discontinue this medication because he was concerned about its "strength" and its adverse effects. He contacted a pharmacist to get advice on safely discontinuing his medication, and used this advice to inform his decision to modify his regimen. This may underscore the importance of patient access to health care providers during recovery since patients incorporate the advice of health care providers into their regimens.

### 5.1.6 Adverse Effects

In the literature on patient medication usage, unintended outcomes of medication usage are labelled as side effects (McIntosh & Leffler, 2004) and adverse effects (Lewis, Combs, et al., 2010; McCracken et al., 2006). In this study, unintended effects are considered to be

adverse effects because all the unintended outcomes mentioned by participants were negative. Twelve participants described a variety of adverse effects, which they attributed to their pain medications. Their reactions varied from mild to severe, and participants reduced or switched their medication usage as a result of these adverse effects.

The adverse effects associated with their pain medications could be classified as physical or cognitive. Physical effects commonly included constipation, nausea, and vomiting. Rarer, more severe reactions were also experienced. Sue had an allergic reaction to her pain medication, while in the hospital, and required antihistamine. John, who was taking NSAIDs, was hospitalized the day after his initial discharge because his heart “was pumping like crazy.” He was informed that the NSAID he was taking had interacted with one of his other medications. Neither Sue nor John took any prescription pain medication after these reactions. The interviewer did not follow up to determine whether either participant was offered an alternative analgesic, so it is unclear whether either was given the option of taking a different pain medication.

In addition to physical effects, participants attributed cognitive symptoms to their pain medication. Some reported altered dreams, inability to focus, hallucinations, sleep disturbance, and withdrawal symptoms. Some described having difficulty with linear thought that was comparable to “being on a trip.” Jack and Tom said opioids made them see the world in “Technicolor” or as if they were “looking through a kaleidoscope,” respectively. The participants modified their regimens if they experienced adverse effects that they attributed to their medication. A few expressed a desire for medications without adverse effects. For example, Laura said, “It’s a pity that they don’t have [medication] that’s a little milder, or has fewer problems with [adverse effects] as far as constipation is concerned.”

Some participants were worried that pain medication could have long-term consequences, but it is unlikely that the amount of medication taken by patients after TKA could lead to organ damage. It may be important to discuss this with patients so that they can make decisions based on the actual risk of long-term adverse effects. For example, Sara felt that the medication she took after surgery had “poisoned” her system, and joked that she would prefer to lose her liver to alcohol than drugs. She took only one tablet of pain medication in the evening before bed, hoping that she could thereby limit her pain medication usage; but she continued to wake up and require another tablet in the night. A recent study indicated that 57 percent of chronic pain patients were concerned pain medication could cause damage to their internal organs (McCracken et al., 2006). Patients’ concerns with long-term consequences have been associated with several classes of medication (Ersek et al., 1999; Morgan & Watkins, 1988; Pound et al., 2005).

The findings of this study support the findings of other studies, that patients frequently adjusted their medication regimens due to adverse effects (Erlen & Mellors, 1999; Ersek et al., 1999; Older et al., 2010; Pound et al., 2005; Svensson et al., 2000; Watt-Watson, Chung, et al., 2004). Fears of side effects have also been associated with rejection of medication regimens (McIntosh & Leffler, 2004). All patients (including the participants in this study) who undergo TKA at the hospital where the research was conducted are provided with some information on managing adverse effects (SHSC, 2007). They are advised on managing constipation, sleepiness, and upset stomach and told to seek advice from a pharmacist or primary care provider if they cannot self-manage their symptoms. Some participants followed this advice. Many attempted first to mitigate adverse effects before approaching a pharmacist or primary care provider. However, instead of seeking

professional support, participants often elected to discontinue taking prescription pain medications or switched to over-the-counter medications when experiencing adverse effects.

Health care providers may need to ensure that patients have the resources and support for managing adverse effects. Health care providers may need to be educated to understand that some patients prefer experiencing pain to experiencing the adverse effects caused by analgesics. Each individual has a specific preference, so health care providers may need to ask patients about their preference and incorporate that information into pain management plans. Focusing on the development of improved medications that lead to fewer adverse effects may also be important.

### 5.1.7 General Dislike of Medication

Some participants had difficulty putting into words why they limited their consumption of pain medication. They explained that they did not like taking pills in general but often did not elaborate on the reasons that they did not like taking medication. Some common statements were, “I’m not a pill guy, really” (George), “I just don’t like taking a whole lot of stuff if I don’t have to” (Eric), and “I really hate, hate taking medication” (Sara). Sara said that she hated taking medication after being asked why she took one instead of two tablets of pain medication. After further prompting, she stated that she did not know why but that she “loathed and detested taking medication.” The participants used their general dislike of taking medicine to explain limiting their use of pain medication. Many did not immediately use medication to treat pain but used several other methods of pain management, such as icing, leg elevation, and exercise. The information given to patients

was focused on medications to manage pain, but health care providers may need to be educated to understand that many patients prefer using nonpharmacological methods of treatment when possible.

The participants conceded that in some instances, such as treating high blood pressure, medication was necessary, but they did not seem to see pain medication as necessary.

Researchers have found that patients with chronic knee pain are most commonly prescribed medications, followed by physiotherapy, to manage their pain (Mitchell & Hurley, 2008).

However, patients have indicated that they would prefer to do physiotherapy as a first line of treatment (Mitchell & Hurley, 2008). The physicians in that study frequently prescribed medication as a first treatment option despite patients' preference that physiotherapy should be the first line of treatment. This may indicate that physicians tend to prescribe medications over nonpharmacological methods. When presenting patients with pain management options, physicians should consider that many patients have a general dislike of medication. It may be important for health care providers to use multiple approaches to managing pain, including nonpharmacological methods, to ensure the treatment plan is acceptable to the patient. It is also important that the patient be educated about the degree of risk associated with taking analgesics and techniques for managing adverse effects associated with these medications.

## 5.2 Summary of Central Theme

Every participant in this study described modifying their pain medication regimen at some point during their recovery. The majority, if not all, would be considered noncompliant if their regimens were compared to the recommended dosage on the medication label.

However, the participants in this study provided reasons for modifying their pain medication regimens that go beyond issues of noncompliance. All of them described adapting their medication regimens to account for several factors.

The findings of this study suggest that compliance is neither central nor irrelevant to patients. The epidemiology literature mostly considers the concept of compliance as central to the study of medication usage, yet some qualitative researchers have suggested that the concept of compliance is irrelevant to patients (Donovan & Blake, 1992). However, the participants in this study considered prescription guidelines as one component determining their medication regimen but took several other factors into account when making decisions regarding medication usage. In some instances, they required medical information to make an informed decision, and so they contacted health care providers, particularly pharmacists and primary care physicians, to obtain this knowledge. The participants incorporated medical advice into their reasoning about medication usage when the advice did not conflict with other competing factors. The participants in this study followed medication guidelines when possible and adapted regimens when necessary. In particular, they adapted regimes when they did not have adequate prescription guidelines, or in situations where taking the medication as directed conflicted with the other factors described in this section.

Some concerns, such as the risk of addiction, were not addressed by the prescribing physician, medication labels, or the patients' education booklet (SHSC, 2007). Participants modified their regimens by incorporating their personal experiences and preferences into their decision-making rationale because they were not provided clear guidelines to address their concerns. Patients' knowledge of their own bodies, such as their preference to endure pain rather than experience adverse effects, and their values, such as the desire to be seen

as stoic, should be considered when physicians are developing pain management plans. A true model of concordance between physicians and patients would require health care providers to incorporate patient's knowledge and values into pain management plans. Each participant in this study had a unique set of circumstances influencing their medication usage; the current model of "one size fits all" pain management may not be suitable for meeting patients' needs. More individualized plans may improve pain management for patients. The participants in this study modified their medication regimens to account for their individual circumstances.



## Chapter 6

### Secondary Theme: Participants Sought Professional Support When Self-Managing Postoperative Pain After Hospital Discharge

The previous chapter explored the factors influencing the medication regimens of those who took part in the study. Among these influences were concerns about the medication itself, the opinions of others, and each individual's postoperative pain experience. Most participants were knowledgeable about the type of medication they were taking and knew what dosage they were supposed to take. They all were willing to incorporate medical information into their regimens, but, adapted their medication regimens based on knowledge of their own bodies and medication beliefs. This section will examine the implications of patient self-management of pain medication at home after TKA.

The participants did not frame their discussions of medication usage around the concept of compliance. This differs from much of the literature which emphasizes the concept of compliance (Broekmans et al., 2009, 2010; Chen et al., 2007; Svensson et al., 2000). Instead, the participants considered pain medication regimens as a component of self-management. They spoke straightforwardly about modifying their medication regimens and provided a clear rationale for their decisions:

I couldn't keep my mind focused on any particular thing...I don't know whether that is true for everybody, but I thought, "No, I'm not going to take [Percocet]." So I just put it aside and I went back to the ibuprofen...So I

phoned the pharmacist and I asked them [about discontinuing Percocet]. –  
Jack

My wife was very adamant that I get off [Percocet] as quick as possible...I stayed on it for about five days and then switched to Tylenol #3. I stayed on the Tylenol #3 probably for about a week, and then I went off them... I just take Aleve morning and night, just to help it... My doctor prior to the operation had told me I could take four a day and they wouldn't bother me... – Eric

Several participants reported seeking medication advice when modifying their medication regimens. Jack was concerned about Percocet's cognitive effects and wanted to discontinue taking it. He contacted a pharmacist before discontinuing Percocet to determine whether it was safe to stop taking it altogether or if he needed to wean-off slowly. He chose to take over-the-counter (OTC) ibuprofen because he did not associate adverse cognitive effects with OTC analgesics. Similarly, Eric considered Percocet a strong medication and felt it was harmful because he was experiencing adverse effects (e.g., constipation). Eric asserted that his wife did not approve of Percocet and that this contributed to his decision to stop taking it. He, too, switched to OTC pain medication early in his recovery. Prior to his TKA, he had consulted his primary care provider to ensure the particular OTC pain medication he used was safe. Both Jack and Eric sought medical advice as necessary to support their medication usage choices. These accounts demonstrate that many participants consider pain medication usage at home after TKA to be a component of self-management but incorporate medical advice into their decisions to modify their regimens.

Previous research has found that patients need to have access and open communication with health care providers to effectively self-manage their respiratory illnesses (Kielmann et al., 2010). Using Jack and Eric as examples, it is evident that they both required medical advice to inform their decisions. Instead of approaching the acute care physician that prescribed their pain medication, Jack and Eric approached a pharmacist and primary care provider respectively. Their need to seek additional advice suggests that they were not given adequate information at the time of prescription, or in the patients' education booklet (SHSC, 2007), or that they could not remember the information they were provided. Kielmann et al. (2010) found that patients self-managing their respiratory illnesses sometimes feel a lack of access to medical support after the initial consultation. The patients in their study wanted to regain control over their condition yet acknowledged that they needed medical advice from health care providers because their own medical knowledge was limited.

Many of participants in this current study did not consult their acute care physician and instead sought medical advice from other health care providers or nonmedical acquaintances. Even during the six-week follow-up appointment few reported discussing pain medication with their surgeons. For example, when Margo was asked whether she had discussed her pain medications with her surgeon at the follow-up appointment she said, "Dr. [X], when you go down there, he checks, he doesn't have a lot of time right? You can't just go into a lot of details and discuss medication." This suggests that some participants may not have felt comfortable discussing their medication with their surgeons.

Those taking part in this study followed medical advice that aligned with their personal experiences and beliefs about medications; however, they had to modify their regimens

when there was a conflict between the prescribed medication and their experience. Many of them approached health care providers for advice when modifying their regimens, but they rarely turned to the surgeon who had originally prescribed their medication. Surgeons may need to ensure they are available to postdischarge TKA patients. They may need to initiate discussions on pain management during follow-up appointments because patients may be reluctant to introduce the topic.

Participants modified their medication regimens after experiencing adverse effects, such as constipation, nausea, and vomiting, that they attributed to their analgesics. Most tried to self-manage these side effects but sought advice from a health care provider if necessary. Among their self-management strategies were eating fruit, waiting out or taking medications to manage the nausea, limiting their prescription medication usage, and switching to over-the-counter pain medications. A few did approach their primary care provider to get advice about managing adverse effects. Lily experienced constipation and approached her primary care provider who provided laxatives. Karen experienced nausea and vomiting and approached her primary care provider who prescribed her a different prescription pain medication. Karen had tried taking over-the-counter medication to treat her nausea before approaching her primary care provider for an alternative prescription. Karen described, “It was just like this awful balancing act, how much pain can I stand before I have to ask for more pills.” Managing adverse effects caused by analgesics was a major component of self-management for participants in this study. Participants first tried to manage adverse effects independently and then would seek medical advice. Participants did not contact their surgeon for advice on managing adverse effects but made changes to their regimens based on the advice of other health care providers and their personal

experience. The response of the participants to adverse effects suggests that effectively managing these effects often requires professional advice.

Over half of the participants in this study reported taking over-the-counter (OTC) pain medication at some point during recovery. One common aspect of patient self-management is the use of OTC medications (Chewning & Sleath, 1996; Sleath et al., 2001). The participants in this study did not associate OTC pain medications with adverse effects or strength despite making these associations with prescription medications. Taking OTC medications allowed them to avoid the aspects of prescription pain medication they found undesirable. Over-the-counter pain medications were used as a tool to wean-off prescription pain medication. The decision to take OTC pain medication was made with or without consulting a health care provider and the use of OTC pain medications were not addressed in the patients' education booklet (SHSC, 2007). There is evidence that health care providers discuss OTC medication infrequently with patients (Sleath et al., 2001). Health care providers may need to discuss OTC medication usage with patients to help ensure that pain is safely and effectively managed at home after TKA. As patients may not be comfortable or think to discuss OTC medications with health care providers, it may be important for health care providers to ask patients about their OTC medications so an effective pain management plan can be developed by the patient and physician in partnership.

The participants in this study adapted their pain medication regimens but incorporated medical advice into their decisions when it was available. This adaptation of medication regimens differs from the self-management of medications as described in the literature (Conrad, 1985; Pound et al., 2005; Roberson, 1992). Other researchers have presented

patients' self-management of medication as resistance to medications but the participants in this study demonstrated a willingness to incorporate medication into their pain management routines if it did not conflict with their personal experiences (e.g., adverse effects) or beliefs (e.g., fears of addiction).

Despite receiving limited guidelines on when to take and discontinue pain medications, the participants seemed to prefer to self-manage their pain medication, evidently believing, as Margo put it, "I can manage my medication because I'm not over [the recommended dosage]." Her comment indicates that she considered modifying her medication regimen appropriate as long as she did not exceed the recommended dosage. Sale et al. (2006) found that osteoarthritis patients taking pain medication usually did not consider lowering their medication dosage as noncompliance, and two recent studies found that patient underuse of pain medication is more common than overuse (Broekmans et al., 2010; Lewis, Combs, et al., 2010). This suggests that Margo, and perhaps others in the study, modified their regimens using the dosage on their prescription label as an upper limit.

No one reported exceeding the recommended dosage at the time of the interview but many had lowered their pain medication consumption. One participant did describe exceeding her maximum dosage for the first few days after discharge, but she exceeded her maximum dosage because she was experiencing severe pain that was not being managed by the dosage she had been provided. These findings can be interpreted to mean that while the participants were comfortable with modifying their medication regimens, they considered the prescribed dosage to be an upper limit and rarely exceeded this amount.

Health care providers should consider that most patients wish to self-manage their pain medications; however, there are times when they require access to medical advice. One problem a few participants encountered was difficulty obtaining a prescription renewal. For example, Lily required a renewal of her prescription after surgery, and asked her primary care provider for Tylenol #3 because she believed this doctor “did not like giving out a narcotic like oxycodone.” She later commented, “I thought it could be switched. I was probably playing doctor. But the Tylenol clearly did not solve the problem.” At her follow-up appointment, she asked her surgeon to renew the Percocet. By then she had had to endure severe pain.

Difficulty renewing a prescription after hospital discharge may prevent effective patient self-management of pain at home. It is important to ensure that patients have access to medication renewals after hospital discharge. It may be important for the hospital providing the TKA to ensure that patients have access to prescription renewals throughout the recovery period. For example, a patient’s primary care physician may not be comfortable prescribing opioids because of concerns about possible abuse or their uncertainty as to which opioid is correct for treatment of acute or chronic pain (Bendtsen, Hensing, Ebeling, & Schedin, 1999).

Several of the factors influencing pain medication usage described by participants in this study were not addressed by health care providers unless the participants sought their advice. Health care providers need to ensure patients are provided with adequate medical information to make informed choices about their medication regimens. One option is to increase the amount of information on pain medications provided to patients in the patient’s education booklet (SHSC, 2007). Four participants referred to this pamphlet,

which suggests that they relied on it for information after their TKA. Currently, the booklet provides no guidelines on when prescription pain medication should be discontinued. It merely states, “You may be able to gradually wean yourself off of your pain medication” (SHSC, 2007, p. 94). As well, the risk of addiction many participants associated with opioids was not addressed in the booklet. A recent, evidence-based review of chronic pain patients with no history of addiction who were on chronic opioid analgesic therapy showed that only 0.19 percent of the patients became addicted to opioids (Fishbain et al., 2008). Participants should be informed about the low risk of addiction to the opioids used to treat pain.

In summary, the findings suggest that the study’s participants considered pain medication usage at home after surgery as a component of self-management. They appeared comfortable managing their pain medication and made regimen changes based on their personal experiences or preferences, the opinions of others, and the medical knowledge they possessed. When they believed that a decision exceeded their knowledge, they sought medical advice. They did not consult the surgeon who initially provided their prescription but approached other health care providers. Among the subjects for which they sought advice were managing adverse effects, taking over-the-counter medications, discontinuing prescription analgesics, and renewing prescriptions. Patients need access to health care providers during their recovery after TKA. These findings are similar to those of another qualitative study that investigated TKA recipients who continued to experience chronic pain two to five years after their procedure (Jeffery et al., 2011). Jeffery et al. (2011) suggested that patients felt that they did not receive enough support from health care providers to manage their chronic knee pain. Some situations (such as difficulty in



renewing opioids) may make it difficult for patients to manage their pain at home after TKA. It is important that patients are offered appropriate access to health care providers and provided with sufficient medical information to self-manage their pain at home, since the length of hospital stays after TKA are becoming shorter and shorter (Memtsoudis et al., 2009).

## Chapter 7

### Conclusions, Limitations and Future Directions

#### 7.1 Conclusions

All participants in this study modified their pain medication regimens in response to personal experiences and values. They limited their consumption, weaned themselves off prescription pain medication, and used nonprescription methods of pain management. Their experience with pain and adverse effects influenced their medication usage; some preferred to endure some pain rather than experience adverse effects (e.g., nausea or constipation). Beliefs about tolerating pain, addiction to opioids, and disliking medication led to reduced consumption of prescription pain medication for some. In addition to experiences and beliefs, the advice that participants received from their family and health care providers contributed to their decisions to take or discontinue analgesics after TKA.

Those taking part in this study considered pain medication usage to be a component of self-management. Access to health care providers who could advise them on discontinuing or renewing prescription medication, taking over-the-counter analgesics, and managing adverse effects was essential to self-managing pain. Pharmacists, physiotherapists, and primary care physicians were consulted most often for such advice. Only rarely did participants approach the surgeon who usually had prescribed the pain medications to be used following hospital discharge. One participant felt that the surgeon was too busy to discuss medication in detail during follow-up appointments. A few of the participants in this study had did not renew their opioid prescriptions because they believed their primary care physician would be reluctant to do so.

Neither the surgeons nor the patients' education booklet (SHSC, 2007) provided participants with medical information pertaining to several of the factors that influenced their medication usage. They were not given specific guidelines on when to take or discontinue pain medications. Some sought advice from other health care providers for proper discontinuation of pain medications because they were not sure if they could stop abruptly or if they should wean themselves off gradually. Despite more than half of the participants taking over-the-counter analgesics, there was no information in the booklet on integrating over-the-counter medications into postoperative pain management regimens. Nine of the fourteen participants associated taking opioids with a risk of addiction. Neither the surgeons nor the booklet addressed this concern. In summary, the participants adapted their regimens in response to their experiences and beliefs since they were given few specific guidelines, and they often sought medical advice to inform their decisions.

It is not surprising that each person described a unique pain management regimen since every patient was advised by the surgeons to take pain medication "as needed." A vast quantity of epidemiology literature presents patient noncompliance to pain medication regimens as a common problem (Berndt et al., 1993; Broekmans et al., 2009, 2010; Fischer et al., 2010; McCracken et al., 2006). However, participants in this current study were given ambiguous guidelines, making it difficult to determine whether they were being compliant. A study of osteoarthritic patients who took analgesics found that the patients treated their pain medications differently from other medications (Sale et al., 2006), and the findings of this current study indicate that health care providers also treat pain medication differently from other medications, because they provide few specific guidelines for them.

In contrast, patients are given explicit instructions about taking other types of medications, such as antibiotics (Ho, Taylor, Cabalag, Ugoni, & Yeoh, 2010).

Participants in this current study reported self-managing their pain at home based on several factors including adverse effects, risks of addiction, pain severity, and medical advice. The tendency to self-manage may have been a result of having been provided with few guidelines. Part of the movement towards patient-centred care is to include patients in the decision-making process (Ontario Medical Association, 2010). Although this study's participants considered medical advice when deciding their regimen, there was no true partnership between patient and physician in developing pain management routines. True partnership would have involved a discussion between the patient and physician that acknowledged the patients' experiences and values and considered the scientific knowledge of the medical field.

The findings of this study reveal several improvements that could be made to postdischarge pain management after TKA. Much of the existing epidemiology literature places compliance as the central concept of studies of patient medication usage (Berndt et al., 1993; Broekmans et al., 2009, 2010; Fischer et al., 2010; McCracken et al., 2006). Some researchers have critiqued the compliance literature and suggested that the concept of compliance is irrelevant to the patient experience of taking medications (Donovan & Blake, 1992). Recently, the medical literature has been shifting away from the idea of patient compliance towards concordance between patient and physician when developing medical regimens (Banning, 2008; Pound et al., 2005). The concept of concordance aligns more closely with the aims of patient-centred care. The current study highlights the need for increased partnership between patients and physicians for managing pain after TKA. It

shows that compliance was neither central nor irrelevant to the participants, who all complied with the guidelines they were given so long as they did not conflict with their personal experiences or beliefs. In the absence of guidelines, or when conflict occurred, the participants adapted their medication regimens.

Because each participant had unique experiences and values, each of them developed a personal pain management regimen despite having been told uniformly to take one to two Percocet or Tylenol #3 tablets every four to six hours. For some, fear of addiction was the strongest influence on medication usage, while for others it was experience with adverse effects or the severity of pain. Several did not experience significant pain and thus did not find it necessary to take medication. Others experienced pain that was not adequately managed by their pain medication prescriptions. It may be important to develop individualized pain management plans for each patient, since each person's experience is different. Currently, pain medication is provided to patients after surgery in a one-size-fits-all format. To create more individualized pain management plans it may be necessary for the patient and physician or discharge nurse to have an in-depth consultation that addresses patients' experiences and beliefs, and provides patients with medical knowledge pertaining to pain management and analgesics.

One way of increasing the understanding of patients' experience of taking medication is to use qualitative research methods. Several such studies have been undertaken (Chen et al., 2007; Dowell & Hudson, 1997; Erlen & Mellors, 1999; Johnson et al., 1999; Sale et al., 2006). Although these studies have provided valuable insight, many still frame their findings and recommendations with the aim of increasing patient compliance (Chen et al., 2007; Johnson et al., 1999; Svensson et al., 2000). An alternative to this objective would be

to incorporate the findings into the development of treatment plans that meet patients' needs.

Although each person in this study had a unique set of concerns and experiences with taking pain medication, several key issues were mentioned frequently. These included taking over-the-counter medications, discontinuing prescription medications, fearing addiction, experiencing adverse effects, preferring to endure pain and avoid medications, and taking the advice of family and health care providers. Some of these issues are easier for health care providers to address and incorporate into treatment plans than others. For example, it should be possible to expand the patients' education booklet (SHSC, 2007), and to have surgeon-patient consultations that address these issues. Concerns about the risk of addictions may be disproportionate to the actual risk, so it may be important to provide patients with information on the risk of addiction to opioids used to manage short-term pain. General information about discontinuing prescription pain medications and taking over-the-counter medications could be provided to patients.

Not all of the concerns raised by participants can be addressed by providing patients with more information, but willingness to endure pain and general dislike of medications can be taken into account when developing pain management strategies. If a patient is experiencing adverse effects, or generally dislikes medication, it may be important for health care providers to outline nonpharmacological techniques of pain management. The subjectivity of pain may partly explain the limited medication guidelines that patients were provided. Prior to their discharge, patients and physicians or discharge nurses may need to have in-depth consultations so that physicians can gain an understanding of the pain the patient is experiencing and willing to endure. In-depth consultations would lead to the

development of pain medication plans that aligned with patients' needs and known medical evidence.

Most of the participants in this current study seemed content to self-manage pain at home after TKA, but it is important for patients to obtain adequate support from health care providers to ensure that their pain is effectively managed during recovery. Several of the studies on patient self-management of medical conditions identified physician-patient communication and patient access to physicians as key components of effective partnership (Hickey et al., 1986; Kielmann et al., 2010; Larsson et al., 2009). Participants in this current study had been sent home shortly after a TKA with a prescription for pain medication and few pain management guidelines. They reported approaching health care providers on several occasions regarding their pain medications. This indicates that they wanted medical input when managing their pain. It is important for the hospital that is discharging patients to ensure that the patients have access to follow-up care during recovery. Such advice will support patient self-management of medications.

In summary, the findings of this qualitative study suggest that current pain management regimens after TKA do not address some patients' needs. The findings highlight several key concerns of patients taking opioids to manage acute postoperative pain. Few of these concerns were addressed at the time of prescription or by the patients' education booklet (SHSC, 2007). To shift towards patient-centred care, physicians and patients may need to have more in-depth consultations about pain management after discharge from hospital. The patient's values and experiences should be considered when prescribing analgesics, and multiple approaches to managing pain, such as prescription and over-the-counter analgesics and nonpharmacological methods of pain control, should be discussed. The

medical standpoint prioritizes pain management, but when taking medication conflicts with experiencing adverse effects, beliefs about stoicism, addiction to opioids, or dislike of medications, patients may choose to endure some pain. Each individual in this study had unique concerns and pain management guidelines may need to be more individualized to meet patients' needs.

## 7.2 Study Limitations

This study's findings cannot be generalized statistically. The aim of qualitative research is to provide an in-depth account of a specific group of individuals that do not necessarily represent the general population. The findings pertain to pain medication usage after hospital discharge in a specific group of TKA patients discharged directly home. The exclusion of patients sent to a rehabilitation ward or assisted-living facility may have resulted in a study population with less pain and fewer comorbidities than the general TKA population. During recruitment, a nurse requested that one certain patient not be approached to participate in this study because he was in significant pain. Another patient asked to be removed from the study during a follow-up call because her pain was too severe for her to take part in an interview. The inclusion criteria and method of recruitment may have contributed to the mild degree of pain reported by many of those in the study. The participants in this study reported milder pain than those in a similar study of pain after total knee arthroplasty by Jeffery et al. (2011). However, Jeffery et al. purposefully selected patients who continued to experience chronic knee pain two to five years after their surgical procedure.



A significant limitation of this study was the lack of cultural diversity in the sample. The use of convenience sampling resulted in all participants being White. Employing maximal demographic, purposeful sampling might have ensured more cultural diversity; however, time constraints on the duration of sampling prevented using such sampling. Had greater cultural diversity been captured in the sample it might have been possible to analyze the impact of culture on pain medication usage. In fact, there is some evidence in the literature that culture can influence medication usage (Morgan & Watkins, 1988).

A more generic limitation was the time available to complete the study. As a component of a master's program, the time permitted to conduct the study was shorter than allowed for a doctoral dissertation. Given more time, several additional avenues of analysis could have been explored. A discourse analysis of this data would have been interesting, but acquiring the skills to perform such an analysis would be difficult in the time allotted a master's degree. In general, qualitative research tends to require substantial time so that researchers can immerse themselves fully in the data.

### 7.3 Future Directions

Future research on the influence of culture on pain medication usage would provide useful insights into factors influencing patients' uptake of prescriptions. Several studies have noted that people's cultural backgrounds can influence their medication usage (Horne et al., 2004; Mosley-Williams, Lumley, Gillis, Leisen, & Guice, 2002; Morgan & Watkins, 1988). Employing a sampling strategy of maximal demographic variation would facilitate such research.

Approaching the data from this study as a discourse analysis would provide a different perspective on patient understandings of pain medications. It would permit assessing the patient's desire to be socially acceptable as an aspect that might influence the information patients are willing to share about using pain medications. Interpretation of the data using discourse analysis could provide further insight into patients' understanding of pain medication usage during the postoperative period.

Finally, this study identified several factors that influence pain medication usage, and several gaps in the information patients receive during their initial consultation. It might be useful to develop an intervention study in which a group of patients takes a more active role in the development of a pain management plan. These patients would be given more information on the issues identified in this study, such as risk of addiction, adverse effect management, importance of adequate pain management, nonpharmacological methods of pain management, contacting health care providers, and the use of over-the-counter medication. As well, the patients' medication beliefs would be assessed and incorporated into the pain management plan. Such a study would provide insight into the outcome of increasing patient involvement in pain management after total knee arthroplasty.

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## Appendix A: University of Toronto Ethics Approval



UNIVERSITY OF  
TORONTO

OFFICE OF THE VICE PRESIDENT, RESEARCH

PROTOCOL REFERENCE #25265

May 14, 2010

Dr. Colin McCartney  
Institute of Medical Science  
Holland Centre  
43 Wellesley St. E.  
Toronto, ON M4Y 1H1

Ms. Samantha Bremner  
Institute of Medical Science  
Holland Centre  
43 Wellesley St. E.  
Toronto, ON M4Y 1H1

Dear Dr. McCartney and Ms. Bremner:

Re: Administrative approval of your research protocol entitled, "Pain and Pain Medication Usage in Older Adults Following Total Knee Replacement"

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We are writing to advise you that the Office of Research Ethics has granted administrative approval to the above-named research study. The level of approval is based on the following role(s) of the University, as you have identified with your submission:

- Graduate Student research – hospital-based only
- Storage or analysis of De-identified Personal Information (data)

This approval does not substitute for ethics approval, which has been obtained from your hospital Research Ethics Board. Please note that you do not need to submit Annual Renewals, Study Completion Reports or Amendments to the ORE unless the involvement of the University changes so that ethics review is required. Please contact the ORE to determine whether a particular change to the University's involvement requires ethics review.

Best wishes for the successful completion of your project.

Yours sincerely,

S. Lanthier  
Research Ethics Coordinator

**OFFICE OF RESEARCH ETHICS**

McMurrich Building, 12 Queen's Park Crescent West, 2nd. Floor, Toronto, ON M5S 1S8 Canada  
Tel: +1 416 946-3273 • Fax: +1 416 946-5763 • [ethics.review@utoronto.ca](mailto:ethics.review@utoronto.ca) • <http://www.research.utoronto.ca/for-researchers-administrators/ethics/>

## Appendix B: Sunnybrook Health Sciences Ethics Approval



Research Ethics Office, Room C819  
2075 Bayview Avenue  
Toronto, ON Canada M4N 3M5  
t: 416-480-6100 ext. 4276 or 88144  
www.sunnybrook.ca

**To:** Dr. Colin McCartney  
Anesthesia  
43 Wellesley Street East  
Room 446

**From:** Dr. Philip Hébert

**Date:** April 19, 2010

**Subject:** **Pain and Pain Medication Usage in Older Adults Following Total Knee Replacement**

*Project Identification Number: 088-2010*

*Approval Date: April 19, 2010*

*Expiry date: April 19, 2011*

The Research Ethics Board of Sunnybrook Health Sciences Centre has conducted a Delegated Board review of the research protocol referenced above and approved the involvement of human subjects as specified in the protocol on the above captioned date. The quorum for approval did not involve any member associated with this project.

The approval of this study includes the following documents:

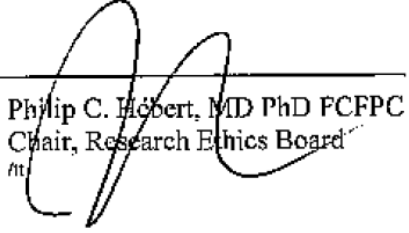
- Protocol dated March 11, 2010
- Informed Consent Form Version 2 dated April 15, 2010
- Telephone Script for Follow-Up Call dated April 14, 2010
- Semi-Structured Interview Guide dated March 11, 2010
- Chart Data Collection Form dated March 11, 2010
- Letter of Introduction dated March 11, 2010
- Letter of Appreciation dated March 11, 2010

The above Project Identification Number has been assigned to your project. Please use this number on all future correspondence. Should your study continue for more than one year you must request a renewal on or before one year from the approval date. Please advise the Board of the progress of your research annually and/or any adverse reactions or deviations which may occur in the future.

The Research Ethics Board of Sunnybrook Health Sciences Centre Operates in Compliance with the Tri-Council Policy Statement, ICH GCP Guidelines, Part C Division 5 of the Food and Drug Regulations, Part 4 of the Natural Health Products Regulations, and the Medical Devices Regulations. All Health Canada regulated trials at Sunnybrook are conducted by a Qualified Investigator.

Fully affiliated with the University of Toronto

Approval of this study by the Sunnybrook REB entails that this study complies with current legislation as outlined in the Ontario Personal Health Information Protection Act (PHIPA) and all policies and guidelines established by Sunnybrook Health Sciences Centre. All applicable contracts and agreements must be submitted to Sunnybrook Research Administration before this research may be initiated.



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Philip C. Hébert, MD PhD FCFPC  
Chair, Research Ethics Board

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## Appendix C: Letter of Introduction



### LETTER OF INTRODUCTION

#### **Pain and Pain Medication Usage in Older Adults Following Total Knee Replacement**

Dear [Participant],

We are interviewing patients who recently had a knee replacement at the *Holland Orthopaedic Centre*. We are interested to hear about your experience with pain and pain medication usage after returning home following your knee replacement surgery. To learn more about your experiences, we would like to ask you to participate in a one-to-one interview. This interview is expected to take between 30 to 90 minutes. This interview would take place approximately six weeks after you are discharged from the hospital.

Participating in this interview is completely voluntary. Your decision to participate or decline involvement in this study will have no impact on the care you receive. If you decide to take part in the interview, members of the research team will not review transcripts until all information that could identify you has been removed to help ensure confidentiality.

If you are interested in participating, please review the enclosed consent form. A member of our research team will call you within the next two weeks to see if you would like to be interviewed and schedule an appointment. If you would like to participate, your interview will be scheduled either right before or after your surgical follow-up appointment at the *Holland Centre*.

If you have any questions or concerns, please do not hesitate to contact the study supervisor, Dr. McCartney at (416) 480 4864.

Sincerely,

Samantha Bremner  
MSc Student, U. Of Toronto  
Institute of Medical Science

## Appendix D: Informed Consent Form



### INFORMED CONSENT TO PARTICIPATE IN A RESEARCH STUDY

**Full Study Title: Pain and Pain Medication Usage in Older Adults Following Total Knee Replacement.**

Principal Investigator: Dr. Colin McCartney, Physician, 416-480-4864

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#### INFORMED CONSENT

You are being asked to consider participating in a research study. A research study is a way of gathering information on a treatment, procedure or medical device or to answer a question about something that is not well understood.

This form explains the purpose of this research study, provides information about the study procedures involved, possible risks and benefits, and the rights of participants.

Please read this form carefully and ask any questions you may have. You may take as much time as you wish to decide whether or not to participate. Feel free to discuss it with your friends and family. Please ask the study staff or one of the investigator(s) to clarify anything you do not understand or would like to know more about. Make sure all your questions are answered to your satisfaction before deciding whether to participate in this research study.

#### INTRODUCTION

You are being asked to consider participating in this study because you recently had your knee replaced at *Sunnybrook's Holland Centre*. You may have knowledge you wish to share about any pain you experienced and your pain medication usage after going home following the surgery that would help us further understand challenges that patients encounter.

## **WHY IS THIS STUDY BEING DONE?**

The purpose of this study is to increase health care workers' understanding of pain experienced by patients after they leave the hospital following knee replacement surgery. To gain a better understanding of challenges faced by patients at home, interviews will be conducted by phone or in person with patients who have had a knee replacement within the past six weeks. The interviews will ask you about your experience with pain and medication usage since being discharged from the hospital.

## **WHAT WILL HAPPEN DURING THIS STUDY?**

A researcher will contact you to arrange an interview. The time, date and location of the interview will be set to accommodate the participants. Interviews are expected to take between 30 to 90 minutes. Interviews can be conducted over the phone or in a private meeting room at *Sunnybrook's Holland Centre* after your routine six-week follow-up appointment. The interview will be audio taped and later transcribed by the interviewer.

Your participation in this study is voluntary and you can refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your medical treatment at *Sunnybrook Health Sciences Centre*. Your health care team, including your doctor, at the *Holland Centre* will not be able to see the answers you provide to any of the interview questions until all identifying information is removed. The transcribed tapes will be entirely confidential. Your name and any details that might identify you, such as geographic location, will be removed from interview transcripts and you will not be identified in any way in publications. The original tapes will be destroyed after the study has been completed.

## **HOW MANY PEOPLE WILL TAKE PART IN THE STUDY?**

It is anticipated that 20 or fewer people will participate in this study who have had a knee replacement at *Sunnybrook's Holland Centre*. The length of this study for participants is a single interview that will take about 30 to 90 minutes. The entire study is expected to take about 12 to 18 months to complete and the results should be known in approximately 1.5 years.

## **WHAT ARE THE RESPONSIBILITIES OF STUDY PARTICIPANTS?**

If you decide to participate in this study you will be asked to do the following:

- Sign an informed consent form and return it by mail or in person,
- Participate in one 30 to 90 minute interview either by telephone or at a private location at Sunnybrook's Holland Centre, and
- Review a summary of your interview transcript and comment on its correctness

**WHAT ARE THE RISKS OR HARMS OF PARTICIPATING IN THIS STUDY?**

There are no medical risks to you from participating in this study, but taking part in this study may make you feel uncomfortable. You may refuse to answer questions or stop the interview at any time if you experience any discomfort.

**WHAT ARE THE BENEFITS OF PARTICIPATING IN THIS STUDY?**

There are no medical benefits to you from taking part in this study.

**CAN PARTICIPATION IN THIS STUDY END EARLY?**

The investigator may decide to remove you from this study without your consent if you are unable or unwilling to follow the study procedures. If you are removed from this study, the investigator will discuss the reasons with you.

You can also choose to end your participation at any time. If you withdraw voluntarily from the study, you are encouraged to contact Dr. McCartney at (416) 480-4864.

**WHAT ARE THE COSTS OF PARTICIPATING IN THIS STUDY?**

Participating in this study may result in added costs to you for transportation, parking and/or time loss from work. Parking will be reimbursed if you are required to visit the Holland Centre beyond visits required for regular care; however, you will not be reimbursed for other costs incurred because of this study.

**ARE STUDY PARTICIPANTS PAID TO PARTICIPATE IN THIS STUDY?**

You will not be paid to participate in this study.

**DO THE INVESTIGATORS HAVE ANY CONFLICTS OF INTEREST?**

There are no conflicts of interests to declare related to this study.

**WHAT ARE THE RIGHTS OF PARTICIPANTS IN A RESEARCH STUDY?**

All participants in a research study have the following rights:

1. You have the right to have this form and all information concerning this study explained to you and if you wish translated into your preferred language.
2. Participating in this study is your choice (voluntary). You have the right to choose not to participate, or to stop participating in this study at any time without having to provide a reason. If you choose to withdraw, your choice will not have any effect on your current or future medical treatment or health care. Should you choose to withdraw from the study you are encouraged to contact Dr. McCartney, physician, at (416) 480-4864.



3. You have the right to receive all significant information that could help you make a decision about participating in this study. You also have the right to ask questions about this study and your rights as a research participant, and to have them answered to your satisfaction, before you make any decision. You also have the right to ask questions and to receive answers throughout this study. If you have any questions about this study you may contact the person in charge of this study Dr. Colin McCartney at (416) 480-4864. If you have questions about your rights as a research participant or any ethical issues related to this study that you wish to discuss with someone not directly involved with the study, you may call **Dr. Philip C. Hébert, Chair of the Sunnybrook Research Ethics Board at (416) 480-4276.**
4. You have the right to have any information about you and your health that is collected, used or disclosed for this research study to be handled in a confidential manner.

If you decide to participate in this study, the investigator(s) and study staff will look at your personal health information and collect only the information they need for this study. “Personal health information” is health information about you that could identify you because it includes information such as your;

- name,
- address,
- telephone number,
- date of birth,
- new and existing medical records, or
- the types, dates and results of various tests and procedures.

The following people may come to the hospital to look at your personal health information to check that the information collected for the study is correct and to make sure the study followed the required laws and guidelines:

- Representatives of the Sunnybrook Research Ethics Board, a group of people who oversee the ethical conduct of research studies at Sunnybrook; and

Access to your personal health information will take place under the supervision of the Principal Investigator.

In addition, any study data about you that is sent outside of the hospital will have a false name assigned to it so your privacy is protected and will not contain your address, or any information that directly identifies you. “Study data” is health information about you that is collected for the research study, but that does not directly identify you.

Study data that is sent outside of the hospital will be used for the research purposes explained in this consent form.

The investigator(s), study staff and the other people listed above will keep the information they see or receive about you confidential, to the extent permitted by applicable laws. Even though the risk of identifying you from the study data is very small, it can never be completely eliminated.

When the results of this study are published, your identity will not be disclosed.

The Principal Investigator will keep any personal health information about you in a secure and confidential location for the study duration of approximately 1.5 years and then it will be destroyed as required by Sunnybrook policy.

5. By signing this consent form, you do not give up any of your legal rights.
6. You have the right to receive a copy of this signed and dated informed consent form before participating in this study.
7. You have the right to be told about any new information that might reasonably affect your willingness to continue to participate in this study as soon as the information becomes available to the study staff.
8. You have the right to access, review and request changes to your personal health information.
9. You have the right to be informed of the results of this study once the entire study is complete.

## DOCUMENTATION OF INFORMED CONSENT

Full Study Title: Pain and Pain Medication Usage in Older Adults Following Total Knee Replacement

Name of Participant: \_\_\_\_\_

Participant/Substitute decision-maker

By signing this form, I confirm that:

- This research study has been fully explained to me and all of my questions answered to my satisfaction
- I understand the requirements of participating in this research study
- I have been informed of the risks and benefits, if any, of participating in this research study
- I have been informed of any alternatives to participating in this research study
- I have been informed of the rights of research participants
- I have read each page of this form
- I authorize access to my personal health information, medical records and research study data as explained in this form
- I have agreed to participate in this study or agree to allow the person I am responsible for to participate in this study

Name of participant/Substitute decision-maker (print)	Signature	Date
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Person obtaining consent

By signing this form, I confirm that:

- This study and its purpose has been explained to the participant named above
- All questions asked by the participant have been answered
- I will give a copy of this signed and dated document to the participant

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Name of Person obtaining consent (print)	Signature	Date
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Statement of Investigator

I acknowledge my responsibility for the care and well being of the above participant, to respect the rights and wishes of the participant as described in this informed consent document, and to conduct this study according to all applicable laws, regulations and guidelines relating to the ethical and legal conduct of research.

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Name of Investigator (print)	Signature	Date
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**ASSISTANCE DECLARATION**  (check here if not applicable)

The participant/substitute decision-maker was assisted during the consent process as follows:

- The consent form was read to the participant/substitute decision-maker, and the person signing below attests that the study was accurately explained to, and apparently understood by, the participant/substitute decision-maker.
- The person signing below acted as a translator for the participant/substitute decision-maker during the consent process. He/she attests that they have accurately translated the information for the participant/substitute decision-maker, and believe that that participant/substitute decision-maker has understood the information translated.

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Name of Person Assisting (Print)	Signature	Date
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## Appendix E: Interview Guide

### SEMISTRUCTURED INTERVIEW GUIDE

#### **Pain and pain medication usage in older adults after total knee replacement.**

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#### **Background Information:**

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- Thank participants for their assistance with study
- Discuss consent form with participants and obtain written consent
- Explain the study (Interview duration and estimated study duration)
- Discuss how participants confidentiality and anonymity will be protected

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#### **Warm-Up Questions:**

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- **Are you from the Toronto area?**
- **Why did you decide to have your knee replaced?**

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#### **Pain /Education in Hospital**

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- **Could you tell me about your pain management while you were in the hospital after your surgery?**
- What was done to help manage your pain?
- **What information were you given about your pain medication(s) before leaving the hospital?**
- If someone spoke to you about your medication(s) before leaving, who was it that spoke with you?
- What information were you told about your pain medication(s)?
- What else would you have wanted to know about your pain medication(s) before being discharged?
- What information were you given about the possible side effects of the medication(s)?
- What advice were you given if your pain medication(s) were not effectively reducing your pain?
- **Prior to your surgery, what were your expectations of postoperative pain?**
- What concerns did you have about managing pain after your knee replacement surgery?
- How did your experience with pain compare to your expectations prior to the surgery?

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#### **Pain at Home**

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- **Would you describe your experience since being home from the hospital?**
- Can you describe a typical day since you were discharged from the hospital?
- How often did your pain occur?
- For how much of a typical day did you experience pain after being discharged from the hospital?

- How is your pain now compared to right after your discharge from the hospital?
- Is there a certain time of day that you experience pain? If so, what time?
- How does the pain you experienced after surgery compare to the pain you were experiencing leading up to surgery?
- **Could you describe your pain medication(s) to me?**
- How often have you been taking your medication(s)?
- Can you explain if the medication(s) is/are effective at reducing your pain?
- Do you have a family member or friend who is able to help you with your medication(s)?
- **Have you had any concerns about the pain medication(s) you are taking?**
- What have these concerns been?
- **Besides medication, what else have you tried to help manage your pain?**
- Have these other techniques been helpful in reducing your pain?

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### Wrap-Up Questions

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- **Would you like to share anything else about your experience with pain or your medication(s) since being home from the hospital?**
- Explain the rest of the research process

### *General Probes*

- Could you please describe that to me in more detail?
- What do you mean by...
- Could you please tell me more about that?
- Why not?

## Appendix F: Coding Framework

<b>Pain Medication Regimens</b>	<b>Circumstances Mediating Postoperative Pain Medication Usage (cont.)</b>	<b>Circumstances Mediating Postoperative Pain Medication Usage (cont.)</b>
<i>Employing nonprescription methods of pain Management</i>	<i>Medical Advice</i>	<i>Adverse effects</i>
Elevating leg	Description of pain medication information received	Cognitive adverse effects
Exercise to decrease pain	Health food advisor	Altered dreams
Herbal ointment	Information from acquaintances	Couldn't keep mind focused
Herbal supplement	Interaction with health care provider	Hallucination
Icing	Internet	Like looking through a kaleidoscope
Lie on back	Medication label	Things were not right in head
Reading	Patients' education booklets	Withdrawal
Resting	Role of family during recovery	Physical adverse effects
Rubbing knee for relief	Would like to know more information on medications	Accumulation of drug in body
Using over-the-counter medication	<i>Discomfort taking opioids</i>	Adverse drug reaction
Vitamin E	Comment about how Percocet in the news	Allergy to medication
Warmth	Commenting on street use of drug	Constipation
<i>Reducing frequency and dosages of prescription pain medication</i>	Commenting on strength of medication	Going to urinate frequently
Pain medication regimen	Don't want pain medication experience again	Insomnia from herbal medication
Taking medication if irritable	Easily hooked to medication	Loss of appetite
Taking medication if in pain	Joking about oxycodone	Nausea
Slitting tablets in half	Leftover prescription pain medication	No energy
Keeping pain medication nearby	Nervous about taking too much pain medication	Pain Medication wrecked-me
<i>Weaning-off prescription pain medication</i>	Not being comfortable with pain medication	Restlessness
Weaning-off prescription pain medication	Percocet based on a narcotic	Sleepiness
Cessation of prescription pain medication	Possibility of addiction	Sweating
<b>Circumstances Mediating Postoperative Pain Medication Usage</b>	<i>Preempting Pain</i>	Vomiting
<i>Tolerance of Pain</i>	Don't take medication for expected pain	<i>Intensity of Pain</i>
Doesn't take a lot of medication	Not taking medication for PT	Comparing pre and postTKA condition
Expressions about taking medication	Sleep disrupted after surgery	Expectation of postop pain
Expression to describe pain	Taking medication after physical activity	Expressions to describe pain
Pain after exercise as progress	Taking pain medication to help sleep	Other pain after TKA
Pain of healing	Taking medication to help with exercise	Pain from exercises
Perceived attitude described by patients	<i>General Dislike of Medication</i>	Pain from staying in one position
Perceived tolerance to pain	Doesn't take a lot of Medication	Sensation of pain after Surgery

<b>Self-management of Pain Medication</b>	<b>Miscellaneous</b>	
Adverse effect management	Attributes	
Physician-assisted management	Better diet once home	
Individual management	Comorbidities	
Access to prescription medication	Comparing own recovery to others	
Cessation of prescription pain medication	Emotional response to knee problems	
Individual medication requirements	Expectations of recovery	
Perceived effectiveness of medication	Fear of injuring self	
Playing doctor	Impressions of surgical outcome	
Renewal of prescription medication	Keep self active	
	Mobility following surgery	
	Name patients used to describe pain medication	
	Previous experience with pain medication	
	Problems with knee before surgery	
	Protective of new knee	
	Quality of care in-hospital	
	Sensation of pain prior to surgery	
	Source of pain	
	Viewing self as good patient	
	Views self as good healer	
	Visual aspect of pain	
	Wanting to return to normal	