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Group Visits for the Delivery of Preoperative Education to Knee Arthroscopy Patients

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Group Visits for the Delivery of Preoperative Education to Knee Arthroscopy Patients

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Group-shared medical appointments are a novel appointment structure for delivering health care. This appointment type is well suited for use in situations that involve high patient volumes with much repetition in clinical task performance and information exchange. The purpose of this quality improvement project was to compare the effects of the use of a group-shared medical appointment 90-minute visit to that of a traditional individual 20-minute office visit structure for preoperative care delivery in an orthopedic office for adult patients undergoing knee arthroscopy. Patients’ perceptions of clinical and organizational care delivery processes, knowledge acquisition and adherence to instructions, satisfaction, number of inappropriate postoperative emergency room visits, calls to the office for clarification of instructions, and number of early unscheduled office visits after surgery were compared across appointment types: group visits (n=28) vs. traditional appointment (n=20). Perceptions of care delivery were measured with the howRwe instrument; other outcomes were measured by patients’ self-reported answers to short questionnaires, and a post-operative checklist. A larger proportion of the participants in the group shared medical appointment group enacted the behavior related to the preoperative instruction to schedule physical therapy prior to surgery (94.7% vs 64.3 %, p =.03). There were no statistically significant differences between groups for other outcomes, however some trends favored group visits. The group-shared medical appointment format for pre-operative care delivery in an orthopedic office for patients undergoing knee arthroscopy was feasible and did not produce any adverse outcomes.

Keywords: group visits, shared medical appointments, patient education, preoperative patient education, knee arthroscopy, outpatient orthopedic surgical care, ambulatory surgery,
empowerment, self-efficacy, and health literacy, access to care, care continuity, and quality improvement.
This evidence-based project by Kimberly A. Stauffer fulfills the dissertation requirements for the doctoral degree in nursing practice approved by Janet S. Selway, D.N.Sc., as Director, and by Patricia C. McMullen, Ph.D., J.D., and Garrett Lynch, M.D. as Readers.

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Chapter 1

Introduction

As the impact of the Patient Protection and Affordable Care Act (2010) continues to unfold, the issue of health care system redesign prominently emerges. Innovative, integrated, and interdisciplinary solutions related to the inadequate structure of healthcare delivery will be required across all areas of the healthcare system. Healthcare delivery within orthopedic surgeons’ office settings, for the purpose of preparing patients for ambulatory surgical care, is not different. Reliance on traditional delivery structures, such as 20-minute individual office appointments, as the only structural format for care delivery is often inadequate (Burke & O’Grady, 2012). This is especially true when patient care requires extensive patient teaching, instruction, counseling, and coordination. Group visits-physical shared medical appointments have the potential to be more supportive of organizational and clinical care processes in these scenarios.

To empower individuals with knowledge and skills for self-care following outpatient surgery, the need for alternate delivery formats are increasingly recognized. Indeed, solutions to inadequate preoperative patient education, fragmentation in care coordination, patients’ poor perceptions of clinical care, limited same-day access to orthopedic care, low patient satisfaction, and insufficient quality in care delivery may be found in innovatively restructuring the traditional 20-minute office visit. Specifically, the use of group-physical shared medical appointments, as an alternative structure of care delivery has the potential to transform preoperative and immediate postoperative care delivery processes within the orthopedic surgery office setting and ultimately reduce inappropriate resource utilization.

The purpose of this paper is to describe the design, development, and evaluation of a pilot preoperative patient education program which utilized the group-physical
appointment format for the delivery of preoperative patient education to patients who were scheduled for knee arthroscopies at a private orthopedic office in an ambulatory care center in the eastern United States. The evaluation involved comparing the effects of the use of this type of a group visit to that of a traditional individual 20-minute office visit structure for preoperative care delivery.

The project was created as part of a quality improvement initiative, for evaluative purposes, to determine the feasibility of permanently utilizing the group-physical shared medical appointment structure for preoperative patient preparation and education in this setting. Along with a description of the project, this paper will provide background information and a review of the state of the science related to group-shared medical appointments to substantiate the choice of utilizing this format for delivering preoperative patient education. Implications for practice and recommendations for future research are made to promote future inquiry related to the use of group-physical shared medical appointments.

Clinical Practice Problem: Reliance on Traditional 20-Minute Individual Visits

This group visits pilot project had its’ genesis in the identification of a practice problem related to the structure of the delivery of preoperative patient education at a private orthopedic practice in the Eastern United States. Specifically, the problem was identified as: reliance on the traditional 20-minute office appointment format for the delivery of preoperative patient preparation, education, counseling, and instruction. Twenty minutes does not allow time to practice in accordance with multiple evidence-based recommendations for care (Burke & O’Grady, 2012). Nevertheless, as is the case at the study site, in most office practices the delivery of healthcare services is organized exclusively around 15 to 20-minute blocks of time for individual patient appointments (Burke & O’Grady, 2012). Several specific issues related to delivering preoperative care in a 20-minute appointment format were identified and
acknowledged. These included: repetition in services, insufficient time for task performance, inefficiencies in coordinating care, inefficient utilization of resources (healthcare personnel, time, appointments, etc.), and inconsistent utilization of a sound theoretical basis for delivering high quality, empowering preoperative patient education. Consequently, it was recognized that delivering preoperative care within the short time of a typical 20-minute visit was not enough, as the only structural option, for care delivery.

**Nature of Clinical Problem**

To elaborate on the need to change the 20-minute office visit structure within which preoperative patient education and preparation occurs, it is important to acknowledge the activities that are part of the usual preoperative patient visit. Doing such increases the understanding of the reasons for needing to change the structure of the preoperative appointment.

**Repetitive Nature of Tasks**

Many of the instructions for preoperative and immediate postoperative care are the same for patients planning to undergo knee arthroscopy and can reasonably be delivered *once* to a group of preoperative patients participating in a group-physical shared medical appointment, instead of multiple times throughout the day when care is delivered in a 20-minute individual appointment format. Delivering instructions once, in a group setting, increases efficiency. While better efficiency helps to create a positive patient care experience, this may also support staff and provider satisfaction with their work by reducing repetition in task performance. Support in provider satisfaction is thought to also arise through increasing variety in care, reducing heavy appointment schedules, and working with an interdisciplinary team during a group-shared medical appointment (Bronson & Maxwell, 2004; Edelman, Giersch, McDuffie, Oddone & Williams, 2012; Shilbuya, Pantalone, & Burguera, 2018).
Multiplicity of Tasks.

During a typical preoperative appointment, a plethora of activity occurs. For example, a medical history and a physical exam are completed; assessments, diagnoses, and evaluations of multiple patient problems are rendered; medications are reviewed; prescriptions for new medications or refills are given; new and alternate instructions on medications are given; side effects of medications are assessed; labs or other diagnostics such as x-rays and MRI’s are ordered or reviewed; patients’ psychosocial concerns are addressed; and preventive, screening, health promotion, and counseling are attempted. Surgical risk assessment related to patients’ individual health care history also needs to be completed. All these tasks must be undertaken along with providing empowering comprehensive patient education and instructions related to the planned knee arthroscopy.

Attempting to conduct preoperative patient education, in addition to the myriad tasks that are required to coordinate and prepare a patient properly for outpatient knee arthroscopy in the span of a short 20-minute time frame, results in less than optimal quality of care delivery. Furthermore, it is not possible to comprehensively use educational principles and techniques that are known to facilitate effective adult learning within the confines of the 20-minute office visit; nor is it possible to adequately address patient expectations of surgery, emotional needs of patients, levels of health literacy, and demographic or cultural factors that are important to patients’ perioperative care experience in such a short time span.

Inadequate Use of Conceptual Basis for Preoperative Patient Education.

Preoperative patient education has traditionally been recognized as an essential component of caring for patients planning to undergo surgical procedures (Wong, Chan & Chair, 2010). However, increasingly, there is an emphasis on patient self-management in the perioperative period with heavy demands placed on patients to meet their own care needs (Prouty
et al., 2006; Wong et al., 2010). According to Clari et al. (2015), following discharge from the health care facility, orthopedic surgery patients must contend with a variety of problems at home. These problems include managing pain and/or anxiety; difficulty with performing activities of daily living; bowel and bladder dysfunction; medication side effects; lack of knowledge related to taking prescribed medications; difficulty with mobility and use of assistive devices; and problems with instrumental activities of daily living such as meal preparation. Patients also have difficulties following recommendations for prescribed exercises postoperatively. Studies have shown that preoperative patient education is beneficial in helping patients address these self-care needs. For example, in a study of 125 participants, Wong and colleagues (2010) found that preoperative patient education given to individuals had a positive effect on postoperative pain management and perioperative anxiety; it was also associated with increased self-efficacy in managing postoperative concerns. Consequently, one of the primary functions of an orthopedic surgery office practice is to prepare patients for ambulatory surgical procedures through preoperative patient education, counseling, instruction, and physical examination. The benefits of preoperative patient education have long-been acknowledged and improvements in methods of providing patient education and instructions are warranted (Eloranta, 2016a).

In the delivery of preoperative education to patients planning to undergo outpatient ambulatory procedures, providers must ensure that patients obtain knowledge and master skills that enable self-care within the home environment. Conceptually, preoperative education should foster self-efficacy to enable self-management, in the home environment, immediately before and after surgery (Johansson, Nuutila, Virtanen, Katajisto, & Salanterä, 2005b). To positively impact outcomes of care, the education provided should be empowering. According to Johansson et al. (2005b), patients are empowered when they have the knowledge, skills, attitude,
and self-awareness to influence their health behaviors within the context of their own lives; thereby, gaining an inner sense of having control over their individual situation.

As delineated by Lorig & Holman (2003), the classic four components of self-efficacy enhancement in patient health teaching include: performance mastery, modeling, interpretation of symptoms, and social persuasion. Core self-management skills such as: problem solving, decision making, knowledge of how to find and appropriately utilize resources, knowledge acquisition, uncertainty management, and the ability to help individuals form appropriate partnerships with their healthcare team are supported by self-efficacy. Given adequate time, teaching to facilitate the development of these skills can be imbedded within a group-physical shared medical appointment format, as part of a preoperative patient education program utilizing group visits (Lorig & Holman, 2003; Trotter, 2016; Wong et al., 2010). Most importantly, the provided education must also include components which encourage patients to take an active, central role in their own care (Cooke et al. 2016).

‘Patient activation’ is another term used to connote an individual’s capacity or propensity to assume an active role in self-care, especially as it relates to coordinating care or self-lobbying (Maeng, Martsolf, Scanlon & Christianson, 2012). According to Maeng et al. (2012) evidence indicates that patients with low health literacy, reduced satisfaction with health providers, multiple chronic health problems, and perceived difficulties with care coordination potentially have lower levels of activation. When providing preoperative education and instructions, providers should aim to identify patient characteristics which are likely to denote a low level of activation. Once low patient activation is identified, providers can build into the educational and instructional plan of care, methods to support the patient, helping to reduce the risk of adverse outcomes of care during the perioperative period.
Inadequate Conceptualization of Patients’ Health Literacy Levels.

Adequate preoperative patient education also requires acknowledgement of patients’ health literacy levels (Ross, 2013). It is also necessary to act to mitigate the effects of reduced health literacy as it relates to patients’ preoperative education delivery. In a systematic review and integration of definitions and models of health literacy, Sorensen et al. (2012) developed a comprehensive definition of health literacy. This definition recognizes that health literacy is more than reading, writing, and the ability to complete mathematical computations. Sorensen et al. (2012) defines health literacy as follows:

Health literacy is linked to literacy and entails peoples’ knowledge, motivation, and competencies to access, understand, appraise, and apply health information in order to make judgments and decisions in everyday life concerning being ill, being at risk, and staying healthy to maintain or improve quality of life (p. 3).

Unfortunately, a report from the Institute of Medicine indicates that 50% of the American adult population has difficulty acting on health information (Sorensen et al., 2012). Yet, having the ability to act on health information is vitally important to patients undergoing outpatient surgery because it impacts the ability to apply and adhere to instructions, which ultimately affect the outcomes of surgical care. Moreover, according to Cutilli & Schaefer (2011), the older adult population is disproportionately impacted by lower health literacy, and this is further complicated by the inherent normal changes of aging that impact the teaching learning process during patient education for surgery (Speros, 2009; U.S Department of Health and Human Services, 2010). Preoperative patient education should be delivered in a manner that accommodates different learning styles, and with an acknowledgement of learning or sensory disabilities, such as hearing or vision impairment, that may impact the teaching-learning process (Speros, 2009). Also, in the context of the culturally diverse American society, any preoperative
patient education should be developed with an awareness of how culture influences teaching and learning (Chang & Kelly, 2007).

Therefore, the aim of preoperative patient education is not merely to impart knowledge to patients via a litany of instructions; rather, it is to empower patients for self-management through understanding and skill mastery (Johansson et al., 2005b; Trotter, 2013). Promoting understanding and skill mastery is facilitated through mitigating inadequate health literacy (Ross, 2013). Helping patients to successively take a central, active role in their own care is essential to safety and reducing risks of care delivery. To mitigate low patient activation and promote increased levels of patient accountability, providers require adequate time with their patients during preoperative encounters, to utilize conceptual knowledge related to these factors.

A 20-minute individual office appointment is not conducive to the delivery of this level of patient care and education. For the purposes of this pilot project, the use of the group visits format, in the context of the study site office setting, was expected to facilitate the ability to apply the theoretical knowledge that supports empowering preoperative patient education, and which is consistent with Sorensen et al. (2012) definition of health literacy.

**Inadequate Time for In-depth Dialogue Related to Patient Expectations**

According to Pihl et al. (2016) many patients are overly optimistic regarding the recovery process and overall outcomes following arthroscopic knee surgery. Avoiding incongruence between preoperative expectations and the reality of the postoperative recovery experience supports better postoperative pain and anxiety control; it also promotes better patient satisfaction with outcomes of surgical care. Therefore, during the preoperative education appointment for knee arthroscopy, it is imperative that patients engage in discussions which allow them to gain an accurate conceptualization of what to expect during the perioperative and postoperative recovery periods. Facilitating such conversations about expectations in a 20-minute individual
appointment format is challenging when it is realized that this must be done in conjunction with other components of the preoperative patient education appointment.

**Inadequate Time to Address Emotional Needs of Patients**

Moreover, patients preparing for surgery are known to experience varying degrees of physical and psychological stress which culminates in anxiety (Ahmetovic-Djug, Hasukic, Djug, Hasukic & Jahic, 2017; Goncalves, Cerejo, & Martins, 2017). The severity of patients’ stress while awaiting surgery varies; and it is within the context of delivering patient education that coping strategies may be developed (Goncalves, Cerejo, & Martins, 2017). Johansson et al. (2005b) explain that since the 1970’s studies have stressed that appropriate preoperative patient education has the capacity to assist patients in coping with negative emotions by reducing anxiety, increasing self-efficacy, and strengthening their commitment to postoperative care instructions. Kesanen et al. (2017) conducted a randomized controlled trial with a sample size of 100 participants. In their study, the authors concluded that increased preoperative knowledge is associated with decreased perioperative anxiety. Empowering knowledge preoperatively has also been associated with higher postoperative health related quality of life (Koekenbier, Leino-Kilpi, Cabrera et al., 2016).

**Inadequate Time for Provider Coordination of Care Delivery.**

The preparation of patients for surgery also entails assisting them with the coordination of their care. Overall, patients that achieve continuity in care and receive highly coordinated care, more consistently rate their care experiences as highly satisfactory (Doty, Fryer, & Audet, 2012). Therefore, effective preoperative patient education and preparation within the structure of a group-shared medical visit also has the potential to enhance patient satisfaction. Provider assistance with coordination of care is also critical in care delivery, to avoid unnecessary repetition in care services (Kash, Zang, Cline, Menser, & Miller, 2014).
At the study site, much of provider care coordination is accomplished, or at least confirmed, during the time the patient is being seen for their preoperative education appointment. A traditional 20-minute individual office visit does not allow enough time for the completion of the tasks necessary to prevent fragmentation or ensure continuity of care in this context.

Innovation related to the structure of the delivery of preoperative care, within office-based practice settings, should incorporate care coordination; this is paramount to improvements in outcomes of care (Johansson et al., 2005a). Well-structured and planned patient educational programs that include assistance with care coordination allow patients to achieve outcomes of care more efficiently and effectively (Prouty et al., 2006).

Preparing for ambulatory orthopedic surgery is complex. Navigating the complexity of the health care system to meet patients’ pre-surgical needs is often extremely confusing, even for the most health literate of individuals. Specific to the office-based preoperative setting, many tasks are necessary to coordinate and prepare for surgery. These tasks are often unfamiliar to patients, require close attention to detail, and provider guidance for completion. For example, patients must obtain medical and specialty clearances for anesthesia; come to the surgeons’ office for preoperative education and counseling; obtain appointments for postoperative physical therapy and office follow-up; obtain necessary prescriptions for postoperative use; obtain diagnostic testing; obtain durable medical equipment; obtain supplies for incision care postoperatively; arrange for time off from work; and possibly require assistance with childcare while recovering. Furthermore, they must ensure insurance coverage and financial readiness for their surgery. These tasks are time consuming and each has specific nuances that must be attended.

**Care Coordination Crosses Geographical Settings**

To complicate matters, preoperative preparation occurs across geographical
settings. Specifically, pre-surgical preparation occurs in patients’ homes and work environments; surgeon’s offices; ambulatory care centers; primary care providers’ offices; specialty providers’ offices; pharmacies; physical therapist offices; and lab facilities. See Appendix A, Figure 1.0, *Care Coordination and Communication Required Across Multiple Healthcare Settings*. Given the challenges and complexity of pre-surgical preparation, highly effective preoperative healthcare delivery systems require interdisciplinary staff dedicated to assisting patients with coordination of care.

**Competing Roles for Non-provider Staff Impacting Quality.**

Reimbursements for providers’ services traditionally reward *quantity* as opposed to *quality* in care giving (Christensen, 2016). Therefore, non-provider office personnel at the study site typically have time conflicts in carrying out two role functions within a 20-minute individual appointment: 1). primarily supporting the provider to deliver care to volumes of patients being seen in multiple exam rooms and 2). secondarily assisting patients while focusing on the quality of the care that is delivered. Often, with the use of a traditional 20-minute individual office visit, the bulk of staff members’ time is allocated to helping the providers, with little time available to assist in coordination of care or to support and reinforce patients’ understanding of their preoperative instructions. Unfortunately, the nature of the care that is delivered in the limited time allotted for individual office appointments is often rushed. Any attempts at slowing down, within the structure of an individual appointment format, often results in frustrated providers and a panel of less than satisfied patients who are not seen on time.

Indeed, the coordination and support of patients’ in their efforts to understand preoperative instructions, develop preoperative self-care skills, or to carry out necessary tasks prior to surgery has traditionally been a secondary role of non-provider office personnel. This negatively impacts patients’ in-office preoperative education and their ability to develop skills
for self-management for use in their home environment (Staren, Edgar, Braun, & Denny, 2010). These competing role requirements of support staff often result in omissions in task performance and gaps in care delivery. However, reorganizing the delivery system to prioritize the function of non-provider staff to a role in assisting the patient has utility, especially in helping to mitigating low patient activation levels. Theoretically, delivering preoperative patient education within the structure of a group-shared medical appointment, allows more time for non-provider members of the healthcare team to focus on the direct peri-operative needs of the patient.

Need for Same-Day Access to Care

The orthopedic practice study site, seeking to provide excellence in care delivery, acknowledged the need to accommodate same-day access to care for patients requiring treatment for painful, acute musculoskeletal injuries (personal communication with Michele Cox Spivey, practice administrator, 2/20/16). As described by Rodriguez (2016) and Snow and Harrison (2009) more efficiency in the delivery of healthcare is needed. In the case of preoperative patient education, the use of a group visits format, as opposed to an individual appointment format, was thought to potentially open space in providers’ schedules. As more patients gain insurance and seek care, open appointments will enable providers to accommodate the projected increase in demand for new patient services. Same-day appointment access is not only important for new patients seeking treatment, it is also important to current patients of the practice who experience exacerbations in their musculoskeletal conditions, or complications following surgery.

Quality Care Needed

Currently, in the healthcare environment, there is a mandate to improve quality of care while simultaneously controlling costs of care delivery (Rodts et al., 2014). As this process continues to unfold, the United States healthcare delivery structure will increasingly be
scrutinized and will require revision if the promise of quality in care provision is to become a reality. In the context of the study site office setting, the need for quality in the delivery of preoperative patient preparation and education served as a strong impetus for choosing to pilot the use of the group-physical shared medical appointments format.

According to the Institute of Medicine, quality of care delivery is care that holds six characteristics. These characteristics include care that is: safe; efficient; effective; timely; equitable; and patient-centered (Khushf et al., 2008). When providing preoperative patient education, the individual appointment format is not always conducive to meeting these dimensions of quality. Therefore, the utility of the individual patient appointment structure for all types of healthcare delivery (such as preoperative patient education and preparation) is limited, especially as healthcare delivery is transformed to a value-based system focusing on efficiencies and quality in care delivery. This is increasingly recognized, as the ACA has accelerated the quality movement, while calling for transparency in outcomes, and costs of care delivery (Olson & Mather, 2013).

To deliver quality care, when providing preoperative patient education and preparation, the very structure of the delivery system must be ameliorated. According to Teisberg & Wallace (2009), efficiencies and quality of care will be improved by three structural changes in the healthcare delivery system: 1). organizing patient care from an interdisciplinary perspective; using an integrated team approach, that is defined by patients’ needs across the full cycle of their care; 2). measuring, and disseminating outcomes of patients’ care; and 3). a value-based system in which provider reimbursements are linked to quality as opposed to quantity (p. 35). However, the ideal healthcare delivery system will require multiple structures and trials to determine the best fit for both patients and providers across different sectors of the healthcare arena (Dove, Weaver & Lewin, 2009). The use of a group-shared medical appointment format in the delivery
of preoperative patient education is one such structure with the potential to allow for improvements in the quality of care delivery through impacting these components.

Clearly, the short time period of a typical 20-minute office visit is not optimal for the delivery of preoperative education that aspires to be concordant with recommendations for quality and best practices in health education as discussed. While the individual appointment format of care delivery has served well in the past for acute care medical evaluations, it is less effective for care that requires intensive teaching, coordination of care activities, counseling, and instruction. Therefore, innovative solutions such as group-shared medical appointments, which afford the structural capacity to allow clinicians to comprehensively address clinical and organizational needs of patients are needed.

What Patients Want Most

Additionally, according to Berry, Rock, Houskamp, Brueggeman, & Tucker (2013), what patients want most in the delivery of health care varies. However, it most definitely includes restoration of health; timely access to care; care that emphasizes kindness, hope, and certainty; and delivery of services that offers continuity, choice, and coordination. Overall, patients that achieve continuity in care and receive highly coordinated care, more consistently rate their care experiences as highly satisfactory (Doty, Fryer, & Audet, 2012). Relying solely on the traditional 20-minute individual appointment structure for all care does not adequately support these patient expectations.

While considering the nature of the clinical practice problem of relying on traditional 20-minute individual office appointments for all care delivery as described above, one finds many reasons for changing the structure of delivering preoperative education. However, there are also many trends within the health care sector at the macro-level, impacting the context of health care delivery, which further provide rationale for the need for innovative solutions to the problem of
relying on traditional 20-minute individual office appointments for all types of care delivery. A description of such reasons follows.

**Macro-level Rationale for Change in Preoperative Health Care Delivery Structure**

The Affordable Care Act of 2010 expands healthcare insurance coverage and an estimated 32 million individuals are projected to benefit from this aspect of the legislation (Dall et al., 2013). However, with the passage of this law, the demand for access to services is also increased and will continue to grow. Estimates suggest an 8 to 12% increase in the total number of office visits, outpatient visits, and emergency department visits between the years of 2013 and 2025 (Dall et al., 2013) pursuant to the expansion of insurance coverage. This is the general case across all areas of healthcare as the ACA is fully implemented and newly insured individuals enter the system. These statistics foretell an influx of patients that will require services. In an already strained system, the need for appropriate solutions to accessing care is highlighted, in both primary care and specialty settings such as an orthopedic surgery office practice.

**Need for Increased Access to Orthopedic Care**

The projected demand for orthopedic care supports the need for an alternate structure of care delivery such as, group visits, to accommodate an increased demand for services. In 2008, according to the American Academy of Orthopedic Surgeons (AAOS) (2019), one in two adults reported a musculoskeletal condition that required medical attention. Annually, musculoskeletal injuries and diseases account for over one-half of all chronic conditions in those 50 years of age or older (Perry et al. 2011). Indeed, among the adult population, staggering levels of pain, reduced mobility, and losses in physical function can be attributed to bone and joint health problems. Consequently, the indirect and direct costs estimate for bone and joint health care are estimated to approach $950 billion annually, or 7.9% of the gross domestic product in the United States (retrieved from boneandjointburden.org/, 10/31/14). Undoubtedly, these statistics imply
that musculoskeletal conditions exert a tremendous impact on the healthcare delivery system reflecting the demand and access needs for orthopedic services.

Historically, specialization has expanded treatment options improving the quality of life for untold numbers of patients and contributed to the increase in the demand for healthcare services as well (Dall et al., 2013). According to Dall et al. (2013), more than one-third of patients seen in primary care are referred to specialists annually. It can be anticipated that demand for care among specialists’ groups will necessarily grow as the rates of health problems related to a specialty increase. The growth in health problems within a specialty can be influenced by many factors. Like most specialties, this holds true in orthopedic surgical care settings as well.

**Aging Population Influences Prevalence Thus Demand for Access**

Accordingly, given that orthopedic conditions are highly prevalent in older adults, as the average age of the population continues to increase, the presence of orthopedic conditions will also increase, thereby, increasing the need for specialty orthopedic services and the need for timely access to care. According to Girdhari & Smith (2006), by the year 2030, twenty percent of the United States population will be over the age of 65 years representing 70 million individuals. By the year 2050, life expectancy will be such that over half of adults will live to be 80 years of age (Perry et al., 2011). With this increase in life expectancy, it is reasonable to expect an increase in disability overall. However, the most common source of disability arises from a physical or musculoskeletal problem such as that related to osteoarthritis, a fall, or sarcopenia-related frailty (Perry et al., 2011). In fact, Perry et al. (2011) state that 45% of older adults report having such a disability. Additionally, in community-dwelling older adults, musculoskeletal conditions are one of the most common sources of pain requiring medical attention (Perry et al., 2011). Therefore, the increased prevalence of orthopedic conditions in an
aging population will continue to drive the demand for timely access to orthopedic specialty services.

**High Rates of Physical Recreational Activities and Obesity Influence Demand for Access**

According to the American Academy of Orthopedic Surgeons (2019), the demand for access to care for orthopedic conditions in the aging adult population is showing no sign of cessation; it is also highly influenced by the prevalence of obesity and levels of physical recreational activities in the. Advanced age and obesity, coupled with highly physical leisure activities, increases the risk for injury and osteoarthritis, thereby, increasing the demand for orthopedic care (Tung, Cooke, & Moyle, 2013). Nevertheless, the public health sector has repeatedly called for high levels of physical activity and exercise as this has positive effects on overall health with resultant decreased mortality rates among more active individuals. In fact, according to Paganini-Hill, Kawas, & Corrada (2011), in their population-based cohort study, physically active leisure time activities correlated with a statistically significant 15 to 30% decrease in mortality as compared to no time in active leisure endeavors. However, as individuals are more active, the potential for orthopedic conditions increases. Yet, physical activity and exercise remain important to overall health. This conundrum, in which increased physical activity and inactivity are both simultaneously risky, provides further rationale for easy access to orthopedic care to support health.

**Stability of Chronic Health Problems Depends on Timely Access**

The presence of painful, mobility-limiting musculoskeletal conditions impacts the ability to exercise and maintain physical fitness. This in turn, has implications for overall health and the management of common co-morbid disease processes. Even though high levels of activity and exercise may increase the potential risk for injury, controlling musculoskeletal pain and preserving the ability to exercise is also critical to the management of comorbid disease. This
necessitates balance in levels of activity and periods of rest. It also provides an impetus for increasing prompt access to orthopedic care in the event of an injury (Camillo, Thompson, Goodman & Jing, 2013).

According to Camillo et al. (2013), there is growing evidence that exercise is anti-inflammatory. Preserving exercise ability, a concrete mechanism to reduce inflammation, is important because recent evidence shows that inflammation is one of the major underlying causes of many of the serious diseases that plague modern society (Camillo et al., 2013; Kendall-Tackett, 2015). Loss of the ability to exercise has serious implications for over 90 million Americans who suffer from chronic disease processes and for those hoping to prevent the onset of such conditions (Jaber, Braksmajer, & Tilling, 2006; Cordero, 2014). For example, the prevention and management of essentially all common chronic health conditions such as diabetes mellitus, hypertension, atherosclerosis, cancer, depression, lipid disorders, obesity, cardiac diseases, osteoarthritis, and Alzheimer’s are at least partially dependent upon the ability to remain active, thereby, reducing overt and subclinical inflammation.

Musculoskeletal impairment renders the ability to remain active difficult or impossible, consequently, exerting a negative impact on existing and developing co-morbid conditions. Therefore, prompt access to care for orthopedic conditions, including surgical care, if needed, has the potential to decrease the period of inactivity arising from musculoskeletal problems and to mitigate the negative effects of chronic subclinical inflammation on co-morbid health problems (Camillo et al., 2013). Unfortunately, even before the enactment of the ACA, the average wait time for new patient orthopedic appointments to treat knee pain or injury, for example, was 16.8 days (Dall et al., 2013). This lengthy wait time for appointments represents a critical barrier to timely access to orthopedic care and requires change.
Need to Reduce Barriers to Access.

Access to orthopedic healthcare is impacted by many factors such as: lack of insurance coverage, insufficient family support, low income/poverty, culture, complexity of the healthcare system, provider availability (both the number of qualified providers and their availability during the time in which patients can attend appointments). Transportation to and from healthcare facilities, and patient knowledge that care is needed or available are other factors of relevance (Horton & Johnson, 2010).

Importantly, access to care may also be affected by patients’ degrees of health literacy. That is, their ability to process and use available health information, making patient education a critical factor in the ability to access care and appropriately use healthcare resources during the perioperative period. Therefore, any innovation that improves the efficiency of orthopedic care delivery, as well as, the breadth and depth of patient education, potentially improves access for individuals or populations of those requiring orthopedic services. In the orthopedic surgery office setting, intense preoperative patient education is of utmost importance in the delivery of quality care for these purposes.

Trends in Ambulatory Surgical Care Justify Change in the Delivery Structure

Several trends in the provision of ambulatory orthopedic surgical care have emerged and can be used to justify the need for change in the structure of care delivery for patients presenting for preoperative care in the orthopedic surgery office setting. Specifically, advancements in biotechnology, shifts in the local of surgical care, shifts in the responsibility for preoperative education and instruction, and an aging patient population have added to the complexity of providing office-based care for orthopedic patients planning to undergo ambulatory surgical procedures. Moreover, the convenience of having surgery in an outpatient setting, the need for cost containment, and the increased numbers of insured patients seeking orthopedic care have
resulted in an increase in the volume of patients undergoing ambulatory surgery, instead of inpatient procedures. Consequently, these trends profoundly change the requirements for the delivery of preoperative patient education for this patient demographic; this calls for a change in the structure of the delivery of preoperative patient education.

Trend: Biotechnology and Arthroscopic Surgery

Arthroscopy, as a surgical procedure for the management of musculoskeletal health problems, has become an indispensable tool for surgeons specializing in orthopedic disorders. This common outpatient procedure can be done on any area of the body but is most commonly done for disorders of the knee. Technological advances in the latter part of the twentieth century have increasingly added to the utility of this procedure, resulting in the technique being identified as one of the most significant innovations in orthopedic surgical care in modern times (Bigony, 2008).

While initially, arthroscopy was mostly used for diagnostic purposes, since the 1990’s, technological advances in instrumentation have increasingly allowed orthopedic surgeons to use arthroscopic techniques for surgical correction of a variety of mechanical orthopedic problems. For example, minimally invasive arthroscopic surgery can be used for the correction or treatment of common knee disorders such as: meniscus tears, plica syndrome, anterior cruciate ligament tears, and osteochondral defects. Accordingly, arthroscopy, once an exciting technologically advanced innovation has now emerged as a core, highly routine procedure within the orthopedic field. In fact, currently, arthroscopic surgical procedures are highly prevalent in the United States and an estimated 2 million arthroscopic procedures are conducted annually worldwide, most with satisfactory outcomes (Jarvinen, Sihvonen, & England, 2014). Whereas, in years past, hospitalization for anesthesia and open surgical techniques may have been required for common orthopedic problems, arthroscopy has made it possible to deliver such surgical care in the
Consequently, the locale of delivering surgical care has dramatically shifted, making changes in the structure of health care delivery imperative.

**Trend: Shift in Surgical Delivery Setting**

The locale of surgical care delivery has dramatically shifted from the inpatient hospital environment to the outpatient ambulatory surgery center setting. According to Suskind et al. (2014), greater than 50% of all types of elective surgeries are now performed outside the traditional hospital setting with 35 million outpatient procedures performed in ambulatory surgery centers yearly. Over the past 15 years, the proliferation of ambulatory care centers has grown substantially and continues to proliferate. One major reason for the growth of ambulatory surgery centers is that they are thought to improve quality and reduce costs per episode of surgical care (Heikkinen, Salantera, Leppanen, Vahlberg, & Leino-Kilpi, 2012; Suskind et al., 2014). Moreover, recently, the proliferation of ambulatory surgery centers has been further spurred by changes in payment policies that allow reimbursement for more diverse procedures. This is the result of changes brought about subsequent to the Medicare Prescription drug Improvement and Modernization Act; and the Outpatient Prospective Payment Policy (Suskind et al., 2014). Along with the shift from the inpatient environment to the outpatient setting for surgical procedures, the location of preparing patient for surgery has shifted as well.

**Trend: Shifting Responsibility and Locale of Preoperative Preparation**

Another trend, and consequence of the shift to performing surgery in ambulatory surgery centers, is that the responsibility for preoperative preparation has also shifted to the outpatient setting with much of the responsibility for surgical preparation now dispersed to the providers and staff among many different health care organizations: surgeons’ offices, ambulatory care centers, primary care providers’ offices, and a variety of specialty practices. This creates
fragmentation in care delivery, potentially creating an environment ripe for less than optimal communication among all stakeholders, safety problems, and a lack of clear direction in terms of where the accountability for various aspects of care should be placed.

In the past, patients may have required input from many different providers to prepare for surgery, but they would have been admitted to the hospital prior to surgery to prepare for their procedure. The patient was not required to navigate multiple facilities to prepare for surgery; all necessary components were delivered in the hospital environment. These trends create the need for health care delivery structures that integrate these aspects of preoperative preparation to improve continuity in care delivery (Suskind et al., 2014).

**Trend: Shift in Setting of Preoperative Patient Education**

Preoperative patient education has traditionally been provided in the hospital setting, as part of the preoperative preparation for surgery. With the shift in performing surgery in the outpatient setting, the location in which patients receive their preoperative education, instruction, and counseling has also shifted from the hospital to the outpatient setting. Given this trend, the need for innovative preoperative patient educational programs within the orthopedic office setting is essential. Ideally, preoperative patient education should begin in surgeons’ offices, and continue across the continuum of care (Kruzik, 2009). Additionally, the structure of delivery in the provision of preoperative patient education in this setting is also critical to positive outcomes of care. The group-shared medical appointments structure of care provision is highly amenable to patient educational needs (Trotter, 2013).

**Trend: Shifting Responsibility for Preoperative and Postoperative Education**

Most importantly, patients are increasingly required to self-manage preoperatively and postoperatively (Johansson, Nuutila, Virtanen, Katajisto, & Salantera, 2005a). In the past, during in-patient stays, professional staff essentially had a captive audience for pre-surgical education,
counseling, instruction, and for management of postoperative care. In modern times, face-to-face interactions between professional staff and patients preparing for surgery is limited; as is, their time together while recovering from surgery. Simultaneously, with less time spent on preoperative patient education, the population of patients undergoing outpatient surgery is increasingly older, with multiple comorbidities (Allison & George, 2014). This brings more complexity to the perioperative surgical care required for the orthopedic patient demographic and highlights the importance of an adequate structure in the delivery of patient education prior to, and after surgery.

**Trend: Older, More Complex Patient Populations**

Older more complex surgical patients increase the risks for surgical complications, highlighting the importance of properly selecting patients for outpatient surgery with adequate preoperative assessment. According to Allison & George (2014), proper selection of patients and comprehensive preoperative assessments are critical to reduce the risk of last-minute surgical cancellations, untoward surgical outcomes or complications, the risk of unanticipated transfer from the ambulatory surgery center to a higher level of medical care, and to reduce the incidences of emergency room visits after discharge from the ambulatory surgery center. Consequently, in order to circumvent these potentially adverse occurrences, properly selecting patients for surgery and providing preoperative patient education entails having adequate processes in place for preoperative assessment of risk factors, medical status, and psychosocial circumstances.

**Moving Beyond 20-minute Office Visit: Group-Physical Shared Medical Appointment**

As discussed, relying on traditional 20-minute individual office appointments format for the delivery of preoperative patient education, instruction, and counseling is a significant
clinical problem for many reasons. Given the context in which this clinical problem arises, a pro-
active innovative solution is required. According to Staren et al. (2010), traditionally innovations
within surgical practices have focused mostly on surgeons, along with their ability to deliver the
latest cutting-edge technologies in surgical care. Often, the organizational focus has been
excluded when innovative change is attempted, with little attention to the non-surgical
organizational processes that support surgeons’ abilities to provide care across healthcare
settings. Staren et al. (2010) propose embracing innovation in a manner that includes
technological advances in surgical care, but also embraces innovation in the conceptualization
and application of interventions that support “new, unique, or different” (p.1) supportive care
processes, within the surgical office practice. In fact, Staren et al. (2010) explain that quality
improvement initiatives are founded on innovation, but initiatives capable of transforming an
orthopedic practice are inclusive of both technologically specific and process improvement
activities. An example of a care delivery innovation that is supportive of organizational
processes and surgeons’ provisions of orthopedic procedures, such as knee arthroscopies,
includes the delivery of preoperative care in the context of group-physical shared medical
appointment format.

Significance of the Project

The use of group-physical shared medical appointments at the study site, for the delivery
of preoperative patient education was thought to potentially have great significance to building
an exemplary patient experience during the perioperative period. In particular, the quality of
care delivery during the preoperative visit was expected to be transformed as the processes of
care were built in a more patient-centered manner within the group visit. Additionally, the
project was planned in such a way as to effectively align with organizational goals and to support
the surgeon’s ability to provide expert surgical care for patients requiring knee arthroscopies.
Utilizing the group-physical shared medical appointment format, appropriate application of theoretical concepts related to patient teaching and adherence to quality metrics were expected to be more easily accomplished. Ultimately, changing the structural format in which the preoperative patient education was delivered was expected to: promote high organizational and clinical perceptions of care delivery; enhance patients’ ability to obtain and retain knowledge; improve patients ‘adherence to instructions; reduce inappropriate resource utilization; foster patient satisfaction; promote improved access to care; and promote optimal outcomes of surgical care.

Moreover, increasingly healthcare providers face more complex patient problems, higher patient volumes, falling reimbursements, and rising practice costs, which all complicate care delivery (Bronson & Maxwell, 2004; Khahyal & Farid, 2018). The use of group visits as a structural change in the method of care delivery was expected to mitigate the effects of these elements on the outcomes of care for orthopedic surgery patients, provider productivity, and the healthcare system itself, while simultaneously reducing waste and replication of services. These factors highlight the significance of this project to the orthopedic surgical patient population and practice operations at the study site.

**Purpose of the Pilot Project on the Use of Group-Physical Shared Medical Visits**

The primary purpose of this evidence-based practice pilot was to compare the effects of using the group-physical shared medical appointment, to that of using a 20-minute individual office appointment format for the delivery of preoperative patient education, in the orthopedic surgery office setting. The pilot program was applied to a sample of patients planning to undergo outpatient knee arthroscopies at an ambulatory care center.

Specifically, the project involved conducting a pilot using the group-physical shared medical appointment format to determine the effects this delivery structure has on care delivery.
Additionally, the feasibility of permanently implementing the use of group visits, physical shared medical appointments structure, in this orthopedic setting for preoperative patient preparation and education was determined based upon an overall evaluation of pilot findings.

The PICOT question used to guide the literature review for this project was: In adult patients planning to undergo outpatient arthroscopic knee surgery, what is the effect of delivering preoperative patient education using a group visits, physical shared medical appointments format, as compared to using the traditional 20- minute individual office visits structure?

Population: Adults age 21 years of age or older in need of a knee arthroscopy

Intervention: Group-physical, shared medical appointment

Comparison: Usual care-20-minute individual office appointment

Outcomes: a) Patients’ perceptions of care (clinical services and organizational services), b) Patients’ knowledge and adherence to instructions, c) Patient satisfaction, d) Number of inappropriate emergency room visits within 10 days of surgery, e) Number of calls to the office after the preoperative visit through the first postoperative visit, and f) Number of early unscheduled office visits after surgery, before the regularly scheduled first postoperative visit.

Time: February 2018 through July 2018
Chapter 2

Review of the Literature

The use of group visits or shared medical appointments affords alternatives to traditional 20-minute office visits, increasing choice in structural formats for the delivery of health care. Group-shared medical appointments also have the potential to improve both processes and outcomes of preoperative care delivery within the orthopedic surgery office setting. The following literature review is organized to describe the evidence related to the use of group visits for the delivery of healthcare. For the purposes of retrieving evidence to inform and support the pilot of using group visits for preoperative preparation and education at the project site, several databases were searched including: CINAHL, Medline, the Cochrane Database, the Web of Science, Psych Info, and the Trip Database. The following keywords were used to retrieve the evidence from the literature: group visits, shared medical appointments, patient education, preoperative patient education, knee arthroscopy, outpatient orthopedic surgical care, ambulatory surgery, empowerment, self-efficacy, health literacy, access to care, care continuity, and quality improvement.

Types of Group Visits

Group visits are an alternative to the traditional individual appointment delivery structure, in which prescribing clinicians provide a series of individual encounters within the presence of other patients with similar healthcare needs. There are three major forms of group visits. These include the: physical shared medical appointment model, which is designed to include a physical exam in specialty or primary care settings; drop in group medical appointments model, used for follow up of established patients; and cooperative health care
 clinic model that is usually used for the delivery of care to high use, chronically ill, older adult patients in a primary care setting (Kelly et al. 2017).

Description of Group-Visits

According to Dickman, Pintz, Gold and Kivlahan (2012), a group visit can include as few as 2 or as many as 20 patients; however, most generally provide care for 8 to 12 patients at once (Reed, Partridge, & Nekhlyudov, 2015). Depending upon the specific needs of the patient population and the organizational setting, these appointments range in length from 60 minutes to 2 hours. Group-visits vary in the frequency of use from once a week to once a quarter. Most group-visits last 90 minutes (Kelly et al., 2017; Omogbai & Milner, 2018). Although variable in composition, all forms of group visits typically use an interdisciplinary panel of clinicians and an educational component to structure these appointment types. Group-visits may include a didactic element, but are primarily interactive in nature (Meehan et al. 2006; Omogbai & Milner, 2018). Most models of group visits are similar in terms of being patient-centered, interactive, and empowering (Burke & O’Grady, 2012; Housden, Wong, & Dawes, 2013; Kelly et al., 2017; Omogbai & Milner, 2018; Trotter, 2013).

Usual Purpose of Group Visits

While there are variable structural arrangements used for the provision of group appointments, this innovative care delivery method is done for the purpose of providing education and instruction; performing medical exams and evaluations; assisting patients with care coordination; and for the provision of patients’ psychosocial support and counseling. Specifically, during a group visit, physical exams are performed; patients may receive prescriptions for medications, orders for labs or other diagnostics; and they may receive referrals for specialty or ancillary services. The overall purpose of group-shared appointment structure is to address population health outcomes efficiently while maintaining quality and patient

**Strengths of Group Visits**

There are several key strengths of the group-shared medical appointments format. In a group-visit, patients receive all the elements of care that would be delivered in an individual visit format, and benefit from interactions with each other and an interdisciplinary team. Patients spend more face-to-face time with their providers and learn from interactions with other patients with similar health concerns. There is extensive time for patient education with the added ability to focus on psychosocial and information needs in populations of patients being seen with similar health conditions. Additionally, group visits are highly useful in practice situations in which repetitive tasks are the norm. The use of group appointments allows for routine care tasks to be performed once for several patients at the same time; thereby increasing efficiency and reducing repetition in services (Braun, Kaufman, Hernandez, & Monson, 2017; Bronson & Maxwell, 2004; Kahkoska et al., 2018; Meehan, et al. 2006).

**Background**

Several major health facilities have utilized group visits of various forms; these include: Dartmouth Hitchcock Medical Center, University of Virginia, Christus Medical Group, University of Michigan, Massachusetts General Hospital, United States Department of Defense, and the Cleveland Clinic (Bronson & Maxwell, 2004). Also, the use of group-shared medical appointments has been increasingly used in outpatient clinics and specialty practices over the last two decades. Highlighting the rapid increase in the use of the group-shared medical appointment format, Shibuya, Pantalone, & Burguera (2018), reported that 385 group-shared medical appointments were used at the Cleveland Clinic between the years of 2002 and 2004. By the year 2017, 12,300 group-shared appointment had been used. In 2018, the American Academy of
Family Physicians endorsed the use of group-shared medical appointments (American Academy of Family Physicians, 2019). Additionally, the United States Veterans Administration has had success with using group-visits for managing diabetes mellitus and is exploring the use of this appointment structure in other chronic medical conditions (Omogbai & Milner, 2018).

Moreover, the use of group-visits has been explored both in the United States and internationally with randomized controlled trials conducted in China, Canada, Greece, Germany, and the Netherlands (Kelly et al., 2017).

According to Heyworth et al. (2014) and Meehan et al. (2006), the concept of group visits was originally applied to primary care settings; but it has since expanded to specialty practices as well. However, the use of group visits in highly specialized environments such as in orthopedic surgery office practice settings has not been extensively studied. To date, much of the research related to the use of group visits has been in those patients with chronic health conditions. For example, group-visits have been evaluated for use in evaluation of cardiac risk, diabetes mellitus, congestive heart failure, hypertension, asthma, weight loss and lifestyle management, movement disorders, osteoporosis, fibromyalgia and chronic pain, women’s health care, cancer care, and in bariatric surgical care (Burke & O’Grady, 2012; Kelly et al., 2017). In fact, most of the available evidence for group visits or shared medical appointments has been obtained from studies related to the care of diabetes mellitus patients.

**State of the Science**

However, there is some evidence specific to the orthopedic setting that supports the use of the group-shared medical appointments format for low-variation, large volume surgical procedures (Wong, Martin, Wong, Bezuhly, & Tang, 2016). In their prospective randomized trial, Wong et al. (2016), using a sample of 80 orthopedic patients undergoing carpal tunnel release, found no significant differences between study groups on satisfaction with the surgeon, overall
patient satisfaction, recall of surgical risk, or patient comfort. Given there was no significant difference between use of the group-medical visit and usual care, the investigators concluded that the use of group-shared medical appointments had utility for routine and low-variation, high volume orthopedic preoperative consultations such as those done for carpal tunnel release.

Additionally, Meehan et al. (2006) developed a model of the use of the group-physical shared medical appointment at Dartmouth; namely, the Dartmouth Transplant Physical-Shared Medical Appointment Model. This model was developed for use in their highly specialized autologous stem cell transplantation clinic. In their small survey of 20 participating patients, 88% stated they would attend future group-appointments. Ninety-four percent stated they had received adequate information and education related to their condition as a result of attending the group-appointment. The magnitude of the effect of the use of the model was not able to be ascertained as a total sample size of those surveyed was not clear from the publication. Meehan et al. (2006) concluded that their pilot of the group-physical shared appointment format demonstrated quality in care delivery, patient satisfaction, provider satisfaction, and better access to care. Additionally, the authors concluded that the group-shared appointment offered increased time with providers. This increased time, improved the ability for providers to meet the emotional, psychosocial, and educational needs of patients when seen in a group-shared medical appointment. By organizing care delivery of the stem cell transplant patients into group-physical shared medical appointments, the increased volumes of patients within the clinic were also accommodated without compromising quality or adding hours to providers’ schedules. The conclusion was that the use of group-physical shared medical appointments had utility in improving quality processes aimed at both organizational and clinical outcomes in care delivery in their population (Meehan, et al. 2006). Meehan et al. (2006) recommended other providers
pilot this delivery model in highly specialized clinical settings after their experience with implementing this appointments format for delivering care to stem cell transplant patients.

Despite limited evidence specific to the orthopedic setting, it is reasonable to extrapolate evidence obtained from a variety of other clinical settings and patient populations, to support a pilot of using group-shared medical appointments in the quest for quality improvement and better understanding of the effects of using the group-shared medical appointment format. This is because many of the clinical and organizational processes that produce excellent patient care experiences are shared across sectors in the health care system. Appendix B, “Evidence Table to Support Use of Group Visits,” provides a summary of the evidence related to the use of the group-shared medical appointments format, which was used to support a pilot study of this delivery format at the study site.

**Group Visits Structure Supports Quality: Organizational Outcomes**

Organizational outcomes of care are important to patients’ care experiences. Timeliness, patient-centered care, safety, efficiency, access, and equitability are the six elements of quality in care delivery as delineated by the IOM (Khushf, Raymond, & Beaman, 2008). These elements are the determinants by which patients experience quality in their healthcare and by which quality can be measured. Patients are attuned to the ability to obtain timely appointments, and increasingly have expectations to be seen on time within their providers’ offices. Furthermore, patients relate their level of satisfaction to having their expectations met. According to Heyworth et al. (2014), many clinicians lack awareness related to the importance of meeting their patients’ expectations, and the link between meeting these expectations, patient-centeredness, and patient satisfaction. Moreover, payers are increasingly linking payment to patient experience and quality patient-centered care (Dickman et al., 2012; Smith & Elias, 2016). This renders the determinants of quality very important to care delivery. It also requires providers of care to focus
on the triple aim of balancing these quality factors with efficiency, costs, and patient satisfaction (Smith & Elias, 2016). The use of group-shared medical appointments represents a potential means of accomplishing this aim.

**Group visits support organizational outcomes quality: efficiency, costs, access, patient satisfaction.** When group-shared medical appointments are structured properly, repetition in staff work task performance is reduced. Additionally, multiple patients are seen at once resulting in patients’ waiting times at the time of their appointment being reduced. Waiting times for new appointments are also reduced because more appointments are made available in providers’ schedules and translates to improved access to care (Heyworth et al., 2014; Kahkoska et al., 2018; Kelly et al., 2017; Meehan et al. 2006; Omogbai & Milner, 2018).

According to Kahkoska et al. (2018), clinic efficiency was enhanced with the use of group-shared medical appointments in their small study of 29 patients with Type II Diabetes Mellitus attending a free clinic. A higher number of patients per month were seen when the group-shared medical appointment type was utilized as compared to the use of the usual individual appointment type. Specifically, 10 to 12 additional patients were seen per month with the use of the group-visits as compared to six to eight patients per month with the use of the individual appointment type. This represented much needed increased access to appointments for their complex patient population. Kahkoska and colleagues (2018) concluded that this level of efficiency could not be realized with the use of individual appointments only, unless providers saw an unreasonable number of patients, one patient every 15- minutes, during a three-hour clinic session.

Like the Kahkoska et al. (2018) study, Braun, Kaufman, Hernandez & Monson (2017) also found the use of group-shared medical appointments beneficial to efficiency and access to care. Braun et al. (2017) conducted a retrospective comparative study to compare the effects of
using a group-shared medical appointment to traditional visits in a cohort of adolescent female patients requiring breast reduction for macromastia (N=46). Using a sample of patients seen in a group-shared medical appointment (N=25), between February and June of 2016 and a retrospective cohort of usual care patients (N=21), seen between 2013 and 2015 the investigators sought to compare the effects of these appointment types. In their study, efficiency was measured as new patients per hour during the time of holding group-shared medical appointments. The number of new patients per hour increased from 1.33 when using an individual appointment structure to 3 patients per hour when group-shared medical appointments were trialed. This represented an increase in access to available appointments and was done without reducing face-to-face time with providers or decreasing time spent on education. Additionally, Braun et al. (2017) found the mean days between referral to their clinic and the office visit for evaluation was 75.3 days with use of traditional individual appointments and 40.3 days with use of the group-shared medical appointment. This finding was not statistically significant (p=.69); nevertheless, it demonstrated a decrease in waiting time for appointments, a measure of efficiency. The investigators concluded that the use of group-shared medical appointments improved efficiency and were beneficial to clinic operations. More efficiency allowed providers to see large numbers of patients at once, while maintaining or improving quality and patient satisfaction. Most importantly, seeing multiple patients at once created room in providers’ schedules for patients needing more acute same-day individual appointments opening access to care. This conclusion was found to be consistent with the findings of Giramonti & Kogan (2018) and Meehan et al. (2006).

Recently, Giramonti & Kogan (2018) implemented and evaluated the use of group-shared medical appointments for educating and counseling children with penile problems. Their study using a sample size of 48, with 21 subjects participating in the group visits and 27 usual care
participants concluded that group-shared medical appointments were an efficient means of seeing more patients in a shorter period of time, without compromising patient satisfaction or quality. Specifically, using the group-shared medical appointment type, providers could see seven new patients in 90-minutes as compared to seven patients in 3.5 hours using the traditional individual 30-minute appointments. The investigators concluded that it was feasible to both design and implement group-shared medical visits for this patient population, while improving efficiency and not compromising the quality of education delivery. In fact, the Giramonti and Kogan (2018) did not find a statistically significant difference in the adequacy of education delivery when subjects completed a questionnaire to determine such perceptions. The mean questionnaire score for those participating in the group-shared medical appointment type was favorable, 6.64 out of seven and 6.56 out of seven in those participating in the usual individual appointment type.

Utilizing group-shared medical appointments may also improve or maintain patient satisfaction while opening access and increasing efficiency in care delivery. In their retrospective, cross-sectional study, Heyworth et al. (2014) surveyed a total of 34,619 patients who received usual care and 981 patients who were self-selected to participate in shared medical appointments to determine levels of patient satisfaction with the group-shared medical appointments format. The primary goal of this study was to identify patients’ overall satisfaction with the group-shared visit as compared to the usual individual visit format. A single item five-point Likert scale was used to measure overall satisfaction. Greater than ten percent of respondents responded positively to the group-shared visit, skewing data towards the positive end of the distribution of variables measured. Therefore, the authors dichotomized the scale as very good versus other responses for analysis. The data were collected via patients’ completion of a validated, reliable, and widely utilized medical experience questionnaire created by Press Ganey. A total of 17 items were measured to ascertain patients’ perceptions of care across five
domains. These included: four items related to access to care; four items addressing visit
coordination; four items measuring physician communication; two items related to team-based
care; and three items related to whole-person orientation. The questionnaires were mailed out
one week after a patient’s encounter and responses collected over the three years of the study,
between 2008 and 2010. Overall, patients who attended the group-shared medical appointments
had higher odds of reporting better satisfaction ratings as compared to those patients who had
attended individual appointments (adjusted OR = 1.26; 95% CI, 1.05-1.52, p = .01). Additionally,
the findings of Heyworth and colleagues (2014) were consistent with more recent findings of the
studies conducted by Kahoska et al. (2018), Braun et al. (2017), Giramonti & Kogan (2018), and
Meehan et al. (2006) in that the use of group-shared appointments increased access to care
through creating more available appointments. In the Heyworth et al. (2014) study, patients
attending the group-shared medical appointment type had higher odds of rating their
appointments as more accessible as compared to those individuals who attended an individual
visit type (adjusted OR = 1.49; 95% CI, 1.21-1.92, p < .001).

Moreover, the findings of the Heyworth et al. (2014) survey also found that patients
attending the group-shared visits had higher odds of rating providers as being more sensitive to
their needs (adjusted OR = 1.34; 95% CI 1.08 -1.65, p = .01). Heyworth and colleagues (2014)
concluded that group visits supported superior appointment access, and enhanced patients’
perceptions of providers being sensitive to their needs as compared to the use of the usual
appointments format while maintaining patient satisfaction. See Appendix B, Evidence Table to
Support Use of Group-Visits.

**Group-shared medical appointments support quality: patient satisfaction.** As
organizations attempt to increase customer service and perceived value of the care provided,
patient satisfaction is an important organizational goal. Group-shared medical appointments have
been well accepted by patients and providers. Congruent with the larger study by Heyworth et al. (2014) smaller studies have shown group-visits to be associated with high levels of patient satisfaction. Knackstedt & Samie (2015) created and piloted a group-shared medical appointment to deliver preoperative patient consultations for patients having Moh’s micrographic surgery to evaluate patient satisfaction with the shared appointment model. The pilot was evaluated by patient responses on a 13-item survey. A total of 149 patients participated in the shared medical appointment, with a survey response rate of 65.8%. A Likert scale from one to five was utilized to rate patients’ satisfaction with five indicating the highest satisfaction level. The mean score on this item was 4.29 +/- .09. Of those surveyed, 84.7% found the group-shared appointment format useful and 80.6% stated that they would attend another group-appointment in the future.

Likewise, Egger, Stevens, Ganora & Morgan (2018) surveyed over 200 group-shared medical appointment attendees from eight different clinical settings to determine patient and provider satisfaction with the group-visits model. The investigators found that nearly all of the patients rated the experience with the shared appointment as satisfactory. All of the providers surveyed reported high levels of satisfaction with their experience using group-shared appointments.

In 2016, Smith and Elias piloted a group-shared medical appointment in a private otolaryngology practice. This pilot was to evaluate patient satisfaction with the group-shared medical appointment type. A total of 17 patients participated in the created group-shared medical appointment. Descriptive analysis indicated that patients were highly satisfied with the group visit model in this small study. More than half of those surveyed (53%) stated that they had heard answers to questions they had not thought to ask themselves; 71% of respondents stated they would recommend a shared appointment to others; 88% of those surveyed would attend
another group-visit. Interestingly, of those surveyed, when asked if they preferred their visit to be an individual appointment type, 53% answered no. Additional findings of this study were that provider efficiency increased. During the course of a 90-minute group-shared visit, three to nine new patients were seen; whereas in the course of a typical day using individual appointments only four patients are seen. Smith & Elias concluded that the pilot of group-shared medical appointments found patient satisfaction and efficiency to be high and realized increased revenue through more access to care.

Other older studies have shown that timely, efficient access to care can be supported by the group visits structure to care delivery making the group-shared medical appointment format suitable for use in system redesign. As Appendix B, Evidence Table indicates, the Dickman et al. (2012) study used a pre-test post-test quasi-experimental design with a small sample of 37 subjects and found group-shared medical appointments to be associated with improved access to care. Jaber et al. (2006) conducted a qualitative systematic review to determine the effects of using group-shared medical appointments. In this review, 33 articles were identified with 18 meeting inclusion criteria. The authors excluded purely descriptive studies without an evaluative component and also found group-visits to have a positive effect on efficiency through improved access to care.

**Group visits support organizational outcomes quality: reduced resource utilization.** Reducing hospitalization rates assists in cost reductions in health care delivery. In a systematic review conducted by Kelly et al. (2017) group-shared medical appointments were found to be associated with significantly reduced hospitalization rates when compared to usual care individual appointments among patients with heart failure in one of the randomized controlled trials reviewed. Specifically, Smith et al. (2014) found a statistically significant longer time in which patients remained hospital free among those patients that attended the group-visit
appointment type as compared to those participants attending a traditional individual appointment at two to seven months post randomization (Cox proportional hazard ratio =.45 (95% CI, 0.21-0.98, p =.04). However, the effect of using the intervention (group-shared appointment) was sensitive to time and no significant difference was found at 8 to 12 months post intervention (hazard ratio = 1.7; 95% CI, 0.7 to 4.1). These findings were based upon a total sample size of N=198 (N= 92 in group-shared visit, N=106 in usual care). The conclusion of Smith et al. (2014) was that further investigation with larger sample sizes are warranted to confirm the benefits of using group-shared visits in the heart failure population.

A recent retrospective review of the Veterans Administration electronic medical record for heart failure patients was conducted by Carroll et al. (2017). These investigators identified a total of 141 electronic health records of veterans. Of these, 91 met inclusion criteria, with 54 subjects identified as having attended a group-shared medical appointment and 37 subjects having attended an individual clinic appointment for a total sample size of N=91. The purpose of this review was to ascertain differences in hospitalization outcomes for subjects who attended a group-shared medical appointment and those who were scheduled to attend a group-visit but did not attend and were seen in a usual individual clinic appointment between 1/1/12 and 1/31/13. The investigators hypothesized that those patients who had attended a group-shared medical appointment would have better 12-month hospitalization outcomes. However, this did not prove to be the case. There were no significant differences between group-shared medical appointment attendees and individual attendees related to hospitalization rates for the sample of heart failure patients reviewed. This study did not support a difference in effects between appointment types on the outcomes studied. However, the lack of difference in effects between groups does not necessarily carry a negative connotation; as no apparent harms were found.
Reducing inappropriate emergency room use is also important to controlling costs of care delivery. For the purpose of determining factors associated with non-urgent emergency room use, Uscher-Pines, Pines, Gillen & Mehrotra (2013) conducted a systematic review of articles published after the 1990’s. There was a total of 26 articles that met inclusion criteria. Of the articles reviewed, 37% of the emergency room visits identified in the articles were judged to be inappropriate (range of eight percent to 62%). Using this sample, the investigators identified waiting time for appointments, and limited access to providers on weekends as major contributing factors for inappropriate emergency room visits. Additionally, these authors stated that the most significant factor in using the emergency room for non-urgent needs was the inability to obtain an appointment with a clinic or their provider. In fact, 60% of surveyed patients presenting for non-urgent emergency department visits felt it was more convenient to access care at the emergency room than it was to obtain appointments with their regular providers (Usher-Pines et al., 2013). Increased access to group-shared medical appointments may have a positive impact on deterring inappropriate use of the emergency room.

Group visits support organizational outcomes quality: costs of care. Seesing, Groenewoud, Drost, van Engelen & van der Wilt (2015) conducted a prospective randomized controlled trial to assess whether group-shared medical appointments were an efficient use of clinicians’ time in caring for patients with chronic neuromuscular disease without compromising quality. Using a sample of N= 272, Seesing et al. (2015) sought to compare the effects of using a group-shared medical appointment type to that of a usual individual appointment format on costs and change in quality adjusted life years among this patient population. The investigators did not find a substantial difference in costs per quality adjusted life years (incremental cost-effectiveness ratio €-960.00; 95% CI € -34,600.00 to +36,800.00). The conclusion of this study was that the use of group-shared medical appointments may offer a cost effective, efficient
alternative to the usual individual appointment format. However, Seesing and colleagues also concluded that the efficiency was highly sensitive to the number of patients seen per group session.

Another randomized controlled trial conducted in breast cancer patients by Visser et al. (2015), cited in Kelly et al. (2017), found higher intervention costs when using group-shared medical appointments compared to individual appointment types but no difference in overall healthcare costs or costs associated with productivity. The randomized controlled trial by Visser et al. (2015) used a total sample size of 69 breast cancer patients. These findings suggest group-shared medical appointments may be beneficial if local costs of implementation are controlled appropriately.

**Group visits support organizational outcomes quality: better perceptions of care coordination and communication.** Care coordination is the deliberate organization of activities related to providing health services among more than one provider or setting, by two or more persons, working to facilitate appropriate care delivery (Maeng et al., 2012). Outcomes of care may be affected by the level of care coordination.

The use of group-shared medical appointments has the potential to foster empowerment for increased patient participation in their own care coordination. Empowered, or highly activated or engaged individuals are those individuals that have the capacity and attitude to act on their own behalf, to coordinate activities which support self-management (Maeng et al., 2012). While traditionally, interventions to improve care coordination have been directed at providers, using approaches which increase patient participation in care coordination is worthwhile to support postoperative self-management.

Maeng et al. (2012) surveyed 9,257 participants out of a total sample size of 10,678 to determine factors associated with patient-reported perceived problems with care coordination.
among chronically ill individuals. The level of patient activation and number of chronic illnesses were the variables found to be inversely associated with reports of problems with care coordination in this study. They found a 30% to 40% statistically significant reduced odds of reporting problems with care coordination in those patients that were highly activated (p < .01). According to these investigators, other variables such as race/ethnicity, income, employment status, insurance status, and income were not significantly associated with self-report of care coordination problems. Increased time, afforded using a group-shared medical appointments format, allows identification of patients with low propensity to self-coordinate care and the time for providers to come to their aid.

**Group visits structure supports quality: patient clinical outcomes.** Like organizational outcomes of care delivery, clinical outcomes are also important to quality in care delivery. Housden et al. (2013), conducted a systematic review, and meta-analysis for the purpose of determining the effectiveness of group medical appointments for improving diabetes care, and included relevant published studies from 1947 through 2012. Specifically, the authors sought to measure the effect of group visits on biophysical, process-of-care, and patient-reported outcomes of care delivery. The sample populations included diabetics (type 1 and 2) ranging from 16 to 80 years of age. A total of 26 studies met the authors’ inclusion criteria, and only randomized controlled trials were included in the meta-analysis. Thirteen randomized controlled trials were included in the review.

**Clinical outcome quality: effects on biophysical parameters:** The meta-analysis completed by Housden et al. (2013) showed that the use of group visits led to statistically significant reductions in hemoglobin- A1C levels, demonstrating that biophysical outcomes of care can be positively impacted through structuring patient appointments in a group format.
Systolic blood pressure was found to be decreased in those attending group-visits, but this was not a statistically significant finding.

In the systematic review of nine randomized controlled trials, conducted by Kelly et al. (2017), two randomized controlled trials evaluated the effect of group-shared medical appointments on biophysical outcomes. In the randomized controlled trial conducted by Junling, Yang, Junming, Pinpin & Hua (2015) among a sample drawn from N=1,204 hypertensive Chinese adults, those attending a group-shared visit were found to have a greater decrease in diastolic blood pressure (1.5 mmHg decrease, as compared to a 0.4 mmHg decrease in those attending usual individual visits respectively). However, there was no difference in systolic blood pressure between groups in this study.

Montoya, Sole, & Norris (2016) evaluated group-shared visits among a sample of N=30 patients with chronic kidney disease and found no differences in diastolic or systolic blood pressure in those attending the group-visit as compared to those attending an individual appointment type. Nor did Montoya et al. (2016) find differences between study groups in the other biophysical outcomes evaluated; these included parameters such as body mass, weight, creatinine, glomerular filtration rate, phosphorus, potassium, and hemoglobin. The evidence related to the effect of group-shared medical appointments on biophysical outcomes of care are mixed and warrant further investigation (See Appendix B, Evidence Table Used to Support Use of Group-Visits which outlines these findings).

Clinical outcome quality: positive effects on engagement, self-care, behavior change, set and achieve goals. Moreover, in their synthesis of the data of 26 studies, Housden et al. (2013) found positive effects of group visit on patients’ engagement in their healthcare. Specifically, Cohen et al. (2011), and Sadur et al. (1999) reported positive effects related to self-care; and Dickman et al. (2012) noted positive effects of group visits on physical activity,
demonstrating effects of group visits on behavioral change in this study. Two studies showed a positive effect of group visits on patients’ abilities to set and achieve goals related to their healthcare (Cohen et al., 2011; Dickman et al., 2012).

**Clinical outcome quality: patient knowledge** was also shown to be positively affected using group visits in the systematic review by Housden et al. (2013). The authors cited and reviewed five studies that demonstrated the positive effects on the domain of patient knowledge (Rygg et al., 2012; Cohen, Taveira, T., Khatana, S., 2005; Trento, Guiterrez, Gimple, & Dallo et al., 2011; Siebenhofer et al., 1995). Knowledge is important to the care of patients as it supports self-efficacy and ultimately self-management; but knowledge alone is a poor predictor of health behaviors. To enact health information and apply knowledge, healthcare interventions should be focused on promoting patient behavior change. Interventions such as assisted or guided preparation for health events, empowering group education, and group consultations have been shown to be effective in producing behavior changes, as they directly elicit patient participation and impact determinants of self-efficacy (van Dam, van der Horst, van den Borne, Ryckman, & Crebolder, 2003). Self-efficacy enhancement via use of group-shared medical appointments promote quality in the delivery of patient education, instruction, and counseling.

**Clinical outcome quality: self-management.** In their systematic review Housden et al. (2013) also cited six studies showing beneficial effects of group visits on patients’ self-management (Benedetti, Flock, Pedersen & Ahern, 2004; Bray, Thompson, Wynn et al., 2005; Dontje & Forrest, 2011; Pieber, Holler, Siebenhofer et al., 1995; Rygg et al., 2012; Schillinger, Handley, Wang et al., 2009). Although these studies were not conducted in an orthopedic setting, these findings have important implications for patient preoperative education for self-management in the orthopedic setting and can be extrapolated for use in the design of the preoperative educational program.
Summary of Evidence

In summary, the literature review as described above provides evidence that the use of group visits has the potential to ameliorate deficits in: timely access to care; efficiency; coordination of care; provider/patient trust; patient engagement; face to face time with clinicians; communication and information exchange; patients’ knowledge; self-efficacy and management; patients’ ability to set goals and follow through with necessary behavioral changes; and levels of patient satisfaction. Also, the evidence supports group visits as a means of reducing inappropriate resource utilization, thereby, enhancing cost effectiveness in care delivery. It also supports the conclusion that group visits have a positive impact on organizational and clinical outcomes of care. Furthermore, the literature review provides evidentiary support for the use of group visits as an effective structure for enhancing patient education. See Evidence Table, Appendix B, which shows the major findings and level of evidence related to the use of group-shared medical appointments.

Limitations of Research on Group-Shared Medical Appointments

The research, to date, on the use of group-shared medical appointments has largely been in patients with chronic disease processes, with most of the research completed in patients with diabetes mellitus. Moreover, the research is indeterminant regarding the specific form of group-shared medical visits that produce the best outcomes, the optimal number of patients per session or the optimal mix of interdisciplinary providers to utilize for the group-shared medical appointment sessions. According to Housden et al. (2013), more research is needed to determine the type of populations that are best served by the group-shared medical appointment format. Additionally, Dickman et al. (2012) emphasize the importance of more research on the effects of group-shared medical appointments in non-English speaking patients, in patients of diverse cultures, in those with limited health literacy, and in patients with varied life experiences.
Specific educational methods, or the content required in the educational components of these visits are also not completely understood. However, experience dictates that these components are likely to be dependent upon the setting in which the group visit is held and the complexity of the patient population for which these types of appointments are used. More longitudinal studies are needed that will determine the long-term effects of using this healthcare delivery modality (Heyworth et al., 2014; Housden et al., 2013).

**Synthesis of Evidence**

Accordingly, much additional research is required to build knowledge related to the use of group-shared medical visits and to optimize their use in practice. This is particularly true for the use of group-shared medical appointments in the orthopedic surgery office setting for the purpose of preparing patients for outpatient ambulatory surgical procedures and to deliver empowering preoperative patient education. Nevertheless, it is reasonable to extrapolate findings from the multitude of studies showing benefits of group-shared medical appointments for application in the orthopedic surgical office setting, given the general success in other healthcare areas. Through the synthesis, integration, and application of research findings, innovation in care delivery for the orthopedic patient population, using the shared medical appointment format, is feasible. Not only is it feasible to implement group visits in the orthopedic setting, it is also practical and a highly flexible option for system redesign. Using group visits, patients’ perceptions of clinical services and the organization of care may be positively influenced. Simultaneously, the overall quality and outcomes of care may be improved with the implementation of group visits in the orthopedic setting, while also enhancing efforts to control costs, resource utilization, and patient satisfaction.

The following is a description of the evidence-based practice model used to guide the implementation of the group-shared medical appointments format for the delivery of
preoperative patient education, instructions, and counseling in the outpatient orthopedic surgery office setting.

 Evidence-Based Practice Model to Guide a Pilot of the Use of Group-Shared Medical Visits

The Iowa Model of Evidence Based Practice to Promote Quality Care was selected to guide the process of developing this evidence-based practice change and the creation of the pilot project of using the group-physical shared medical appointment format. The Iowa model is one of several evidence-based practice models available to advanced practice nurses to assist in translating evidence into practice. It is widely used and is designed to guide change at the organizational level (Schaeffer, Sandau, & Diedrick, 2013), making it suitable for use in an outpatient private orthopedic office practice setting.

While there are several process models to guide translation of evidence into practice, the Iowa model is well suited for a quality improvement project, in an outpatient practice environment. There are several strengths of the Iowa model. It acknowledges both problem-focused and knowledge-based triggers as precipitating factors for practice change; while it simultaneously focuses attention on organizational priorities for practice early in project development (Madsen et al., 2005; Titler et al., 2001). The Iowa model supports interdisciplinary collaboration in advancing evidenced-based change and is well suited for use with teams (Kowal, 2010). To guide change, it allows inputs from the perspectives of providers; the healthcare team; organizations; the entire health care system; and the perspective of patients (Kowal, 2010). The model also uses a flow-chart to guide decisions, includes feedback loops as information unfolds in the process of making changes, and encourages the use of trials or pilots prior to system-wide implementation of change (Schaffer, Sandau, Diedrick, 2013). Moreover, the Iowa model acknowledges the non-linearity inherent in evidence-based practice processes and an understanding that every practice question or problem may not have enough formal
evidence on which to base practice (Melnyk & Fineout-Overholt, 2014). According to Kowal (2010), it allows for the use of both formal and informal sources of evidence to support practice changes. Subsequently, it allows for the use of multiple sources of evidence such as expert opinion, case studies, theory, scientific evidence, and clinical experience to inform practice change initiatives (Kowal, 2010). Furthermore, the Iowa model does not prevent extrapolating information from studies in various areas, for use in the orthopedic setting.
Chapter 3

Design and Methodology

Setting. This pilot was conducted at a private orthopedic surgery office setting located in a large suburban area in the eastern United States. This practice provides general, and subspecialty orthopedic services for approximately 200 patients per day, or 52,000 individuals per year. The practice has one main office with two satellite offices and is a participating provider for Medicare and several private insurance carriers’ beneficiaries (personal communication with the practice administrator, 2/20/16). There are four surgeons, one physician assistant, and two nurse practitioner providers of care in this facility. The facility offers radiology services, physical therapy, and provides some durable medical equipment. Among the surgeons, subspecialties include arthroscopic and reconstructive surgery of the knee, wrist, elbow, and shoulder. Three surgeons are subspecialized in joint replacements of the knee, hip, and shoulder. The main mission of the practice is to provide excellence in orthopedic surgical services. Surgeons of this practice perform surgeries in a nearby hospital, and in ambulatory care centers.

Population of interest. The population of interest for the evidence-based pilot of the use of the group visit, physical shared medical appointment for the delivery of preoperative patient education was adult patients, 21 years of age or older, planning to undergo outpatient arthroscopic knee surgery, to be performed by one surgeon, in the ambulatory care center. Specifically, the recipients of the group visit intervention were drawn from a population of adult patients that were definitively scheduled for arthroscopic knee surgery for knee pain, synovitis, and/or mechanical symptoms that are related to meniscus tears, osteochondral defects, plicas, and/or intra-articular loose bodies. All participants were fluent in English.
Application of the Iowa Model Steps to the Project

Step One: Selecting a topic of change: After acknowledging a trigger for practice change, choosing a topic, and clearly describing the identified problem, as part of step one, the Iowa model prompts the user to determine whether the proposed topic of change aligns with the priorities of the organization within which it will be conducted (Madsen et al., 2005). This requires the use of an in-depth organizational assessment to determine the priorities of the organization. In addition, the assessment of the organization to determine the facilitators and barriers to the implementation of an evidence-based practice project includes attention to internal and external factors which have the potential to impact the successful implementation of proposed practice changes (Melnyk & Fineout-Overholt, 2011). Specifically, a SWOT matrix and analysis was employed to accomplish this task. This involves the identification of the strengths, weaknesses, opportunities, and threats to the organization, and to the success of the project implementation (David, David & David, 2015). The SWOT matrix allows change agents to match organizational strategies to that of its capacity.

The organizational assessment should include an evaluation of the work-place culture as this will impact the ability to implement desired changes. Often, a cultural shift in the focus of the organization is required to make the change and this should be carefully orchestrated. Accordingly, the elements of transforming a healthcare organization to one that values evidence-based practice include creating a vision for such, engagement of stakeholders, integration of evidence-based change, and evaluation of the changes in practice. Creating a shared mental framework was an essential first step to moving the organizational culture to one that values evidence-based practice (Melnyk & Fineout-Overholt, 2011). Once the organizational assessment was completed and the priorities were identified, the proposed practice change of using a pilot of the group-shared medical appointments format was implemented.
Step 2. Formation of a team: According to the Iowa model, step 2 in making evidence-based practice changes involves the formation of a team, which is responsible for the design, implementation, and evaluation of the proposed practice change (Doody & Doody, 2011). Doody & Doody (2011), state that the team members should be chosen with regard to the topic, individuals’ expertise, and the involved stakeholders. A bottoms-up approach to the selection of the team members is likely to strengthen the ability to successfully implement changes; although, every member of the team requires the support of those above and below their level in the organization to operationalize the proposed change seamlessly (David, David & David, 2015; Doody & Doody, 2011).

The interdisciplinary team formed to facilitate the implementation of the pilot of group visits, physical shared medical appointments at the project site included a surgeon, adult nurse practitioner, office administrator, physical therapist, x-ray technician, nurse, medical technician/assistant, surgical scheduling coordinator, and receptionist. The members of this team were chosen based upon the idea that all these stakeholders impact patients’ experiences of preparing for surgery, and the delivery of preoperative patient education in this setting.

Communication between healthcare settings is extremely important to the preparation of patients for surgery. According to David and collaborators (2015), communication is likely to be the most important concept and tool utilized by managers or change agents. Good communication between all healthcare settings results in adequate coordination and effectiveness; it is likely to positively impact patients’ perceptions of care delivery as well. Moreover, it is essential that the orthopedic surgery office and the ambulatory care center are consistently relaying the same messages to patients regarding the instructions to be followed before and after surgery. Conflicting information results in patients being confused and increases the likelihood of non-adherence and inappropriate healthcare resource utilization. Accordingly,
in planning the project, communicating with a nurse liaison from the ambulatory surgery center was a necessary part of this project.

**Step 3. Retrieve evidence:** Step 3 of the Iowa model directs the change agent to lead the team in retrieving evidence to inform the creation of an innovative solution to the identified practice problem (Doody & Doody, 2011). According to Melnyk & Fineout-Overholt (2011), the PICOT acronym indicating the population, intervention, comparison, outcome, and time-frame should be used to guide the literature review. The specific PICOT question used for the literature review is delineated in Chapter 1. In Chapter 2, the search strategy used for the literature review is also included. Ultimately, the solution identified for the practice problem should be supported by evidence, which may include formal research, provider’s clinical experiences, patients’ preferences, and scientific or theoretical frameworks. The evidence may be generated from external or internal sources. Once the evidence is collected, it is integrated and synthesized (Doody & Doody, 2011; Melnyk & Fineout-Overholt, 2011).

**Step 4. Grading the evidence:** Next, in step 4 of the Iowa model, the evidence should be graded to determine the quality and strength of the body of evidence (Doody & Doody, 2011; Melnyk & Fineout-Overholt, 2011). For the purposes of the pilot of the use of group-shared medical appointments conducted at the project site, the literature was reviewed and appraised using the Agency for Healthcare Research and Quality (AHRQ) evidence hierarchy, and the United States Preventive Services Task Force (USPSTF) grading system. The preponderance of the evidence was found to be positive for the use of group visits in a variety of healthcare settings. However, research related to the use of the group-shared medical appointment format, specifically within an orthopedic surgery office setting, for preoperative patient preparation and education is limited. To evaluate the applicability of using the group-shared medical appointments format at the project site, the findings from studies in other healthcare areas were
reviewed. Specifically, the findings were extrapolated, synthesized, and integrated with provider experience, expert opinion, patient preferences, and an internal analysis of the organization.

**Step 5. Develop an evidence-based standard.** Step 5 of the Iowa model employs the change agent and the team to develop an evidence-based standard related to the proposed practice change (Doody & Doody, 2011). For the purposes of the pilot of group-shared medical appointments at the project site, there was no specific published standard. The specific procedures and tasks used to develop this project were as follows: a) a physical location within the office to hold the group visit was chosen; b) considering resources, and the context of the practice environment, the best time and day to hold the group-appointments was chosen; c) the total number of patients to survey for the purposes of evaluating the use of group visits was decided; d) the necessary frequency of holding the group visits to accommodate restrictions imposed by physical space, the volume of patients requiring preoperative patient education, and the length of time required to collect a sufficient sample was decided; d) start and end dates for the pilot were determined; e) the amount of time needed for each group visit appointment was chosen; f) the best allowable code for charging patients’ insurance companies for the group visit was determined; g) a schedule for the group visits to be held was written and distributed to all team members; h) educational/instructional content to include in the group visit (didactic and interactive components) was developed; i) informational content and skills for self-care in the immediate preoperative and postoperative time-frame was defined; j) the sequence and timing of each component of the group visit from the patient arrival at the beginning of the visit to completion of survey at the end was developed; k) variables and points of measurement, and tools for measurement were identified; l) staff were trained on how to introduce the concept of group visits to patients; m) Institutional Review Board approval was obtained; n) announced the group visit project to the entire staff; o) provided training to all involved staff; p) planned to run
the pilot over a period of six weeks to 6 months until desired sample obtained: q) scheduled patients for the group visits or individual visits; r) collected and scored surveys, analyzed process and outcomes, determined feasibility of adopting the physical shared medical appointment for preoperative preparation and patient education permanently in this setting.

**Determining the type of group visit to employ:** Since there is no specific standard for the choice of the type of group visit format to use within the context of the orthopedic surgery office setting, the choice was determined after reviewing, appraising, and grading the literature related to group visits or shared medical appointments, and considering the applicability of using each type in this setting. A review of the literature resulted in a clear description of the forms of group visits or shared medical appointments as described above. The physical, shared medical appointment type was determined to be the best choice for use as a solution to the identified practice problem of an inadequate structure of preoperative care delivery in the project site office setting. This form of group visit was thought to be best suited to the practice setting because it included the ability to do a focused-orthopedic physical exam; and it allowed the capture of all elements required to support evaluation and management coding for reimbursement purposes.

**Determining the number of patients to be seen per group-shared appointment.** For the purposes of this pilot, a minimum of two patients and a maximum of six patients were able to be seen in a group-shared medical appointment for the purposes of preoperative preparation and education. Each patient had the option to bring one significant other to the group visit. According to Burke & O’Grady (2012) most group-appointments are held with a range of 8 to 10 patients in attendance. The number of patients in each group-shared appointment, during this pilot study, was limited to six to prevent overcrowding in the available physical space in which the group-shared medical appointments were held.
Determining the length of time for each group-shared appointment. There is a lack of formal evidence regarding the optimal length of time to be allotted for each group-shared medical appointment. However, the literature indicates that most range from one to two hours (Burke & O’Grady, 2012). The Iowa model allows multiple types of evidence to be used when making decisions in implementing innovations. Therefore, clinician knowledge and experience in conducting preoperative patient education appointments, with input from the interdisciplinary team, was also utilized in deciding the length of time to allot for each group-visit. Subsequently, a total of nine separate group-shared medical appointments were conducted for the purpose of this pilot study from February 2018 through July of 2018. Each visit was scheduled for 90 minutes and included a didactic and interactive component for instructional purposes. Ninety minutes of time was thought to be adequate to allow for all team members to complete tasks and for completion of all components of the preoperative patient education visit.

Content of each preoperative appointment. (Please refer to Appendix C Figure 3.0, Group-Shared Medical Appointments Proceedings). Each patient received a focused orthopedic preoperative physical exam, along with every element of a usual individual office visit. Patients were provided with prescriptions for postoperative pain management, and deep vein thrombosis prophylaxis. Additionally, patients were given a prescription for the first postoperative physical therapy session and were instructed to make the first appointment before leaving the office. The patients were assisted in making the first two postoperative office follow up appointments prior to leaving the office. Patients were asked to identify the person who would likely be providing transportation from the surgery center to their home on the day of surgery and whether transportation will be an issue for postoperative follow-up visits. Durable medical equipment (cryotherapy) was ordered for postoperative use, and the patients were instructed on its use. During the group visits session, patients were given an opportunity to ask questions, and practice
skills required for their postoperative care. Patients also received written directions for postoperative care. Travel restrictions/plans and return to work plans were discussed.

As part of the allotted time for the group visits, the patients also had individual time with the nurse practitioner provider to complete the preoperative history and focused physical exam. This was done by calling each patient out of the group visit individually.

**Step 6. Implementation of the evidence-based practice change.** Step 6 of the Iowa model is to implement the evidence-based change. After obtaining Institutional Review Board approval from the Catholic University of America, all patients planning to undergo arthroscopic knee surgery, to be performed by one surgeon of the project site orthopedic practice, were offered the opportunity to receive their preoperative patient education in the group-physical shared medical appointment format or the usual 20-minute individual format (See Appendix D, Figure 4.0, Proceeding for Inviting Participation and Scheduling), for the method of inviting patients to participate, scheduling of preoperative appointments, and obtaining informed consent for both the group-shared medical appointments and the individual 20-minute appointments participants.

**Protection of Human Subjects.** An application to the Institutional Review Board at The Catholic University of America was submitted and permission was granted to proceed with the project. See Appendix E Figure 5.0, Copy of Institutional Review Board Approval. No identifying information was utilized in the collection of survey data for this project. The findings associated with this proposed project were used for internal purposes only, to evaluate the feasibility of permanently using the group visits format, for the delivery of preoperative patient care, education, counseling, and instructions at the orthopedic practice project site.

**Step 7- Evaluation Methods.** According to the Iowa model, Step 7 of evidence-based practice is to evaluate the results. A thorough analysis plan was developed. This involved
choosing outcome variables and the methods to be used for measurement of such. According to Gawlinski (2007), in evidence-based practice initiatives, determining the outcomes of interest and the methods by which they are to be measured are critical to the usefulness of an innovation. As part of the evaluation phase of evidence-based practice, outcomes measurement assists investigators in determining whether an innovation is worthy of permanent implementation, elimination, or modification.

**Outcome variables.** For this project, there were six specific outcomes of interest. Specifically, the outcome variables included: patients’ perceptions of clinical and organizational care delivery processes; patient knowledge acquisition and adherence to instructions; patient satisfaction; number of inappropriate emergency room visits postoperatively from the day of surgery through the first postoperative visit at 7 to 10 days after surgery; number of calls to the office for clarification of instructions or concerns after the preoperative visit and through the time of the first scheduled postoperative visit; and number of early unscheduled office visits after surgery (before the first scheduled postoperative visit). These outcomes were chosen as measures to determine the effects (differences) in care delivered via the group-physical shared medical appointment format as compared to the usual 20-minute individual appointment structure. The outcomes for this pilot were measured through a preoperative survey which incorporated the howRwe instrument and a quiz item. A postoperative Interview/Check-List was used to measure patient responses (See Appendix F, Figure 6.0a, Preoperative Survey, and Figure 6.0b, Postoperative Interview/Check-List), for copies of these measurement tools.

**Methods of measurement: the howRwe instrument.** This instrument is a short, generic patient experience questionnaire, to measure patients’ perceptions of their experiences with healthcare delivery. According to Benson & Potts (2014), this tool is a short set of questions designed to measure patients’ perceptions of experiences with care. Moreover, it measures
patients’ perceptions of different aspects of their care; specifically, perceptions of clinical care and the organization of care within a clinical area. It is also used to measure patient satisfaction with care delivery. The instrument is appropriate for use alone, or in combination with other instruments in quality assessments. Like the setting in which this pilot project was conducted, Benson & Potts (2014) conducted a trial of using the howRwe questionnaire within an orthopedic pre-operative assessment clinic, in 828 patients preparing for orthopedic surgery. However, the tool is designed for use by all types of patients and is not meant to be condition specific. It is a very readable tool, and the readability was measured using the Flesch-Kincaid Readability Grade instrument, indicating the tool is suitable for use in those with at least a reading ability on par with a 2.2 grade level. It is suitable for repeated use in a clinic situation. In the study conducted by Benson & Potts (2014), the psychometric properties of the tool were found to be good (Cronbach’s alpha of .82), with both construct and discriminant validity evaluated. According to Benson & Potts (2014), the howRwe tool, included in their article, is an open access tool, and it is acceptable for use in an unrestricted manner. This includes distribution and reproduction in any medium if the original work is credited appropriately. Therefore, a request for special permission to use this tool was not necessary.

**Measurement of patients’ perceptions of clinical and organizational processes in care delivery and patient satisfaction.** The howRwe tool has two items related to clinical care, two items related to the organization of care, and one item related to patient satisfaction. According to Benson & Potts (2014) the two items related to clinical aspects of care include: ‘treat you kindly’ and ‘listen and explain’. The ‘treat you kindly’ item is designed to cover all aspects of how the patient perceives being treated as a person during their experience in receiving care. It is designed to cover aspects such as emotional support, politeness, privacy, empathy, and compassion. The ‘listen and explain’ item covers the patients’ perception of communication in
the receipt of care and includes aspects of care delivery such as: engagement, education, information exchange, choice, consent, and empowerment. In terms of the organization of care, the two items included on the howRwe tool are: ‘see you promptly’ and ‘well organized’. The ‘see you promptly’ item measures aspects of care such as promptness, waiting, access, and responsiveness in the receipt of healthcare services. The ‘well organized’ item covers patients’ perceptions of how well organized the clinical practice is in delivering care, and includes components of quality such as safety, efficiency, reliability, and whether information is available in a timely, useable manner. The ‘How likely are you to recommend this practice to friends or family if they needed similar care or treatment?’ item covers patient satisfaction (Benson & Potts, 2014). See the Appendix F, Figure 6.0a, Preoperative Survey, for a copy of the preoperative survey which incorporates the howRwe tool utilized at the preoperative appointments and the postoperative Interview/check-list used at the first postoperative appointment to capture data for this pilot study.

**Measurement of patient knowledge.** A simple quiz was developed by the investigator to measure patients’ knowledge related to immediate preoperative and postoperative care instructions. The content of the quiz was based on the educational material presented at the preoperative (group or individual) appointment. A three-item multiple choice quiz was administered to study participants at the end of the preoperative group or individual visit before the patient left the office. The specific queries related to knowledge acquisition included: ‘After surgery, how long will you take aspirin to prevent blood clots in your legs?’, ‘After surgery, when will you start physical therapy with a therapist?’, ‘After surgery, when will you remove your surgical dressing?’. See the Appendix F, Figure 6.0a, Preoperative Survey for a copy of this survey which incorporated the quiz items.
Measurement of adherence to instructions. At the first postoperative visits, seven to 10 days after surgery, patients were questioned by the nurse practitioner and assessed to determine whether they did or did not adhere to care instructions. To capture adherence, an Interview/check-list in which the provider indicated whether instructions were followed by checking yes or no was completed (See Appendix F, Figure 6.0b, Postoperative Interview/Check-List). There were three specific items utilized to measure adherence, indicating that the patient enacted behaviors utilizing their acquired knowledge, as related to postoperative self-care management. These items included: ‘Postoperatively, did the patient continue to take the aspirin 325 mg 1 daily for deep vein thrombosis prophylaxis as instructed?’, ‘Postoperatively, did the patient remove the surgical dressing 48 hours after surgery and perform appropriate suture line care: shower with soap and water, dry, apply betadine solution and Band-Aids?’, and ‘Prior to surgery, did the patient schedule their physical therapy to being 1 week after surgery and for 3 times a week, as instructed?’.

Linking knowledge acquisition and behavioral adherence to determine differences in effects of appointment type. As part of the comparison of the use of group-shared medical appointment and usual 20-minute individual appointment format, the investigator also sought to determine if knowledge acquisition was linked to adherence to instructions. To compare the differences in effects between study groups, knowledge obtained at the preoperative visit, as measured through answers on the quiz items, was linked to postoperative items which measured adherence or enactment of behaviors indicating compliance with instructions (behavioral application of knowledge). Specifically, the investigator sought to answer the following question: ‘Of those who answered quiz items correctly at the preoperative visit, what percentage of patients also adhered to the related behavior requirement after surgery?’ For example, if a patient answered the preoperative quiz item related to when to start postoperative physical
therapy correctly, did the patient also indicate behavioral application of acquired knowledge or skill and adhere to the instruction?

**Measurement of resource utilization.** Additional variables measured at the first postoperative visit included whether patients did or did not *inappropriately go to the emergency room*, whether they called the office for clarification of instructions or concerns after the preoperative visit or before their first scheduled postoperative visit at 7 to 10 days after surgery, and *whether they came to the office for an early unscheduled office visit* prior to their first scheduled postoperative visit. As indicated in Appendix F, *Figure 6.0b, the Postoperative Interview/Check-List*, was completed by the provider to collect this data. The three specific items used for this data collection included: ‘*Did the patient go to any emergency room or urgent care facility within 7 to 10 days of surgery for any reason? If yes, how many times and why was the patient seen at the emergency room or urgent care facility?*’, ‘*Did the patient call the office following the preoperative visit through the first postoperative visit for clarification or instructions/concerns? If yes, how many times and why?*’, and ‘*Did the patient come in for an early unscheduled office visit during the first 10 days after surgery? If yes, how many times and why?*’.

**Analysis Plan.** A statistician was employed to assist in choosing the appropriate statistical tests to be used and to complete the statistical calculations. The pilot of using group visits was evaluated by collecting a purposive sample of patients who scheduled preoperative patient education appointments. The grouping variable for this project was *type of preoperative education appointment attended*. Specifically, those patients who were receiving their preoperative patient education in the group-physical shared medical appointment format were compared to those receiving their education in a 20-minute individual appointment structure. A total sample size of N=48 was utilized for the comparison (20 patients participated in the group-
shared medical appointment and 28 patients participated in individual appointments). Once the surveys were collected and coded, responses were summarized in terms of means, standard deviations, frequencies, and proportions as appropriate. Mean values were compared between the group-shared medical appointments and the 20-minute individual appointments treatment methods using the Student’s t-test. For the variables in this project that yielded nominal data a Pearson’s Chi-square test was used to compare frequencies and proportions between treatment methods. The Fisher’s exact test was applied when expected cell size was small. A p-value below .05 was set as indicative of a statistically significant difference between the treatment groups.
Chapter 4

Results and Discussion

Sample Description

The population of interest for this project was adult patients, 21 years of age or older, scheduled to undergo outpatient arthroscopic knee surgery. A purposive sample was obtained from those patients of one orthopedic practice when they scheduled their preoperative appointments. Specifically, the type of appointment scheduled to receive preoperative patient education, counseling, and instructions served as the grouping variable for this project. Those choosing the group, physical shared medical appointment type participated in the intervention group; those who chose the 20-minute individual appointment participated in usual care. A total sample size of 48 subjects was obtained; 28 subjects participated in the 1.5-hour physical shared medical appointment type and 20 subjects participated in the traditional 20-minute individual appointment type. All participants were fluent in English.

Statistical Methods Used

The howRwe tool, a quiz, and postoperative provider interview/check-list of yes/no questions were utilized to obtain data. See Appendix F Figures 6.0a and 6.0b. A statistician was employed to analyze the data. The Survey items were summarized in terms of means, standard deviations, frequencies and proportions. The Student’s t-test was used to compare Mean values between the individual appointment type and group appointment type in this pilot study. Frequencies and Proportions were compared between treatment methods using Pearson’s Chi-square test. The Fisher’s exact test was applied when expected cell sizes were small. A p-value
below 0.05 was indicative of a statistically significant difference between treatment methods for this analysis.

Results Related to Demographic Characteristics of Sample

To describe the characteristics of the study group, demographic data related to age, self-identified gender, and self-identified race were compared to determine if there was a significant difference between the characteristics of those subjects participating in the group visit appointment type versus those in the traditional individual appointment type. No significant differences were found on any of these variables as shown in Appendix G, Table 1.0, Demographic Characteristics of Sample, shows. The mean age of those participants in the group visit appointment type was 57.4 years; and the mean age of participants in the individual appointment type was 55.4 years. Appendix G Table 1.0 shows that the absolute number of female participants (N=29, 60.4%) was higher than male participants. This was true for both of the groups: 65% of participants in the group-physical, shared medical appointment were female, and 57% of participants in the individual appointment were female. Additionally, there were more Caucasian (71%) than non-Caucasian participants in both comparison groups. Even so, none of these differences were found to be statistically significant between study groups. This suggests that age, race/ethnicity, and gender were less likely to have functioned as confounding variables for this project, in this setting.

Results Related to Physical and Psychological Characteristics of Sample

Physical and psychological stress are common in patients preparing for surgery (Ahmetovic-Djug et al. 2017; Goncalves, Cerejo, & Martins, 2017). The physical and psychological states of participants may influence participation and engagement in learning activities during the appointment for preoperative patient education, counseling, and instruction.
Consequently, an attempt was made to further describe the sample characteristics on these dimensions. Both the shared medical appointment (intervention group) and individual appointment (usual care) participants were asked to answer a portion of the howRwe survey which related to their levels of pain, anxiety/worry, physical limitations, and reliance on others for help. Specifically, the survey items used were: “How are you today?” (past 24 hours): ‘Pain or discomfort’, ‘feeling low or worried’, ‘limited in what I can do’, and ‘require help from others’. The possible responses for each of these items were: ‘none’, ‘a little’, ‘quite a lot’, and ‘extreme’. As reflected in Appendix H, Table 2.0, howRwe Survey: Physical and Mental Characteristics of Sample, there were no statistically significant differences found between study groups related to these variables. As such, this fact reduces the likelihood of these variables having functioned to confound the descriptive findings of this project.

**Survey responses related to levels of pain.** As Appendix H, Table 2.0 shows, most of the participants in both study groups reported little to no pain at the time of their visits preoperatively. Of those who participated in the intervention group, 75% responded that they were in ‘a little’ pain or discomfort; whereas, 53.6% of those who participated in the usual care group responded likewise. However, of those who experienced ‘quite a lot’ of pain, at their preoperative visit, most were participants of the usual care group; 21.4% of this group responded as such. One study participant in the usual care group responded that they were having ‘extreme’ pain or discomfort at the time of the preoperative visit. In comparison, 10% of the intervention group participants reported having ‘quite a lot’ of pain and none of this group reported having ‘extreme’ pain.

**Survey responses related to anxiety/worry.** Most of the study participants were not having symptoms of anxiety or worry at the time of their preoperative visit. On the ‘feeling low or worried’ item, 70% of those in the intervention group responded ‘none’, as compared to
67.9% of those in the usual care group. Of those who answered ‘a little’ to the ‘feeling low or worried’ item, most were from the usual care group as Appendix H, Table 2.0. indicates. None of the participants from either study group expressed ‘extreme’ anxiety/worry at the time of the preoperative visit.

**Survey responses related to physical ability.** Most of the participants in this study responded affirmatively to ‘limited in what I can do’ with 60% of those in the intervention group responding, ‘a little’ and 57.1% of those in the usual care group responding the same. Of those reporting ‘quite a lot’ or ‘extreme’ on the ‘limited in what I can do’ item, more were part of the usual care group as Appendix H Table 2.0 indicates. Again, no statistically significant differences were found between groups on this survey item.

**Survey responses related to requiring assistance from others.** Even though most of the sample respondents had some physical limitations, most of these limitations were not severe. In fact, most of the participants responded ‘none’ to the ‘require help from others’ survey item; 85% of the intervention group and 64.3% of the usual care group responded in kind. Of those requiring help from others, most were participating in the usual care group as seen in Appendix H, Table 2.0. No statistical differences between groups on this item were noted.

Collectively, the descriptive findings related to the demographic, physical, and psychological attributes of the sample reflect a rather homogenous set of participants between study groups. There were no statistically significant findings related to between group differences on these variables. This suggests that the sample obtained was appropriate for the purposes of this study. The sample lends itself well to enable a description of the comparative effects of utilizing the group-physical shared medical appointment, versus the usual traditional individual appointment, for delivering preoperative patient education. Moreover, the sample was
appropriate for utilization in determining the feasibility of implementing this delivery method for consistent use in this orthopedic setting.

**Results Related to Perceptions of Clinical and Organizational Care Delivery**

When attempting to provide high quality care and achieve high ratings of patient satisfaction, patients’ perceptions of their health care delivery are important to understand; these factors impact the reputation of a practice. In deciding *how* to deliver preoperative patient education within a practice, direct knowledge of patients’ perceptions of care inform the decision-making process. To determine effects of the use of a group, shared medical appointment as compared to the usual individual appointment type, on the dimension of *patient perception*, participants were asked to respond to additional items of the *howRwe* tool. The between group differences related to perceptions of the clinical aspects of care delivery in this study were measured through analysis of subjects’ responses on the ‘*treat you kindly*’ and ‘*listen and explain*’ portions of the *howRwe* survey. The ‘*see you promptly*’ and ‘*well organized*’ items were used to measure the organizational aspects of care delivery. Appendix I, *Table 3.0, howRwe Tool: Perceptions of Care Delivery*, displays the results of survey responses on these items.

**Survey responses related to perceptions of clinical care delivery.** According to Benson & Potts (2014), the ‘*treat you kindly*’ item is designed to capture all aspects of care that relate to how patients perceive being treated as a person during the delivery of health care. This item has been found to measure patients’ perceptions of care delivery related to providers’ levels of emotional support, politeness, empathy, and compassion. These aspects of clinical care are important to fostering therapeutic relationships with patients. As shown in Appendix I, *Table 3.0, howRwe Tool: Perceptions of Care Delivery*, this study found that 100% of those attending a group visit appointment type rated care delivery as ‘*excellent*’, as compared to 89.3% of those in the individual or usual care group responding likewise.
The ‘listen and explain’ survey item is designed to measure other clinical aspects of care that relate to the patient’s perceptions on how well care delivery supports communication, engagement, education, information exchange, choice, instruction, and empowerment (Benson & Potts, 2014). Again, see Appendix I Table 3.0, howRwe Tool: Perceptions of Care Delivery for these findings. All these items would be important to the process of providing preoperative patient education and promoting skill development for postoperative self-management. Again, as with the ‘treat you kindly’ survey item, 100% of participants attending a group visit type of appointment rated care delivery as ‘excellent’; whereas, 96.4% of those participating in the individual group rated their perception of care delivery as ‘excellent’ on this item. Nevertheless, the differences in clinical perceptions observed on these items were not found to be statistically significant between the study groups.

**Responses on perceptions of organizational aspects of care delivery.** According to Benson & Potts (2014), the howRwe tool survey items ‘see you promptly’ and ‘well organized’ measure perceptions of the organizational aspects of care. Specifically, ‘see you promptly’ measures patients’ perceptions of care delivery related to promptness, waiting, access, and care giver responsiveness. The ‘well organized’ survey item is designed to measure patient’s perceptions of how well care delivery is organized and includes perceptions on components of quality such as timeliness, safety, efficiency, and the level of coordination in care (Benson & Potts, 2014) (See Appendix I Table 3.0, howRwe Tool: Perceptions of Care Delivery).

Interestingly, of those participants in the group visit appointment type, 65% rated their perception of care delivery on the ‘see you promptly’ item as ‘excellent’ as compared to 71.4% of those attending the individual visit appointment type. Two of the 28 participants in the individual appointment types rated their perception of care delivery on the ‘see you promptly’ item as ‘fair’; whereas, none of the group visit attendees rated their perception of care as less
than ‘good’ on this survey item. As seen in Appendix I Table 3.0, howRwe Tool: Perceptions of Care Delivery, statistically significant differences between study groups were not found on the ‘see you promptly’ item.

Regarding the ‘well organized’ survey item, 90% of participants in the group visit appointment type rated their perception of care delivery as ‘excellent’ as compared to 85.7% of those participants in the individual appointment type. Only one of the individual participants rated their perception of care delivery on this item as ‘fair’. Findings were not statistically significant between the study groups for this item. Again, Appendix I Table 3.0, howRwe Tool: Perceptions of Care Delivery, displays these findings.

Overall, the responses on the howRwe survey tool did not show statistically significant between groups differences in participants perceptions of the care received, as related to clinical or organizational aspects of the care delivery process. However, the trends in responses notably favored the use of the group visits, shared medical appointments format when considered collectively, except for the findings on the ‘see you promptly item’ (See Appendix I, Table 3.0, howRwe Tool: Perceptions of Care Delivery). More participants in the 20-minute individual usual care group responded favorably to being seen promptly than did those participating in the intervention group. The exact reason for this was unclear but was thought to be related to procedural difficulties with the first held group-shared medical appointment. At this initial group-shared appointment, staff waited for one individual who was running late before starting the visit. The visit was started late and may have impacted participants perception of timeliness. This possibly explains the between group differences on this item.
Quiz Responses Related to Knowledge Acquisition and Immediate Retention

Study participants of both the shared medical appointment group and the individual appointment group were given a three-item multiple choice quiz immediately after receiving preoperative education/instructions at their preoperative visit. The intention of the quiz was to measure knowledge acquisition and immediate retention of the information discussed in the preoperative visit. All participants were given the same paper/pencil quiz.

**Quiz item.** Item one asked: “*After surgery, how long will you take aspirin to prevent blood clots in your legs?*” Three multiple choice answers were possible: ‘1 week’, ‘2 weeks’, and ‘3 weeks’. Of those subjects participating in the group visits type, 80% provided the correct answer of ‘3 weeks’, and 75% of those participating in the individual appointment type responded correctly to this survey item.

**Quiz item.** The second quiz item asked: “*After surgery, when will you start physical therapy with a therapist?*” The three possible responses on this item were: ‘2 days after surgery’, ‘1 week after surgery’, and ‘3 weeks after surgery’. The correct response was ‘1 week after surgery’. Ninety five percent of the participants in the group visit appointment types responded correctly to this item and 100% of the subjects in the individual appointment types answered this item correctly.

**Quiz item.** The third quiz item asked: “*After surgery, when will you remove your surgical dressing?*” The three possible answers included: ‘24 hours after surgery’, ‘48 hours after surgery’, and ‘72 hours after surgery’. The correct response was: ‘48 hours after surgery’. Of the participants, 100% of the group visits participants provided the correct response to this quiz item; whereas, 96.4% of the participants in the individual appointment types answered this
quiz item correctly (See Appendix J Table 4.0, Quiz: Knowledge Acquisition and Immediate Retention of Information).

Participants of both groups appeared to retain the instructional information and did well on the quiz at the preoperative visit. There were no statistically significant differences between study groups related to knowledge acquisition and immediate retention as measured by quiz responses. However, on two of three quiz items, more of the participants in the intervention group answered the items correctly.

**Survey Responses Related to Patient Satisfaction**

In this study, the howRwe survey tool was also utilized to determine between group differences on the dimension of patient satisfaction levels. At the end of the preoperative visit, to obtain an overall indication of ‘satisfaction with the care delivery’ the study participants answered the survey item: “How likely are you to recommend this practice to friends or family if they needed similar care or treatment?” Possible responses to this item were ‘extremely likely’, ‘likely’, ‘neither likely nor unlikely’, ‘unlikely’, ‘extremely unlikely’, and ‘don’t know’. In this study, 80% of participants in the group shared medical appointment type and 75% of those participating in an individual appointment type responded that they would be ‘extremely likely’ to recommend the practice to friends or family. Twenty five percent of the participants in the individual appointment type and 20% of those subjects participating in the group visit appointment type responded that they would ‘likely’ recommend the practice to friends or family. None of the participants in either of the study groups responded using the other possible responses on this item. No significant differences were found on this item between the study groups. Refer to Appendix K Table 5.0, howRwe Responses: Patient Satisfaction for these findings.
Check-list Responses at Postoperative Visit: Application of Knowledge and Adherence

Further data were collected at the first postoperative visit, 7 to 10 days after surgery. At this visit, the provider asked subjects three ‘yes’/‘no’ questions related to knowledge application and adherence to self-care instructions. These questions were specifically linked to the instructions provided at the preoperative visit. Therefore, they were used to determine whether there was a difference between the shared medical and individual appointment participants’ levels of knowledge application and adherence to the directions for their postoperative self-care. For these three postoperative ‘yes’/‘no’ questions, an appropriate response was viewed as evidence for applying knowledge related to preoperative education (on that item) and adhering to the instructions for self-care in the participants’ home environments. Table 6.0, Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively, reflects the findings related to these items.

**Aspirin use instruction.** The first postoperative question was: “*Postoperatively, did you continue to take the aspirin 325 mg 1 daily for DVT prophylaxis as instructed?*” The possible answers were: ‘yes’ or ‘no’. At the preoperative visit, patients were instructed to take aspirin, if not allergic to it, for one week preoperatively and for three weeks postoperatively to reduce the risk of deep vein thrombosis. Answering the quiz item related to aspirin use correctly preoperatively and then applying the information appropriately postoperatively, was viewed as application and adherence to instructions.

Of the group visit, physical shared medical appointment subjects, 16 subjects correctly answered the quiz item, related to aspirin use, at their preoperative visit. Only one of the 16 subjects or 6.3% of individuals that answered the quiz item correctly preoperatively did not take aspirin postoperatively. As Table 6.0, Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively, shows, 93.8% or 15 of the 16 subjects answered ‘yes’ on the
postoperative query indicating these individuals took the aspirin and correctly answered the related preoperative quiz item. The one individual that answered ‘no’ and did not take aspirin was allergic to it. Therefore, not taking the aspirin, because of an allergy to it, indicated proper application of preoperative instructions and the subjects’ ability to decipher information as it specifically applies to them as an individual. To further clarify, these findings indicate that 100% of subjects applied the knowledge appropriately postoperatively; even though, only 93.8% answered ‘yes’ on this postoperative query. In other words, the only subject in the intervention group that answered ‘no’ to the postoperative query related to aspirin, demonstrated knowledge of both when it would normally have been taken, as evidenced by the preoperative quiz response; and knowledge that, in their case, it was not appropriate to take the aspirin.

By comparison, 21 subjects participating in the usual care group correctly answered the preoperative quiz item related to aspirin use; of these, one of the 21 subjects that answered the quiz item correctly before surgery, did not actually take the aspirin. Again, this was because the patient was allergic to aspirin. As in the intervention group, this indicates that 100% of the usual care subjects applied the information correctly postoperatively to their individual circumstances. As Table 6.0, Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively shows, in the usual care group, 95.6% of 21 patients answered ‘yes’ to the postoperative ‘yes’/ ‘no’ question, but 4.8% or one of 21 of these individuals did not take aspirin because of an allergy to this medication.

The above findings related to the ‘yes’/’no’ postoperative queries about aspirin indicate that both the intervention and usual care study group participants were able to apply and adhere to the instructions given at their preoperative visit. However, the differences between groups were not found to be substantial on this query item.
**Surgical dressing change instruction.** The second question posed to subjects postoperatively was: “Did you remove the surgical dressing 48 hours after surgery and perform suture line care with soap and water, betadine solution, and band-aid application?” The possible answers were again ‘yes’ or ‘no’. At the preoperative visit, study participants were instructed to remove their surgical dressings at 48 hours after surgery. They were instructed to cleanse the surgical knee with soap and water in the shower; then dry the area, apply Betadine solution, and a band-aid to the arthroscopic incisions. Analysis showed that of those participants who correctly answered the preoperative quiz item related to this query, 100% of the intervention group participants (n=20) adhered to the instructions postoperatively; whereas, 96.3% of the usual care subjects behaved similarly. As Table 6.0 Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively shows, of the intervention group participants, 100% correctly answered the preoperative quiz item, and all these individuals adhered to the instruction postoperatively, answering ‘yes’ to the postoperative ‘yes’/’no’ query.

By comparison, 28 usual care participants correctly answered the preoperative quiz item related to the dressing change; one of the 28 (3.7%) individuals did not follow the dressing change instructions after surgery as instructed. This was an interesting finding given that the subject answered the question related to the dressing change correctly on the preoperative quiz; yet, this subject failed to enact the behavior postoperatively in their home environment. This implies that the participants in the intervention group not only obtained knowledge, but enacted the related behavior postoperatively; whereas, not all of those in the usual care group acted similarly.

The findings related to the dressing change item were very similar between study groups. Presumably, this suggests that participants were able to obtain and apply knowledge related to this item when participating in either study group, with the intervention group having an ever
small more favorable finding. Nevertheless, the differences between groups on this postoperative query item were not found to be statistically significant in this small sample.

**Physical therapy scheduling instruction.** Table 6.0, *Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively* shows, the only statistically significant finding related to the differences in participants’ responses on the postoperative ‘yes’/’no’ queries. This finding is related to instructions regarding physical therapy. The third question asked postoperatively was: “*Prior to surgery, did you schedule a physical therapy appointment to begin one week after surgery?*” At the time of the preoperative visit, all subjects were instructed to start physical therapy one week postoperatively. Each participant was given a physical therapy prescription and a list of physical therapy facilities with phone numbers. The participants were also instructed to schedule the appointment for physical therapy, prior to their date of surgery, to ensure a timely postoperative start of their rehabilitation.

As Table 6.0 shows, 20 subjects in the intervention group—shared medical appointment answered the preoperative quiz item related to physical therapy correctly. Of these participants, 1 of 19 or 5.3%, answered ‘no’ on the related ‘yes’/’no’ postoperative query, indicating the individual did not schedule physical therapy prior to surgery as instructed. Most of the participants in the intervention group, 94.7% or 19 of 20 individuals, adhered to the instruction to schedule physical therapy prior to surgery.

In contrast, those participating in the usual care study group showed statistically significant differences in their responses to this postoperative physical therapy ‘yes’/’no’ query. Compared to the intervention group, of those participating in the usual care group, 28 subjects answered the preoperative quiz item related to the start of physical therapy after surgery correctly. Of these, only 64.3% or 18 of 28 individuals, followed the preoperative instruction related to scheduling their physical therapy. Specifically, 10 of the 18 or 35.7%, of individuals
who answered the physical therapy related preoperative quiz item correctly, did not apply the knowledge as instructed, therefore, answered ‘no’ to the postoperative ‘yes’/ ‘no’ query.

These findings represent a statistically significant difference between study groups related to this physical therapy postoperative ‘yes’/ ‘no’ query. A statistically significant larger proportion of the participants in the intervention group enacted the behavior related to the preoperative instruction to schedule physical therapy prior to surgery (94.7% vs 64.3 %, \( p = .03 \)). As Table 6.0, *Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively* indicates, this was the only postop ‘yes’/ ‘no’ question in which there was a statistically significant difference in responses between groups.

This is an interesting finding because most patients in both the intervention group and the usual care group answered the associated preoperative quiz item related to when they would start physical therapy after surgery correctly. This presumably indicates that the participants in both groups had accurate knowledge of when to start the physical therapy. In fact, 100% of those in the usual care group answered the physical therapy quiz item correctly, as compared to 95% of those in the intervention group (See Table 4.0, *Quiz: Knowledge Acquisition and Immediate Retention of Information*). Yet, the participants in the usual care group showed a significantly lower percentage of applying the knowledge or enacting the knowledge associated behavior to adhere to the instructions to schedule physical therapy prior to surgery.

Even though there was only one statistically significant finding among the postoperative ‘yes’/ ‘no’ queries related to the physical therapy item, an interesting pattern emerges from the evaluation of the ‘yes/no’ questions collectively. The responses on the postoperative query related to both the dressing change and the physical therapy items suggests that those participating in the intervention group—shared medical appointment, in fact, enacted the health behavior associated with acquired knowledge more often than those in the usual care group.
Although, in this study the sample size was relatively small, the pattern shows a trend favoring the intervention group to enact health behaviors. These descriptive findings cause one to question whether participation in the intervention group might have positively influenced the application of knowledge or health behavior more readily through an unknown mechanism than did participation in the usual care group.

Check-List Responses at Postoperative Visit: Resource Utilization

Table 7.0 Comparison of Healthcare Resource Utilization between Appointment Types, shows the findings related to the use of health care resources postoperatively. At the postoperative visit, the subjects from both study groups were asked three ‘yes’/’no’ questions related to health care resource use. The intention of these questions was to determine if a difference existed between study group participants related to their use of health care resources. Table 7.0 displays the related findings.

**Emergency room use.** The first of the ‘yes’/no’ questions related to resource utilization was: “Did you go to any emergency room or urgent care facility after surgery for any reason? If so, why?” On this query item, of the participants in the intervention group, only 1 of the 20 individuals went to the emergency room after surgery and prior to their first postoperative visit. This patient went because of developing “shingles”, and not for any postoperative complication with their knee. However, comparatively, none of the usual care participants went to the emergency room or urgent care facility. As Table 7.0, Comparison of Healthcare Resource Utilization between Appointment Types indicates, there was not a statistically significant difference between study groups on this item.

**Early unscheduled office visit.** At the preoperative visit, subjects were given full postoperative instructions to care for themselves at home for the first seven to 10 days following
their surgery. They were also given these instructions in writing. All subjects scheduled their first postoperative visit prior to surgery, for seven to 10 days after their operation. At the preoperative visit, expectations for the postoperative experience were also discussed in detail. At the first postoperative visit, the second of the ‘yes’/‘no’ queries related to health care resource utilization asked: “Did you come to the office for any unscheduled office visit after surgery but before today? If so, why?” This query item was used to elicit a description of the number of times participants needed in-office clarifications of instructions for their self-care after surgery. The number of unscheduled office visits was also used as a method to determine congruence between subjects’ preoperative expectations of the immediate postoperative experience and their actual postoperative experience. The premise on which this measurement was devised was that if participants of the study groups were able to adequately acquire knowledge and skill, and a clear expectation of what to expect during the immediate postoperative period, one could reasonably expect less of a need to ask for an early unscheduled postoperative visit for clarification on these items.

**Reason for the one-unscheduled office visit.** As Table 7.0, *Comparison of Healthcare Resource Utilization between Appointment Types* shows, none of the intervention group participants came in for an unscheduled office visit. In comparison, one of the usual care group participants came to the office for an unscheduled visit prior to the first postoperative visit. This usual visit participant came to the office five days after surgery secondary to concern over swelling in the knee, pain, and not being able to completely bend or straighten their knee. After exam, none of these symptoms were found to be unexpected. This finding suggests that this participant had expectations for the immediate postoperative period that were incongruent with their reality of the postoperative experience. The patient was re-instructed on how to manage the symptoms and reassured. Nevertheless, as Table 7.0 *Comparison of Healthcare Resource*
Utilization between Appointment Types indicates, there was not a statistically significant difference between study groups on this item.

**Postoperative call to the office.** The third question posed to participants at the first postoperative visit related to resource utilization was: “Did you call the office for clarification of instructions or concerns after your preoperative visit, through today?” Interestingly, only two of 20 (10%) of participants in the intervention group answered ‘yes’ on this item as compared to seven of 21 (25%) of individuals in the usual care group. There was not a statistically significant difference in the number of calls to the office after the preoperative visit and through the time of the first postoperative visit between groups. However, the reasons for the calls that were made are very different between the groups.

**Reasons for calls to the office.** Table 8.0, Reasons for Calls to the Office After the Preoperative Visit, displays the between study group reasons for the calls to the office. The two calls made to the office from participants of the intervention group were not related to clarification of instructions or for assistance with items that were covered during the preoperative visit. However, the seven calls to the office from the participants in the usual care group were all for tasks or information that should have been covered in their preoperative appointments. One of the seven participants called with concerns for what was found to be incorrect expectations for the immediate postoperative period. This same participant asked for an early postoperative appointment to further alleviate concerns.
Chapter 5

Implications, Summary & Conclusions

The aim of this study was to pilot the use of group visits in an orthopedic surgery office setting. Precisely, the aim was to describe the effect of using a group visit appointment type, as compared to the traditional 20-minute individual appointment type, for the delivery of preoperative patient education in patients planning to undergo outpatient knee arthroscopy. A secondary goal was to determine the feasibility and sustainability of utilizing the group visit-shared medical appointment format on a regular basis for the delivery of preoperative education in this orthopedic outpatient setting.

The intended goal of the study related to determining the effects of using a group visit-shared medical appointment was achieved through the application of descriptive statistical methods. In addition, the findings provided evidence upon which to garner an argument for the sustained use of the group-shared medical appointment as an alternative format for the delivery of patient education in this orthopedic practice.

The findings of this study favor the utility of the group-shared medical appointment, in this setting, as an optional delivery format. Although differences between the study groups on most measured variables were not statistically different, the overall trend in the findings were favorable for the use of the group-shared medical appointment format (See Tables 2.0, 3.0, 4.0, 5.0, 6.0, and 7.0). Importantly, there was also one statistically significant finding related to scheduling physical therapy indicating a difference between study groups and favoring the group-shared medical appointment type. Table 6.0 presents the statistically significant finding
related to adhering to the instruction to schedule physical therapy prior to surgery. Most importantly, this study did not find any known adverse effects of using the group-shared medical appointment type for the delivery of preoperative patient education. This is precisely because statistically significant negative differences between study groups were not found on the measured variables. Additionally, the theoretical analysis of the potential of group visits to increase access to care, revenue, and overall efficiency in care also lend support for the use of the group-shared medical appointment. There are several implications for practice that arose related to these conclusions. These implications warrant close attention in the event of future use of the group-shared medical appointment type for the delivery of preoperative patient education. Additionally, the findings of this pilot study have resulted in ideas for future research on the effects of the use of group-shared medical appointments.

**Implications Related to Characteristics of Participants**

After statistical analysis, the sample used for this pilot study was found to be rather homogenous on subjects’ measured demographic, physical, and psychological characteristics. The lack of great diversity among and between groups simplified the process of delivering preoperative care in the shared medical appointment study group. The clinical implication related to these findings is that the sample was reflective of the known practice population during the time the study was conducted. This finding supports the feasibility and ease of using the group-shared medical appointment type, in this setting, for the given population. However, the future ability to provide care in the group-shared medical appointment format may become more complex as diversity increases within the practice. Therefore, in the event of the emergence of a more heterogeneous or diverse patient population, a paramount concern would be to avoid creating knowledge and skill disparities solely based on demographic, psychological, or physical differences that impact learning style.
Indeed, according to Chung, Dieckmann, & Issenberg (2013), age, gender, and ethnicity or culture may impact learning because these factors are associated with varying learning styles. Moreover, such differences also affect expressions of pain and anxiety. Rajala, Kaakinen, & Kaariainen (2017), state that pain and anxiety are common factors in patients preparing for surgery. Such factors may function as barriers to the acquisition, comprehension, and retention of information. Therefore, integrating this information with the findings of this pilot study, the implication is that there is a need to continuously utilize clinical acumen for close ongoing assessment of patients during their preoperative appointments to address any complexity brought to care delivery because of diversity. Doing so, while maintaining high levels of cultural sensitivity in the event of future use of the group-shared medical appointment format will aid in avoiding creating disparities based upon these factors.

Notwithstanding, the complexity that increased diversity might bring to the process of delivering preoperative patient education, within a group-shared medical appointment format, it does not preclude the use of this delivery format. Just as is the case with using individual appointments, if the use of group-shared medical appointments is implemented on a regular basis, appropriate interventions and accommodations to remove or mitigate any identified barriers to learning would need to be continued and developed. For example, not unlike the case of usual care delivery, teaching methods may need to be modified and information may need to be given in multiple forms to accommodate diversity in the event of a more heterogeneous shared medical appointment. The application of knowledge related to adult learning principles and learning differences in the elderly will also be necessary to avoid creating disparities in knowledge attainment based upon demographic, psychological, and physical differences. Consideration of health literacy levels in the design of group-shared medical appointments will also continue to be necessary, just as it is in usual care. With careful planning and an organized
approach to care delivery within the group-shared medical appointment format, these requirements could be met. The plethora of items that need to be addressed to embrace and navigate complexity as diversity increases, imply a need for further study related to *best practices* for the implementation of group-shared medical appointments for delivering patient education.

Elevated preoperative levels of pain and anxiety have been found to be associated with lower levels of patient satisfaction, increased postoperative pain, and poorer surgical outcomes (Alanazi, 2014). Another implication for practice arising from this knowledge and the findings of this pilot study is that the group-shared medical appointment *may* positively impact levels of pain and anxiety/worry. Levels of pain and anxiety/worry in this pilot study were found to be relatively low and similar between study groups. However, although not found to be statistically significant, the levels of anxiety/worry were lower in the shared medical appointment study group as compared to the traditional individual appointment group (See Table 2.0, *howRwe Survey: Physical and Mental Characteristics of Sample*). Presumably, if the group-shared medical appointment type positively impacts levels of pain or anxiety/worry, this effect could be beneficial across the perioperative spectrum. Given this possibility, further study with a larger sample size would be helpful in looking for associations between the use of a group-medical appointment and decreased preoperative pain, anxiety or worry. Furthermore, the mechanism by which the group-shared medical appointment may affect levels of pain and anxiety/worry requires further study to have a more comprehensive understanding of the effect of using the group-shared medical appointment format.

**Implications Related to Findings on Perceptions of Care and Patient Satisfaction**

Despite the surrounding controversy, the ACA (2010) linked patient experience to reimbursement in Medicare’s Value Based Purchasing formula as an attempt to improve quality
of care. This gives new importance to patient experience for providers of care focusing on maximizing revenue. It also heightens the importance of patient experience in ambulatory care settings, as consumers of care increasingly exercise their choice in seeking healthcare providers and look for options. According to Needham (2012) people base their choice of providers on prior experience and not necessarily on outcomes of care. This fact further illuminates the importance of patient experience or satisfaction levels and perceived value in care delivery. Therefore, it is important for individual providers of care to strive for creating a highly satisfactory patient experience that meets the health care consumer’s perception of value and provides convenient options.

This pilot study showed that patients’ perceptions of care across both clinical and organizational domains remained high, when care was provided in the group-shared medical appointment. In fact, despite a lack of statistically significant differences, the participants in the group-shared medical appointment showed survey responses which were more frequently favorable than those responses from the usual care, individual appointment participants. Additionally, patient satisfaction levels as measured by the ‘likelihood’ of recommending the practice to others were also better in the shared medical group. These findings imply that participants had positive experiences in the process of receiving care. The implication here is that providing the option of receiving preoperative patient education within a group-shared medical appointment may satisfy consumer demand for choice and perceived value when receiving care. This makes the group-shared medical appointment an attractive care delivery modality; as it is also a means by which patient perceptions and satisfaction levels may be maintained or improved. These findings provide confidence and bode well for the use of this care delivery format.
Implications Related to Findings on Patient Knowledge and Adherence to Instructions

For ambulatory surgery patients, the primary purpose of providing preoperative patient education, counseling, and instruction is to enhance patient knowledge and skills; it is also to reduce risk of adverse outcomes of care. The knowledge and skill acquired during a preoperative visit, serve to enable and empower the patient for self-care postoperatively, within the home environment. In this pilot study, patients in the group-shared medical appointment were able to correctly answer quiz items indicating acquisition of knowledge, as were those in the individual appointment type (See Table 4.0, Quiz: Knowledge Acquisition and Immediate Retention of Information). However, a statistically significant increased number of participants in the group-shared medical appointment adhered to the preoperative instruction to schedule their physical therapy before surgery, to ensure a timely start postoperatively (See Table 6.0, Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively). This implies that the use of a group-shared medical appointment type may have enhanced adherence and supported application of knowledge that is necessary for meeting health goals in the perioperative period, especially as related to self-care postoperatively. This statistically significant finding also implies that the group-shared medical appointment format may be beneficial specifically when behavior change, or application of knowledge is needed to carry out instructions.

Interestingly, statistically significant differences between study groups were not found related to adhering to the other instructions on taking aspirin and changing the surgical dressing. The reasons for these differences in findings as compared to the statistically significant finding related to adhering to scheduling physical therapy before surgery are not clear. It is possible that the group-shared appointment format may have contributed to decreasing the tendency for procrastination among participants in scheduling physical therapy. This is because there was time
allotted for the patients participating in the group-shared appointments to call and schedule physical therapy during the group-shared preoperative visits; which was not available for those participating in 20-minute individual appointments.

According to Rozental (2017) it is estimated that one-fifth of the adult population has difficulty with procrastination in task performance. The instruction related to scheduling physical therapy prior to surgery required executive planning for a future need when delivered in the 20-minute individual appointment type; whereas, instructions to take aspirin were associated with an immediate need at the time the instruction was given in both study groups. Although, the instructions regarding changing the surgical dressing also required planning for a future need in both study groups, immediately postoperatively the physical presence of the surgical dressing served as a visual cue to recall the related care instructions.

Additionally, scheduling an appointment for postoperative physical therapy may not have carried the same level of priority for patients as did taking the aspirin before and after surgery, or changing the dressing postoperatively. Patients may not have perceived negative physical outcomes because of not scheduling physical therapy; whereas, the negative consequences of not taking aspirin or not changing their dressing were more obvious. Consequently, patients’ perceived evaluation of urgency may have been different for scheduling physical therapy as compared to other task items. Having an allotted time to schedule physical therapy within the structure of a group-shared medical appointment may also have highlighted the importance of making the appointment before surgery; not having the same time during the 20-minute individual visits did not convey the same level of importance in making the physical therapy appointment prior to surgery.

The implications related to these finding is that future study related to the effect of the use of a group-shared medical appointment format on adherence to instructions that require
behavior change would enhance knowledge in this area. Inquiry to bring forth more understanding of the underpinnings of how behavior is affected using the group-shared medical appointment format is of interest. Of those with a tendency to procrastinate in task performance, does the use of the group-shared medical format decrease procrastination in some manner depending upon type of tasks to be performed? If so, is this the mechanism by which the increased adherence, among those participating in a group-shared medical appointment, ensues? How does the use of the group-shared medical appointment affect perceptions of priority and urgency related to instructions that are given, especially if the instructions require behavioral change as related to a future need or task performance?

**Implications of Findings Related to Healthcare Resource Utilization**

Inappropriate or unnecessary healthcare resource utilization drives up costs of delivering care. Therefore, mechanisms which potentially reduce inappropriate resource utilization are important and should be further developed. The findings of this pilot study imply that the use of a group-shared medical appointment format in the delivery of services may have positive effects on resource utilization. As the findings outlined above show, there were fewer calls to the office and fewer unscheduled office visits after attendance in the shared medical appointment than was the case for the 20-minute individual appointment type. Only one study participant went to the emergency room following surgery. See Table 7.0, *Comparison of Healthcare Resource Utilization between Appointment Types.*

*Explanation for differences in the number and nature of calls to office.* Although determining a definitive cause is beyond the purview of this descriptive study, several factors could explain the differences between study groups as to why the number and nature of calls to the office were dissimilar in the usual care group as compared to the intervention group. The most obvious factor to consider in explaining these differences is the structure of the
preoperative visits, specifically the difference in the amount of time allotted for the two appointment types. Table 9.0, *Comparison of the Structure of the Preoperative Education Appointments*, describes the differences in the structure of the preoperative visit within a group-shared medical appointment, as compared to that of the usual traditional appointment type. In the group-shared medical appointment, there is ample time to provide instruction, clarify information, and complete tasks.

Structuring the preoperative visit to allow enough time to accomplish all that is necessary to prepare patients for surgery, in an unrushed manner, is critically important for preserving quality of care. To successfully meet patient needs at the preoperative visit, enough time is crucial. As shown in Table 9.0, *Comparison of the Structure of the Preoperative Education Appointments*, one of the most beneficial components of structuring preoperative care delivery in a group-shared medical appointment is having enough time to deliver the needed care. In fact, according to Bronson & Maxwell (2004) and Meehan et al. (2006), increased face-to-face time with the provider and other staff is a major strength of using a group-shared medical appointment. In this pilot study, whether the difference in time allotted for the preoperative visits between study groups explains all the variations in the reasons for calls to the office is unclear but is certainly a possibility.

All these resource related factors impact efficiency in the office setting. The findings related to resource utilization warrant further scrutiny and evaluation in the future. Specifically, knowledge in this area would be enhanced by determining specific mechanisms for how calls to the office, unscheduled office visits, and emergency room visits are impacted using the group-
visit shared medical appointment format. Further study with a larger sample size would further advance knowledge of such. Is enough time for the delivery of care the key driver explaining the impact the use of the group-shared medical appointments had on the number of calls to the office and the number of unscheduled office visits? Does the use of the group-shared medical appointment support more congruence in patient expectations and actual experiences following surgical procedures, thereby reducing anxiety and uncertainty? If so, this may improve comfort in self-care and decrease need for accessing healthcare resources in this population of patients.

**Implications for Sustainability of Using Group-shared Medical Appointments at the Orthopedic Practice Project Site**

Insofar as whether it was feasible to sustain the use of this visit type on a regular basis, additional information related to efficiency and organizational implications were considered. Specifically, the degree to which the use of the group-shared medical appointment format could theoretically reduce repetition in the performance of necessary tasks, increase access to appointments, and increase the number of billable office appointments, was also analyzed. The impact of using group-shared medical appointments on clinical outcomes of surgical care were also considered and determined to add support for continued use of the group-shared medical appointment in this setting. The following discusses these factors.

**Organizational implications: efficiency, repetition, access, and billable office hours related to care delivery format.** The efficiency of an organization is one means of supporting quality in care delivery. Reducing repetition and improving access to care are mechanisms by which organizational efficiency in operations may be improved. Improving access to care is also linked to financial efficiency by enabling the organization’s capacity to generate additional
revenue. These factors were considered when determining the sustainability of using the group-shared medical appointment at the project site. The conclusion of the theoretical analysis was that the use of group-shared medical appointments improves efficiency through impact on several levels.

**Group-shared appointments reduce repetition of tasks.** Group-shared medical appointments are well suited to reducing repetition in tasks when delivering care. The degree to which repetition may be decreased has many implications for efficiency in practice. The delivery of preoperative patient education involves many tasks that ultimately become repetitive for staff (See Appendix P, Table 10.0, *Tasks Performed at the Preoperative Visit for Knee Arthroscopy*). For example, many of the instructions provided for preoperative and immediate postoperative care in patients planning to undergo knee arthroscopy are the same. These repetitive instructions include those given by multiple members of the care team. The nurse practitioner or physician provider, the physical therapist, the durable medical equipment specialist and the orthopedic technician repeat the same directives multiple times during a typical day, when providing instructions during an individual traditional 20-minute appointment type. When delivering care in a group-shared medical appointment type, the instructions and any clarifications are presented once by each of these staff members and this equates to more efficiency. For example, all knee arthroscopy patients in this setting are shown how to use a cryotherapy device by the durable medical equipment specialist. In the group-shared medical appointment, the specialist presents and demonstrates the device at one time, to multiple patients. This is also the case for other instructions given by other members of the healthcare team, including the nurse practitioner provider. The lack of repetition for staff members has the potential to make their jobs more enjoyable, improving provider and staff satisfaction. Moreover, reducing repetition adds to the efficiency of the office operations without decreasing quality or financial reimbursements.
In fact, after careful analysis, it appears that in this study, the use of the group-shared medical appointment did reduce repetition in task performance. There were 48 participants in this study, 20 of these were appropriated to the shared medical group. Resultantly, staff were able to reduce numerous tasks performed each time a group-shared medical appointment was held, ultimately culminating in 20 fewer repetitions for each task item performed, by each staff member, in each of nine total group appointments held during the pilot. Considering that repetition in task performance was reduced, this information supports the ability to sustain the use of group-shared medical appointments in this practice setting.

**Group-shared appointments increase access to available appointments.** Ideally, the use of the group-shared medical appointment format should open available appointments on each day in which it is used to deliver a preoperative education visit. The number of created new patient, follow up, and urgent same day appointment types increases as the volume of those seen in the group-medical appointment for their preoperative visit increases, representing increased access to care. Appendix Q Table 11.0, *Increased Access to care Created by Use of Group-Shared Medical Appointment*, shows the hypothetical increase in the number of available appointments that are created when the 90-minute group-shared appointment format is used for the preoperative education visit in the Anne Arundel Orthopedic Surgeons setting. As Appendix Q: Table 11.0 *Increased Access to Care Created by Use of Group-Shared Medical Appointment*, indicates, the number of participants that would need to be seen in a group-shared medical appointment to create one additional individual appointment slot for other visit types was set at six patients. That is, a minimum of six patients per 90 minutes would be needed to increase the number of available patient appointments by a factor of one in this setting, assuming no change in the current scheduling template.
In this study, typically no more than five patients were seen at once for a 90-minute group visit. The number seen in this pilot, did not exceed the set break-even point of five patients per 90-minute group-appointment; precisely because there were not enough knee arthroscopy patients scheduling surgery during the time the pilot was implemented. At the same time, using the group-shared medical appointment format did not decrease the number of available appointments either. Consequently, the overall number of patients seen were about the same for the days the group-shared medical appointments were held during the time this pilot was conducted.

However, patient volume impacts the efficiency of using the group-appointment format. Therefore, with sustained use of this appointment type, the frequency of use may need to be altered to accommodate seasonal ebb and flow in patient volume. Also, in this pilot study, the sample was drawn from the patient population of one surgeon. Theoretically, if all surgeons of the practice utilized the group-shared medical appointment type for preoperative education of their knee arthroscopy patients, the volume of patients would drastically increase, and efficiency would be maintained. Also, if all preoperative visits for other types of surgeries, such as shoulder arthroscopies and knee replacements, were done within a group-shared medical appointment, this would add to efficiency and further open access to appointments in all surgeons’ schedules. The possibility of developing a program in which multiple surgeons’ patients are seen in a group-shared medical appointment for preoperative education is an intriguing concept and could be considered further in efforts to maintain efficiency and quality in care delivery.

Organizational implications: importance of same-day or rapid appointment access. Orthopedic or musculoskeletal health problems are typically painful. Alleviating pain is a priority for patients as it interferes with quality of life; it impacts work, sleep, relationships,
recreation and overall health. Having available same day or rapid access to new patient and follow up appointments is beneficial in that it theoretically deters unnecessary visits to the emergency room, urgent care facilities, or to other practices when patients are searching for immediate relief of pain. This is important to: increasing and maintaining volume-based revenue for the practice; reducing overall health care costs through reducing unnecessary emergency room or urgent care visits; health of the orthopedic patient population; and patient satisfaction with care.

Organizational implications: increased number of billable visits. Increased access to care, typically translates to increased revenue. For this pilot project, the degree to which using a group-shared medical appointment may increase revenue for the practice was a factor used to determine sustainability of using this appointment type at the project site. Because in this study, the physical-shared medical appointment type of group visit was used, each of the participants had time alone with the provider in which a focused orthopedic history and physical exam was performed. This allowed each of the participants to be billed as is customary for a usual type of follow up office appointment. In this setting, this is usually the 99213 code for a preoperative visit. As openings for other visit types, appointments increase, the total charges for the day of appointments would theoretically be increased and added to the charges produced within the group-shared medical appointment, without the need for adding time to providers’ in-office schedules. This equates to increased efficiency and revenue for the practice, assuming available appointment slots are filled.

Typical payments received at the project site. A review of typical payments received from Medicare, at the project site, for common evaluation and management codes (99213 and 99203) and common CPT codes (20610, 73030, 73564) was completed with the assistance of the office billing supervisor at the project site. A table showing the minimum revenue that could
theoretically be realized by creating access to four extra office visits per month on the days the
group-shared medical appointments are held was constructed. See Appendix R Table 12.0,
Medicare Reimbursements Typically Paid and Potential Increased Revenue. Of course, these
calculations are assuming an adequate volume of patients to participate in the group-shared
medical appointments, as projected and shown in Appendix Q Table 11.0 Increased Access
Created by Use of Group-Shared Medical Appointment.

For the purposes of this pilot study the exact change in the number of available office
appointments, the associated revenue generated, or the exact collections for visits during the time
frame were not measured. However, the purported theoretical increase in these aspects are
important to consider when deciding to implement the group-shared medical appointment for
continued future use in this setting. See Appendix R, Table 12.0 Medicare Reimbursements
Typically Paid and Potential Increased Revenue. For ongoing evaluation of the ability of group-
shared medical appointments to impact practice revenue, a detailed real-time analysis of these
factors would be warranted in the future.

Costs in implementing group-shared medical appointments. The costs for implementing
the group-shared medical appointment type, for the purposes of this pilot study were not
increased as compared to the use of the traditional individual appointment type. The same office
personnel, medical providers, office space, paper work, and equipment that is typically used in
the provision of usual care, was used in the implementation of the pilot of the group-shared
appointment type. This illustrates that it is possible to utilize and sustain the use of the group-
shared medical appointment type without additional costs in this practice setting. However, if
the implementation is changed with added features, the costs would necessarily increase and
would need to be weighed against the benefit of any alterations. This would need to be factored
in to any decisions as to when and how implementation changes should occur in the event of future continued use of the group-shared medical appointment type.

**Clinical implications of the use of group-shared medical appointment for preoperative patient education: better surgical outcomes and overall health of the orthopedic patient population.** Ultimately, the use of group-shared medical appointments has implications for the health of the orthopedic surgical population. This is because the use of the group-shared medical appointment for preoperative education facilitates improving patients’ capacity for self-management preoperatively and immediately postoperatively. Theoretically, when patients acquire knowledge and adhere to instructions through the application of the knowledge and skill, gained in a group-shared medical appointment, adverse surgical outcomes may be averted or at least mitigated.

According to Bohensky et al. (2014), deep vein thrombosis, joint complications, and infection are three of the more common adverse outcomes associated with elective knee arthroscopy. In their retrospective cohort study, Bohensky and colleagues (2014) sought to quantify the excess costs and resource utilization associated with common complications in elective knee arthroscopy. Using a population of 166,770 episodes of knee arthroscopy, 976 complications were identified. Of these, there were: 573 deep vein thromboses identified and associated with extra costs of $3,227 per patient (95% CI; $3,211 to $3,244); 227 joint complications identified and associated with extra costs of $2,247 per patient (95% CI; $2,216 to $2,280); and 141 infections found with associated extra costs of $4,364 per patient (95% CI; $4,331 to $4,397).
Given the excess pain, suffering, and costs of any complications associated with knee arthroscopy, it is important to develop and apply clinical innovations to mitigate or alleviate the associated risks of developing these adverse occurrences. In this pilot study, outcome variables to measure the effects of the group-shared medical appointment were chosen with the idea of determining the effect the group-shared appointment format would have on some of the more common potential adverse surgical outcomes (See Appendix S, Table 13.0, Preoperative Instructions and Potential Adverse Surgical Outcome Prevented, for the specific variables and associated risk targeted). In determining the future sustainability of the use of group-shared medical appointments for the delivery of preoperative patient education, ongoing monitoring and evaluation of the impact this delivery format potentially has on preventing or decreasing adverse outcomes should be ongoing.

Next Steps

This pilot project used a small sample of patients scheduling surgery with one surgeon and was conducted over a relatively short period of time. For a more comprehensive evaluation of using the group-shared medical appointment format at the project site, to determine sustainability, additional study conducted with a larger sample size and over a longer period is required. If all surgeons of this practice setting considered the use of the group-shared medical appointment format, organizational effects in terms of efficiency could be more easily ascertained secondary to the use of a larger sample for evaluations. In doing so, actual measurement of revenue generated, and provider and staff satisfaction should be evaluated. Also,
it may be possible to apply the group-shared medical appointment for other patient needs in addition to those requiring preoperative education. For example, the group-shared medical appointment could conceivably be applied to the non-surgical chronic osteoarthritis patient population. The group-visit structural format could be used to conduct an injection clinic for osteoarthritis patients, in which groups of patients could be seen at once for steroid injections or viscous supplementation injections. Finally, the use of the group-shared medical appointment format would be an excellent venue for expanding services at the project site orthopedic practice to include programs to assist patients with weight loss, smoking cessation, and osteoporosis screening. Expanding services to include these health problems can be justified in the orthopedic surgery setting because they all impact surgical care, in terms of healing and surgical risk. Nurse practitioners are ideal candidates to lead initiatives to launch such services.

**Dissemination of Findings**

Following the Iowa Model of Evidence-based Practice, change agents should plan for dissemination of findings. It would be appropriate to present these findings at one of the American Academy of Nurse Practitioners conference sessions and/or at one of the National Association of Orthopedic Nurses conference sessions. Additionally, the findings will be prepared for submission and consideration for publication in a peer reviewed nursing practice journal.

In summary, this project attempted to describe the differences in the effects of utilizing a group-shared medical appointment format as compared to a traditional individual appointment
format when delivering preoperative patient education in an outpatient orthopedic setting. Specifically, the study described the demographic, physical and psychological attributes of the study groups, and sought to describe the differences in effects between study groups through measuring multiple variables of interest. One statistically significant difference between the use of the group-shared medical appointment and the use of a traditional, 20-minute individual appointment type, when delivering preoperative patient education was found. Even so, many of the measured variables showed more favorable findings among the group-shared medical appointment group as discussed above. Moreover, the statistically significant finding related to scheduling physical therapy suggests that a major impact of the use of the group-shared medical appointment may lie in the superior ability of this delivery format to improve adherence to instructions, through impacting behavioral changes necessary to achieve positive surgical outcomes.

Based upon the results of this project, many implications for further evaluation and research could be surmised. When the results are considered collectively, the priorities for evaluation would be to focus on how the group-shared medical appointment may impact behavioral change; reduce preoperative pain and anxiety; and reduce inappropriate use of health care resources during the perioperative period. Additional priorities for future evaluation and research would be to determine best practices for implementing group-shared medical appointments for educational purposes. Specifically, further study should focus on best teaching practices to be used when implementing group-shared medical appointments to ensure mitigating or alleviating barriers to learning that might arise from demographic, physical, or psychological factors among diverse populations of patients. Further study related to the optimal structure of
group-shared medical appointments is also needed; including research to identify the optimal number of participants in each group session, the ideal mix of interdisciplinary team members. Knowledge in use of group-shared medical appointments could also be enhanced through further research with precise study applied to specific patient populations with specific disease states.

In terms of continued use of the group-shared medial appointment format, in the project site office setting, the analysis of findings generally supports sustaining the use of this delivery structure. The costs associated with implementation as done for this pilot project were negligible. Quality of care was maintained with the use of the group-shared medical appointment format, with no known adverse outcomes with the use of this modality. Additionally, improved operational efficiency appears to be a substantial finding in utilizing this appointment type. The potential increase in revenue afforded by opening access through the creation of appointments provides additional motivation for continued use.

In conclusion, this study related to the use of group-shared medical appointments did not find this delivery method to be inferior to the use of the traditional 20-minute individual appointment, for the delivery of preoperative patient education, in this orthopedic setting. To the contrary, the findings provide preliminary evidence to support the feasibility of delivering preoperative patient education using this alternative appointment format. Also, the findings poignantly identify areas to be continually evaluated during any future implementation of the group-appointments in this setting. Furthermore, while it is not appropriate to generalize and apply these findings to all settings in which preoperative care is delivered; the findings do provide evidence to inform and support other specialty practices which may want to pilot the use of the group-shared medical appointments for evaluation in their respective settings. The findings also stimulated the spirit of inquiry related to the use of group-shared medical
appointments and elicited many questions to be further explored through future nursing research.
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[https://doi.org/10.1080/0965254X.2016.1148763](https://doi.org/10.1080/0965254X.2016.1148763)


Appendix A

Figure 1.0

Care Coordination and Communication Required Across Multiple Health Care Settings

- Communications with:
  - Pharmacies to provide prescriptions for pain meds, Nsaid etc.
  - Medical clearance
  - Referrals as needed
  - Communicates with patient, orthopedic office setting, specialty setting, insurance companies, and ambulatory surgery center

- Labs, UA, EKG
- Medical clearances
- Referrals as needed
- Communicates with patient, orthopedic office setting, specialty setting, insurance companies, and ambulatory surgery center

- Orthopedic Office Setting
- Ambulatory Surgery Center
- Primary Care Office Setting
- Specialty Care Office Settings
- Patient Home Setting
- Patient Work Setting

- Patient communicates across all settings
- Provide specialty clearances for anesthesia and surgery
- Communicates with patient, primary care office, orthopedic office and ambulatory surgery center

- Patient communicates across all settings
- Provides specialty clearances for anesthesia and surgery
- Communicates with patient, primary care office, orthopedic office and ambulatory surgery center
Appendix B

Figure 2.0

*Evidence for Effects of Group-Shared Medical Appointments*

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Type of Study and Findings Showing Positive Effects of Group-Shared Medical Appointments (* indicates statistically significant finding; **indicates approaching statistical significance)</th>
<th>Sample Size</th>
<th>Level of Evidence</th>
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</table>
| Heyworth et al., 2014  | Retrospective, cross-sectional study comparing group-shared medical visits to usual individual visits, (mailed patients surveys 1 week after their visits from 2008 to 2010) to determine effects on patient satisfaction; showed:  

  - improved patient satisfaction; more likely to rate experience with care as “very good” in group-shared visit (odds ratio = 1.26; 95% CI, 1.05–1.52) *  
  
  - enhanced perception of sensitivity to patients’ needs, care coordination, and team-based approach to care among group-shared visit attendees, (adjusted OR = 1.34; 95% CI, 1.08–1.65) * | 34,619 patients in usual care and 981 in group-visit | Level 11 |
- Improved access to care; more likely to obtain access to an appointment of their choice (adjusted OR = 1.49; 95% CI, 1.21–1.92) *
- Improved perception of convenience of office hours in group-shared visit (adjusted OR = 1.22; 95% CI, 1.02–1.45) *
- reported a shorter wait for laboratory testing in group-shared visit (adjusted OR = 1.49; 95% CI, 1.21–1.92) *

| 2. Dickman et al., 2012* | Pre-test/Post-test quasi-experimental design; used to evaluate group-shared appointment at a free clinic to determine effects on self-managing behaviors (exercise and goal-setting activity); *statistically significant findings:  
- increase in goal-setting activity; all participants set goals and 97% achieved or nearly achieved goals*  
- mean increase exercise time of 86 minutes per week in group-shared visit representing effect on behavior *  
- Improved access to care | Level 11 | 37 participants |
<table>
<thead>
<tr>
<th></th>
<th>Authors</th>
<th>Study Description</th>
<th>Articles Identified</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Riley &amp; Marshall, 2010*</td>
<td>Systematic Review conducted to review effects of using group-visits for Diabetes Mellitus patients;</td>
<td>615 articles identified, 386 excluded, 12 articles met inclusion criteria (4 review articles representing 75 studies and 8 new original research)</td>
<td>Level I11</td>
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<tr>
<td></td>
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<td>• failed to demonstrate <strong>consistent</strong> statistical improvement in A1C, BP, or lipids</td>
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<td></td>
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<td>• 2 studies included showed statistically significant effects on Hgb A1C</td>
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<td></td>
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<td>• + effects indicating potential of reducing costs</td>
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<td></td>
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<td>• + effects on patient and provider satisfaction</td>
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<td>4.</td>
<td>Davis, Sawyer, &amp; Vinci, 2008</td>
<td>Descriptive review of pilot findings and selected literature review evaluating evidence to support use of group-visits; conclusions:</td>
<td>10 studies representing a sample of 7.145 participants</td>
<td>Level I11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Group-shared medical appointment participants had lower HgbA1C levels, lowered cholesterol levels</td>
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<td>• Group-shared visits support self-management</td>
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<td>• Group-shared visits support provider adherence to ADA standards</td>
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<td></td>
<td></td>
<td>• Support self-efficacy in patients</td>
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<td></td>
<td></td>
<td>• Patient and provider satisfaction improved</td>
<td></td>
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<td></td>
<td>Scott et al., 2004*</td>
<td>Prospective RCT conducted over 2 years showed significant improvement in:</td>
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<td></td>
<td></td>
<td>- patient satisfaction*</td>
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<td>5.</td>
<td></td>
<td>- patients’ perceptions of:</td>
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<td></td>
<td></td>
<td>- (providers’ unhurriedness,</td>
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<tr>
<td></td>
<td></td>
<td>- time spent with provider,</td>
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<td></td>
<td>- quality of care,</td>
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<td>- learning medication management, and</td>
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<td></td>
<td></td>
<td>- learning self-management skills)*</td>
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<td></td>
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<td>- patients’ self-efficacy in communicating with providers*</td>
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<td></td>
<td></td>
<td>- rates of inpatient admissions*</td>
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<td></td>
<td></td>
<td>- rates of emergency room visits*</td>
<td></td>
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<td></td>
<td></td>
<td>- use of professional services*</td>
<td></td>
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<td></td>
<td></td>
<td>- perception of quality of life *</td>
<td></td>
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<td></td>
<td></td>
<td>**294 patients</td>
<td></td>
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<td>**Level 1</td>
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<tr>
<th></th>
<th>Clancy et al., 2003, 2008*</th>
<th>RCT 2003 showed factors that were associated with improved patient satisfaction and approached statistical significance among those attending group-shared visits:</th>
</tr>
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<tbody>
<tr>
<td>6.</td>
<td></td>
<td>- increased perception of better care coordination**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- increased perception of personalized attention**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- increased interaction and receipt of advice from other patients during group-shared visits**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- receipt of self-management education**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>**120 patients in 2003 study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>**186 patients in 2008 study</td>
</tr>
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<td></td>
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<td>**Level 1</td>
</tr>
</tbody>
</table>
- increased perception of providers having a community focus and cultural competence in group-shared visits patients**
  - *Statistically significant findings:
  - increased level of trust between patient and provider*
  - increased adherence to ADA standards of care*
  - RCT 2008 showed:
    - Reduced overall costs
    - Improved patient and physician perceptions of care
    - Improved adherence to ADA standards of care

<table>
<thead>
<tr>
<th>7. Wagner et al., 2001*</th>
<th>Prospective RCT to determine effects of group-shared visits found:</th>
<th>707 patients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient satisfaction</strong></td>
<td>patient satisfaction to be improved from 50% to 61% with use of group-shared visits and decreased in control group (usual care) dropped from 57% to 53% **</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of care</strong></td>
<td>statistically increased:</td>
<td></td>
</tr>
<tr>
<td><strong>Participation in patient education</strong></td>
<td>quality of care *</td>
<td></td>
</tr>
<tr>
<td><strong>Patient knowledge</strong></td>
<td>participation in patient education *</td>
<td></td>
</tr>
<tr>
<td><strong>Resource utilization</strong></td>
<td>general health status * statistically decreased:</td>
<td></td>
</tr>
<tr>
<td><strong>Healthcare costs</strong></td>
<td>rates of emergency room visits, admissions, and specialty visits*</td>
<td></td>
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<tr>
<td></td>
<td>overall decreased costs of care *</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Coleman et al., 1999*</th>
<th>RCT showed statistically significant effects of group-visits vs usual care on patient clinical outcome:</th>
<th>9 primary care practices 169 frail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biophysical effects</strong></td>
<td></td>
<td>Level 1</td>
</tr>
<tr>
<td>Patient satisfaction</td>
<td>Costs of care</td>
<td>Rates of emergency room use</td>
</tr>
<tr>
<td>----------------------</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>Decreased urinary incontinence at 1 2-month follow-up*</td>
<td>Non-significant improved effects in group-shared visits vs usual care:</td>
<td></td>
</tr>
<tr>
<td>• patient satisfaction</td>
<td>• costs of care</td>
<td>• rates of emergency room visits</td>
</tr>
<tr>
<td>• functional status</td>
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</tr>
</tbody>
</table>

9. Sadur et al., 1999* | RCT to determine effects of group-shared appointment vs usual care; found statistically significant + effects on: | 185 patients with diabetes mellitus | Level 1 |
| Patient satisfaction | • patient satisfaction * | | |
| Biophysical effects | • HbA1c levels * | | |
| Self-efficacy | • medication use* | | |
| Adherence to care recommendations/instructions | • frequency of blood glucose monitoring and control of glucose levels* | | |
| Resource utilization | • self-efficacy recognizing and treating abnormal glucose levels * | | |
| | • rates of hospitalization * | | |
| | • visits to non-physician provider * | | |

10. Beck et al., 1997* | RCT of chronically ill patients conducted over 1 year found statistically significant + effects of group-shared visits vs usual care: | 321 chronically ill patients | Level 1 |
| Patient satisfaction | • increase in patient satisfaction * | | |
| Resource utilization | • decrease in emergency room visits * | | |
| Access to care | • decrease in specialist visits* | | |
| Cost savings | • decrease in repeat hospital admissions* | | |

122
<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Findings</th>
<th>Level</th>
</tr>
</thead>
</table>
| 11. Dontje & Forrest, 2011                                           | Descriptive review of group-visit implementation at a midwestern university; goals of the implementation were to improve documentation of adherence to Diabetes metrics/guidelines, increase patient self-management knowledge and skill; findings included + effects of group-shared visits: | - Improved clinical outcomes, patient self-monitoring, provider adherence to standards  
- Better self-management  
- Improved knowledge and skill | Level 111 |
| Adherence to care instructions/guidelines                             |                                                                             |                                                                          |         |
| Self-management                                                       |                                                                             |                                                                          |         |
| Knowledge and skill                                                   |                                                                             |                                                                          |         |
| Clinical outcomes                                                     |                                                                             |                                                                          |         |
| 12. Trento et al. 2002, 2004*                                         | RCT to determine effects of group-shared visit vs usual care; statistically significant findings included: | - Biophysical (labs, less progression of retinopathy, stable HgA1C which was increased in control group, fewer hypoglycemic events which were increased in control)  
- Health behaviors increased compared to usual care decrease in health behaviors*  
- Better problem-solving ability*  
- Increased knowledge* | Level 1 |
<p>| Biophysical                                                          |                                                                             |                                                                          |         |
| Health behavior adherence                                             |                                                                             |                                                                          |         |
| Knowledge                                                             |                                                                             |                                                                          |         |
| Problem-solving                                                       |                                                                             |                                                                          |         |</p>
<table>
<thead>
<tr>
<th>13. Meehan et al. 2006</th>
<th>Descriptive study of group-shared appointments implementation in highly specialized bone transplant clinic; showed:</th>
<th>Not clear, implied 20</th>
<th>Level 111</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>• Increased efficiency via decreased clinician task repetition in care delivery</td>
<td></td>
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<tr>
<td></td>
<td>• Patients have more face-to-face time with clinicians</td>
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<tr>
<td>Patient and provider satisfaction</td>
<td>• Increased patient and provider satisfaction</td>
<td></td>
<td></td>
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<tr>
<td>Time to focus on patient educational, information, and psychosocial needs</td>
<td>• Extensive time for patient education</td>
<td></td>
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<tr>
<td>Quality of care</td>
<td>• Time to focus on psychosocial needs of patients</td>
<td></td>
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<tr>
<td>Provider productivity</td>
<td>• Increased time for information exchange and usage of interactive teaching techniques</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Improvement in quality of care</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Increased provider productivity</td>
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<tr>
<th>14. Jaber et al. 2006</th>
<th>Qualitative electronic review of literature related to group-visits from 1974 through 2004; databases used included Medline and PubMed; purpose of review was to summarize existing literature on the effects of group-shared medical visits in a variety of diseases/health conditions; Conclusions:</th>
<th>33 articles identified; 18 met inclusion criteria authors excluded purely descriptive studies without an evaluative component</th>
<th>Level 111</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient and provider satisfaction</td>
<td>• Group-visits literature supports + effects on patient and provider satisfaction</td>
<td></td>
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<tr>
<td>Quality of life</td>
<td>• + effects on quality of life</td>
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<tr>
<td>Quality of care</td>
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<tr>
<td>Self-efficacy</td>
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<tr>
<td>Resource utilization</td>
<td></td>
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<tr>
<td>Study</td>
<td>Year</td>
<td>Design</td>
<td>Findings</td>
</tr>
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<td>-------</td>
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<tr>
<td>Simmons &amp; Kapustin, 2011</td>
<td>Synthesis of a review of literature; data bases searched included CINAHL, Medline, Cochrane Review of Systematic Reviews, PubMed; findings:</td>
<td>Overall studies indicate patient and provider satisfaction with group-visit format</td>
<td>111</td>
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<tr>
<td></td>
<td></td>
<td>Potential to improve patient care outcomes</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Improve patient self-care management and skill</td>
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<td></td>
<td></td>
<td>Improved financial effects (decrease emergency room visits, hospitalization, and health care utilization with overall costs savings)</td>
<td></td>
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<td></td>
<td></td>
<td>Improve provider productivity and revenue</td>
<td></td>
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<tr>
<td>Osborn &amp; Wooley, 1981</td>
<td>Non-experimental study in mother-baby population showed:</td>
<td>increased patient satisfaction linked to interaction with others in the group-shared appointment</td>
<td>111</td>
</tr>
<tr>
<td>Housden et al., 2013</td>
<td></td>
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</tbody>
</table>

<p>| Figures title: | | +effects on quality of care | |
| | | +effects on resource utilization | |
| | | + mixed results on effects on self-efficacy | |</p>
<table>
<thead>
<tr>
<th>Figure</th>
<th>Reference</th>
<th>Study Details</th>
<th>Participants</th>
<th>Level</th>
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</thead>
<tbody>
<tr>
<td>18.</td>
<td>Edelman et al., 2010*</td>
<td>Biophysical changes</td>
<td>Blinded RCT to determine effects of group-shared appointments as compared to usual care; findings: • Improved HgbA1C levels in group-shared visit (not statistically significant) • Improved blood pressure control*</td>
<td>239 diabetic patients</td>
</tr>
<tr>
<td>19.</td>
<td>Bray et al., 2005</td>
<td>Patient and provider Perceptions</td>
<td>Descriptive non-experimental study conducted in rural region of North Carolina (5 clinics); found: • Patients and providers accepted care format • Improved provider productivity • Improved provider adherence to standards of Diabetes care (documentation of foot exam, ASA use, lipid testing) • Improved access to care</td>
<td>314 diabetic patients</td>
</tr>
<tr>
<td>20.</td>
<td>Looney-Hutchinson et al., 2009 *</td>
<td>Biophysical effects</td>
<td>RCT conducted at a hospital center; findings: • Significant decrease in HgbA1C* • Improved blood pressure control • Improved control of lipids</td>
<td>66</td>
</tr>
<tr>
<td>21.</td>
<td>Kirsch et al., 2007*</td>
<td>Biophysical effects</td>
<td>Quasi-experimental design to determine effects of group-visits vs usual care; conducted at VA center; findings showed: statistically significant: • Improvement in HgbA1C • Improvement in blood pressure control*</td>
<td>44</td>
</tr>
<tr>
<td>22.</td>
<td>Housden et al. 2013*</td>
<td>Systematic review and meta-analysis; included search of electronic database and grey</td>
<td>94 studies identified; 26 met</td>
<td>Level 1</td>
</tr>
<tr>
<td>Effects on biophysical parameters</td>
<td>Effects on quality of life</td>
<td>Patient knowledge</td>
<td>Self-management</td>
<td>Self-efficacy</td>
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<tr>
<td>literature from 1947 through 2012 to determine effects of group-shared visits; findings included:</td>
<td>• Statistically significant decrease in HgbA1C in those attending group-shared visits*</td>
<td>• Decrease in blood pressure (not significant finding)</td>
<td>• Increased quality of life</td>
<td>• + effect on patient knowledge</td>
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<td></td>
<td>• +effect on self-care management</td>
<td>• + effect on behavioral change</td>
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Conclusions of authors: group-shared visits should be more widely utilized
Appendix C

Figure 3.0

Group-Shared Medical Appointment Proceedings

- Patients arrive simultaneously for the scheduled group-shared appointment and are escorted together to the assigned conference room after front desk check-in and signing of HIPPA documents
- Medical assistant welcomes the patients to the group appointment and introduces the proceedings allowing time for patients to introduce themselves to each other in the group
  - Medical assistant explains the prepared patient packet of information
  - Nurse practitioner presents the didactic portion of the visit which includes all instructions for preoperative and immediate postoperative self-care and reviews contents of patient packet (approximately 20 minutes)
  - NP refers to the written postop instructions in packet
  - NP refers to picture of suture portals in packet
  - Durable medical equipment specialist explains and demonstrates use of cryotherapy device allowing patients to practice set up and use of the device (approximately 3 minutes)

While NP is instructing:
- Ortho-technician verifies with surgical coordinator receipt of medical and/or specialty clearances, labs, and EKG
- If all clearances not present, calls to obtain are made

While durable medical equipment is demonstrated:
- Ortho-technician and x-ray tech verify receipt of all knee x-rays and MRI’s with reports
- Ortho-technician verifies that all necessary components of the preoperative patient chart are in designated chart for use during surgery

While NP is instructing:
- Ortho-technician verifies with surgical coordinator receipt of medical and/or specialty clearances, labs, and EKG
- If all clearances not present, calls to obtain are made

While durable medical equipment is demonstrated:
- Ortho-technician and x-ray tech verify receipt of all knee x-rays and MRI’s with reports
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- Nurse practitioner presents the didactic portion of the visit which includes all instructions for preoperative and immediate postoperative self-care and reviews contents of patient packet (approximately 20 minutes)
- NP refers to the written postop instructions in packet
- NP refers to picture of suture portals in packet
- Durable medical equipment specialist explains and demonstrates use of cryotherapy device allowing patients to practice set up and use of the device (approximately 3 minutes)
Figure 3.0 Continued

Group-Shared Medical Appointments Proceedings

- Nurse practitioner leads interactive discussion and/or answers patient questions related to the given instructions for self-care and surgery
- Patients practice putting on cryotherapy device and elevating their knee above heart (approximately 8 to 10 minutes)

Ortho-technician is overseeing the remaining group attendees while NP is doing individual portion of visit:

- Answers questions as needed, provides patients with reinforcement and clarification of instructions - continues practice of skills
- Directs patients to call during this time to make physical therapy appointments to begin 7 days postop
- Provides patients with physical therapy prescriptions
- Ensures patients have a first and second postop follow up visit scheduled
- Ensures transportation and caregiver identified

- Ortho-tech demonstrates how to ice and elevate knee/leg on pillows with the knee over the level of heart
- Refers patient to the picture of icing and elevating provided in patient packet (approximately 3 minutes)

- Nurse practitioner takes first patient out of group for private focused orthopedic physical exam and review of patient history (6 minutes allotted per patient, maximum of 36 minutes of nurse practitioner time)
- Nurse practitioner performs exam and enters prescriptions in medical record for opioid pain medication and NSAID
**Figure 3.0 Continued**

*Group-Shared Medical Appointments Proceedings*

- NP completes documentation on all patients

- Ortho-technician and NP closes and ends group-shared appointment and escorts patients to check-out

- NP completes documentation on all patients

- Patient returned to the group and next patient taken for individual time with NP
- Continues in this manner until all patients (maximum of 6) are seen

- Once all members of the group-visit have been seen for individual component of the visit NP re-joins the group and verifies with the ortho-technician that all tasks are completed
- NP available for questions

- Ortho-technician escorts entire group to physical therapist for instruction on leg lifts

- Ortho-technician asks those participating to complete preoperative survey
- Ortho-technician and NP closes and ends group-shared appointment
- Ortho-technician escorts patients to check-out
Appendix D

Figure 4.0

Proceedings for Inviting Participation and Scheduling

- Surgical coordinator schedules patient for knee arthroscopy
- Surgical coordinator explains that preoperative appointment is needed
  - Explains group-shared medical appointment
  - Gives patient choice between attending a group-shared appointment or an individual 20-minute appointment
- Patient arrives for the scheduled group-shared medical appointment
- Patient arrives for scheduled 20-minute individual appointment
- Trained ortho-technician addresses the group explains study and invites patients to participate
- Trained ortho-technician explains study and invites patient to participate
- Trained ortho-technician obtains informed consent from those willing to participate
- Preoperative appointment commences
- At completion of the appointment those choosing to participate complete survey
  - Those declining participation do so by not completing survey
Appendix E

Figure 5.0

Copy of Institutional Review Board Approval
RESEARCH CONSENT FORM

Subject Name

Date

Group Visits for the Delivery of Preoperative Education to Knee Arthroscopy Patients

Title of Study

Kimberly A. Stauffer M.S., C.R.N.P

Principal Investigator

FWA00004459

INVITATION TO PARTICIPATE

Our nurse practitioner, Kimberly A. Stauffer M.S., C.R.N.P is pursuing a Doctorate in Nursing Practice (DNP) from the Catholic University of America. As part of the doctoral program, she is conducting a study related to the method of the delivery of preoperative patient education, instructions, and care for patients that are planning to undergo an outpatient knee arthroscopy. You are cordially invited to participate in this study/project.

PURPOSE

The primary purpose of this project is to compare the effect of using a group visit/class, physical shared medical appointment format, to that of a 20-minute traditional individual office appointment type for the delivery of preoperative education. The purpose of this consent is to describe/inform you of the study/project proceedings, and to obtain your consent to participate.

DESCRIPTION OF THE PROJECT/STUDY and PROCEDURES

As part of usual care, all of our patients are required to be seen by our nurse practitioner for a preoperative visit prior to undergoing knee arthroscopy. Traditionally, we have only offered an individual office appointment format for the preoperative visit. As part of this project, we are also offering group visit/class appointments for the preoperative visit. The educational content and instructions provided is the same for both the group visit and the individual office visit.

Specifically, this project/study involves conducting a pilot of comparing the group visits format vs individual visits format to determine the effects delivery structure has on: a) patients’ perceptions of clinical care services, and the organization of the preoperative preparation, patient education delivery, and coordination of care—basically (patient satisfaction); b) patients’ ability to gain knowledge related to self-care; c) patients’ adherence to instructions for self-management; d) the number of emergency room visits during the first seven to 10 days following surgery; e) the number of unscheduled office visits.

Subject’s Initials __________ Date __________
visits during the first 10 days after surgery; f) the number of calls to the office following the preop visit and through the first postop visit for clarification of instructions/concerns.

Methodology

A sample size of 20 participants from the group visit preoperative appointment type and 20 participants from the individual preoperative appointment types will be obtained. The effects of the use of the group/class appointment vs. the individual appointment format will be compared through analysis of very short surveys/quiz responses from the sample of consenting participants. The surveys/quiz responses will take approximately 2 minutes to complete. The surveys/quiz responses will be administered by the trained assistant to consenting patients, immediately following the preop visits and as part of the postop visits.

All surveys/quiz responses will have demographic information collected on them which includes: self-identified gender, self-identified race/ethnicity, and age in years. The demographic information will be used for descriptive purposes. To allow for comparison and analysis of the responses between groups, all surveys/quiz responses will be pre-marked with a “G” to represent a subject’s participation in a group type preop appointment or an “I” to represent participation in an individual preoperative appointment type.

Once all data from the preoperative and postoperative survey questions/quiz responses have been collected, the data will be analyzed by a statistician in an effort to compare the patient responses collected from those attending the group visit/class preoperative appointments to those patients attending the individual appointment formats for the preoperative visit.

The results obtained from the analysis of the surveys/quiz responses will be used for internal office purposes to enhance the quality of care delivery. This will include use for administrative, educational, and informational purposes.

Your participation in this project/study is completely voluntary. If you have any questions related to the project/study, the nurse practitioner investigator will be immediately available to respond. After all of your questions have been answered and you have read and understand this consent form, if you choose to participate in the study/project, please sign this consent form indicating your agreement to participate. If you choose not to participate, this is accomplished simply by not signing this consent form.

If you choose to participate, at any time, you as a patient may withdraw your participation in the study/project and may choose to not answer any or all survey/quiz questions. Your choice to participate, answer survey/quiz questions, or decline to answer survey/quiz questions will not impact your patient care.

Subject’s Initials_________ Date__________
Procedure for protecting the anonymity of the subjects

No patient identifying information will be collected on any surveys/quizzes. This means that your name, social security number, or birthdate will not be on the surveys/quizzes. The surveys will not be connected to your medical record. After you complete the surveys/quizzes, there will be no way for your provider to identify your survey/quiz responses to you as an individual.

DISCOMFORTS AND RISKS

There is no known or anticipated direct risk to your preoperative or postoperative care that would arise as a result of your participation in this project or from your decision to decline participation.

RISKS DURING PREGNANCY

Not applicable (no pregnant subjects are included in this study)

EXPECTED BENEFITS

There are no known /expected benefits to you for participation in this project or from your decision to decline participation.

WITHDRAWAL FROM THE STUDY

You may withdraw your participation in this project at any time by simply not completing surveys at the preop or postop visits. You may choose to not answer any questions on any surveys at any time.

COSTS AND PAYMENTS

There is no additional cost to you as a patient to participate in this project. Your insurance company will be billed for the care you receive as usual.

CONTACTS

Kimberly A. Stauffer, M.S., C.R.N.P. principal investigator

RESEARCH SUBJECT RIGHTS: I have read or have had read to me all of the above.

_________________________ has explained the study to me and answered all of my questions. I have been told of the risks or discomforts and possible benefits of the study. I understand that I do not have to take part in this study, and my refusal to participate will involve no penalty or loss of rights to which I am entitled. I may withdraw from this study at any time without penalty or loss of benefits to which I am entitled.

Subject's Initials _________ Date___________
RESEARCH CONSENT FORM

I understand that any information obtained as a result of my participation in this research study will be kept as confidential as legally possible.

The results of this study may be published, but my records will not be revealed unless required by law.

NOTE:

If I have any questions about the conduct of this study or my rights as a subject in this study, I have been told I can call The Catholic University of America, Office of Sponsored Programs 202-319-5218

I understand my rights as a research subject, and I voluntarily consent to participate in this study. I understand what the study is about and how and why it is being done. I will receive a signed copy of this consent form.

Signature of Subject Date

Signature of Subject's Representative* Date Subject's Representative (Print)

Signature of Witness Date Witness (Print)

Signature of person obtaining consent** Date Signature of Principal Investigator

*Only required if subject is not competent.
**Only required if not investigator.

Subject's Initials Date
Appendix F

Figure 6.0a

Preoperative Survey

Purpose: To determine patients’ perceptions of the clinical care services and the organization of the preoperative preparation, patient education delivery, and coordination of care

Type of Visit: Group Individual

Demographics:

Self-identified gender:

Self-identified race/ethnicity:

Age:

How are we doing? Please circle one answer for each item.

<table>
<thead>
<tr>
<th>Treat you kindly</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listen and explain</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>See you promptly</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>Well organized</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
</tbody>
</table>

How are you today? (Past 24 hours) Please circle one response.

<table>
<thead>
<tr>
<th>Pain or discomfort</th>
<th>None</th>
<th>A little</th>
<th>Quite a lot</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling low or worried</td>
<td>None</td>
<td>A little</td>
<td>Quite a lot</td>
<td>Extreme</td>
</tr>
<tr>
<td>Limited in what I can do</td>
<td>None</td>
<td>A little</td>
<td>Quite a lot</td>
<td>Extreme</td>
</tr>
<tr>
<td>Require help from others</td>
<td>None</td>
<td>A little</td>
<td>Quite a lot</td>
<td>Extreme</td>
</tr>
</tbody>
</table>
Preoperative Survey Continued:

Please circle one answer to the following questions.

1. After surgery, how long will you take aspirin to prevent blood clots in your legs?
   A. 1 week
   B. 2 weeks
   C. 3 weeks

2. After surgery, when will you start physical therapy with a therapist?
   A. 2 days after surgery
   B. 1 week after surgery
   C. 3 weeks after surgery

3. After surgery, when will you remove your surgical dressing?
   A. 24 hours after surgery
   B. 48 hours after surgery
   C. 72 hours after surgery

How likely are you to recommend this practice to friends or family if they need similar care or treatment? Please circle one response.

   Extremely likely
   Neither likely nor unlikely
   Unlikely
   Extremely Unlikely
   Don’t know
Appendix F

Figure 6.0b

Postoperative Interview/Check-List

Purpose: To measure patients’ abilities to gain knowledge related to self-care as well as adherence to instructions for self-management. To be completed by the provider at the first postoperative visit.

Type of Visit: Group Individual

Demographics

Self-identified gender:

Self-identified race/ethnicity:

Age:

Interview Questions:

1. Postoperatively, did the patient continue to take the Aspirin 325 mg 1 daily for DVT prophylaxis as instructed? Yes No

2. Postoperatively, did the patient remove the surgical dressing 48 hours after surgery and perform appropriate suture line care? (shower with soap and water, rinse, dry, apply Betadine solution, and Band-Aids) Yes No

3. Prior to surgery, did the patient schedule their physical therapy to begin 1 week after surgery and for 3 times per week, as instructed? Yes No

4. Did the patient go to any emergency room or urgent care facility within 7 to 10 days of surgery for any reason? Yes No
Figure 6.0b

Postoperative Interview/Check-List Continued:

If yes, how many times and why was the patient seen at the emergency room or urgent care facility?

5. Did the patient come in for any un-scheduled office visits during the first 10 days after surgery?  Yes  No

If so, how many and why?

6. Did the patient call the office following pre-operative visit through the first post-operative visit for clarification or instructions/concerns?  Yes  No

If yes, how many times and why?
Appendix G

Table 1.0

Demographic Characteristics of Sample

<table>
<thead>
<tr>
<th></th>
<th>Individual</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=28</td>
<td>N=20</td>
<td></td>
</tr>
<tr>
<td>Age (Mean, SD)</td>
<td>55.4 11.0</td>
<td>57.4 12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Years</th>
<th>SD</th>
<th>Years</th>
<th>SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Mean, SD)</td>
<td>55.4</td>
<td>11.0</td>
<td>57.4</td>
<td>12</td>
<td>.57</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td>42.9</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>57.1</td>
<td>13</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>20</td>
<td>71.4</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>8</td>
<td>28.6</td>
<td>6</td>
<td>30</td>
</tr>
</tbody>
</table>

Note. P < .05 indicates statistically significant finding. No statistically significant differences on demographic characteristics found between study groups.
### Appendix H

#### Table 2.0

*The howRwe Survey: Physical and Mental Characteristics of Sample*

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Group</td>
</tr>
<tr>
<td>N=28</td>
<td>N=20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Individual N=28</th>
<th></th>
<th></th>
<th>Group N=20</th>
<th></th>
<th></th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pain/Discomfort</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>6</td>
<td>21.4</td>
<td>3</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Little</td>
<td>15</td>
<td>53.6</td>
<td>15</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quite a Lot</td>
<td>6</td>
<td>21.4</td>
<td>2</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme</td>
<td>1</td>
<td>3.6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>.45</td>
</tr>
<tr>
<td><strong>Feeling Low or Worried</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>None</td>
<td>19</td>
<td>67.9</td>
<td>14</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Little</td>
<td>9</td>
<td>32.1</td>
<td>5</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quite a Lot</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Extreme</td>
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<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>.51</td>
</tr>
<tr>
<td><strong>Limited in What I can do</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>None</td>
<td>4</td>
<td>14.3</td>
<td>7</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Little</td>
<td>16</td>
<td>57.1</td>
<td>12</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quite a Lot</td>
<td>6</td>
<td>21.4</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme</td>
<td>2</td>
<td>7.1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>.13</td>
</tr>
<tr>
<td><strong>Require Help</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>18</td>
<td>64.3</td>
<td>17</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Little</td>
<td>8</td>
<td>28.6</td>
<td>3</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quite a Lot</td>
<td>2</td>
<td>7.1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>.30</td>
</tr>
</tbody>
</table>

*Note.* Findings were measured at the time of the preoperative patient education appointment. N = number of participants responding in each answer category. p < .05 indicates statistically significant finding.
Appendix I

Table 3.0

The howRwe Tool: Perceptions of Care Delivery

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>Individual (N = 28)</th>
<th>Group (N = 20)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Clinical Aspects of Care Delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treat You Kindly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>25</td>
<td>89.3</td>
<td>20</td>
</tr>
<tr>
<td>Good</td>
<td>3</td>
<td>10.7</td>
<td>0</td>
</tr>
<tr>
<td>Fair</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Listen and Explain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>27</td>
<td>96.4</td>
<td>20</td>
</tr>
<tr>
<td>Good</td>
<td>1</td>
<td>3.6</td>
<td>0</td>
</tr>
<tr>
<td>Fair</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Organizational Aspects of Care Delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See You Promptly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>20</td>
<td>71.4</td>
<td>13</td>
</tr>
<tr>
<td>Good</td>
<td>6</td>
<td>21.4</td>
<td>7</td>
</tr>
<tr>
<td>Fair</td>
<td>2</td>
<td>7.1</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
**Well Organized**

<table>
<thead>
<tr>
<th></th>
<th>No.</th>
<th>%</th>
<th>Score</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>24</td>
<td>85.7</td>
<td>18</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>3</td>
<td>10.7</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>1</td>
<td>3.6</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td></td>
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<tr>
<td></td>
<td></td>
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<td>1.00</td>
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</table>
Appendix J

Table 4.0
Quiz: Knowledge Acquisition and Immediate Retention of Information

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>Individual (N=28)</th>
<th>Group (N=20)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>Aspirin Use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 week</td>
<td>4.0</td>
<td>14.3</td>
<td>3.0</td>
</tr>
<tr>
<td>2 weeks</td>
<td>3.0</td>
<td>10.7</td>
<td>1.0</td>
</tr>
<tr>
<td>*3 weeks</td>
<td>21.0</td>
<td>75.0</td>
<td>16.0</td>
</tr>
<tr>
<td><strong>Start PT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 days</td>
<td>0</td>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td>*1 week</td>
<td>28.0</td>
<td>100.0</td>
<td>19.0</td>
</tr>
<tr>
<td>3 weeks</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Remove Dressing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 hours</td>
<td>1.0</td>
<td>3.6</td>
<td>0</td>
</tr>
<tr>
<td>*48 hours</td>
<td>27.0</td>
<td>96.4</td>
<td>20.0</td>
</tr>
<tr>
<td>72 hours</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Correct answer on quiz.
No statistically significant findings at p<.05
Appendix K

Table 5.0

howRwe Responses: Patient Satisfaction

*How likely are you to recommend this practice to friends or family if they needed similar care or treatment?*

<table>
<thead>
<tr>
<th></th>
<th>Individual (N=28)</th>
<th>Group (N=20)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Extremely Likely</td>
<td>21</td>
<td>75.0</td>
<td>16</td>
</tr>
<tr>
<td>Likely</td>
<td>7</td>
<td>25.0</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note: p < .05 indicates a statistically significant finding*

*Other possible responses on this item were ‘neither likely nor unlikely’, ‘unlikely’, ‘extremely unlikely’, ‘don’t know’. No participant answered using these choices.*
Appendix L

Table 6.0

Answered Preoperative Quiz Items Correctly and Adhered to Instruction Postoperatively

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>Individual (N=28)</th>
<th>Group (N=20)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Aspirin for 3 weeks postop and followed instruction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>*1</td>
<td>4.8</td>
<td>*1</td>
</tr>
<tr>
<td>Yes</td>
<td>20</td>
<td>95.2</td>
<td>15</td>
</tr>
<tr>
<td>Dressing change at 48 hours after surgery and followed instruction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>3.7</td>
<td>0</td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>96.3</td>
<td>20</td>
</tr>
<tr>
<td><strong>PT to start 1 week postop and scheduled PT to start prior to surgery as instructed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>35.7</td>
<td>1</td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>64.3</td>
<td>19</td>
</tr>
</tbody>
</table>
*Of those who answered correctly, that they should take aspirin for 3 weeks after surgery, two people who did not take aspirin didn’t do so because they were allergic to it.

**A statistically significant larger number of the intervention group participants answered the quiz item related to PT correctly and scheduled their PT prior to surgery as instructed.
Appendix M

Table 7.0

Comparison of Healthcare Resource Utilization Between Appointment Types

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>Individual (N=28)</th>
<th>Group (N=20)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Went to emergency room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>28</td>
<td>19</td>
<td>.42</td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Unscheduled office visits postop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>20</td>
<td>1.00</td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Called office</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>18</td>
<td>.27</td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

No statistically significant results on these items
Appendix N

Table 8.0

Reasons for Calls to the Office After the Preoperative Visit

<table>
<thead>
<tr>
<th>Physical Shared Medical Appointment Group (2 calls)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Report Flu symptoms to surgeon</td>
</tr>
<tr>
<td>• Report acute swelling near one of the suture portals concerned about infection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>20-minute Individual Appointment Group (7 calls)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Schedule earlier postoperative appointment-concerned about pain, swelling, motion 5 days postoperatively</td>
</tr>
<tr>
<td>• Clarification of how to take pain medication and anti-inflammatory and Aspirin postoperatively</td>
</tr>
<tr>
<td>• To check whether cardiac clearance for surgery had been received</td>
</tr>
<tr>
<td>• To ask for a pain medication prescription (not received at preoperative visit)</td>
</tr>
<tr>
<td>• To ask for anti-inflammatory prescription (not received at preoperative visit)</td>
</tr>
<tr>
<td>• To report anti-thrombotic hose size incorrect</td>
</tr>
<tr>
<td>• No reason recorded</td>
</tr>
</tbody>
</table>
Table 9.0

Comparison of the Structure of the Preoperative Education Appointments

**Group-Physical Shared Medical Appointment (Intervention Group)**

- 90-minute appointment
- Team of health care staff representing each inter-office department present and/or interacting with patient during the appointment for a longer period (nurse practitioner provider, ortho-tech assistant, x-ray technician, surgical coordinator, physical therapist, durable medical equipment specialist)
- Multiple patients (3 to 5) and significant others present at the same time
- Opportunity for dialogue between multiple patients planning to undergo the same surgical procedure
- Opportunity for patients that have previously undergone knee arthroscopy to share experience with those who have not undergone the procedure in the past during the visit
- Time to *practice* skills necessary for home self-care during the preoperative visit

**Individual Traditional Appointment (Usual Care Group)**

- 20-minute appointment
- Patient with the nurse practitioner provider for 15 minutes, and with the ortho-tech assistant for 5 minutes at separate times
- Some other members of the health care team may or may not interact with the patient at the preop visit and if so for a very brief period
- Other patients and their significant others are not present
- One patient seen at the allotted time and significant other may or may not be present
- No opportunity for dialogue with other patients during the preoperative visit
- No time to practice skills for home self-care during the preoperative visit
Appendix P

Table 10.0

Tasks Performed at the Preoperative Visit for Knee Arthroscopy

- Determine patient’s status and readiness for surgery
- Review current symptoms and perform focused orthopedic physical exam
- Review past medical and surgical history including anesthesia history
- Ensure receipt of medical clearance from primary care provider including required blood work from the lab and EKG
- Ensure receipt of clearances from specialty providers
- Ensure availability of MRI and x-ray reports and films for use at surgery
- Review and reconcile medications
- Provide prescriptions for pain medications, anti-inflammatory medications, and Aspirin
- Provide durable medical equipment and teach patient how to use
- Provide patient with prescription for physical therapy and a list of therapy facilities
- Teach patients how to use prescribed temporary medications safely and properly
- Teach patients how to manage pain and swelling
- Teach patient about cryotherapy
- Teach patient how to avoid/handle potential side effects of anesthesia such as nausea and vomiting
- Teach patients approaches to help prevent complications such as infection, deep vein thrombosis, loss of motion, atelectasis/pneumonia, and medication side effects
- Teach patients how to do home exercises
- Teach patients how to take care of their suture portals
- Explain the procedure being done
- Review potential risks and benefits of the procedure
- Help patients to develop realistic expectations related to the postoperative period through full recovery
Appendix Q

Table 11.0

*Increased Access to Care Created by Use of 90-minute Group-Shared Medical Appointments for preoperative visits* +

<table>
<thead>
<tr>
<th>Patients in Group-Visit</th>
<th>Extra Appointments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>break-even</td>
</tr>
<tr>
<td>6</td>
<td>1 extra appointment</td>
</tr>
<tr>
<td>7</td>
<td>2 extra appointments</td>
</tr>
<tr>
<td>8</td>
<td>3 extra appointments</td>
</tr>
<tr>
<td>9</td>
<td>4 extra appointments</td>
</tr>
<tr>
<td>10</td>
<td>5 extra appointments</td>
</tr>
</tbody>
</table>

*And so on* ………………………..

+Assuming usual scheduling of 20-minutes of time for each individual appointment and typical appointment slots from 9:00 to 12:20 a.m. and 1:20 to 4:20 p.m. (10 patient slots in the a.m. and 10 in the p.m. or a total of 20 patients per day
Appendix R

Table 12.0

Medicare reimbursements typically paid and potential increased revenue at project site

**Evaluation and management codes**

| Code     | Description                          | Revenue (4 visits/mo) | Additional Revenue  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>99213</td>
<td>established patient office visit</td>
<td>$52.77</td>
<td>$211.08***</td>
</tr>
<tr>
<td>99203</td>
<td>new patient office visit</td>
<td>$88.98</td>
<td>$355.92 ****</td>
</tr>
</tbody>
</table>

**CPT codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Revenue (4 visits/mo)</th>
<th>Additional Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>20610</td>
<td>*steroid injection</td>
<td>$55.12</td>
<td>$220.96 *****</td>
</tr>
<tr>
<td>73030</td>
<td>*shoulder x-rays (2 views)</td>
<td>$25.40</td>
<td>$101.60*******</td>
</tr>
<tr>
<td>73564</td>
<td>**knee x-rays (4 views)</td>
<td>$34.28</td>
<td>$137.12************</td>
</tr>
</tbody>
</table>

Assuming 2 group-shared medical appointments for preoperative education per month and 2 accessible and filled office visits per time group-appointment sessions are held

*Patients with shoulder pain in this setting typically receive steroid injection and obtain in-office x-rays at a new patient visit; at follow-up visit patients often receive a repeat steroid injection

**Patients with knee pain in this setting typically obtain in-office x-ray and may or may not receive steroid injection depending upon the nature of the clinical problem

***$633.24 per fiscal quarter or $2,532.96 per year additional reimbursement if 4 extra established patient visits

****$1,067.76 per fiscal quarter or $4,271.04 per year additional reimbursement if 4 extra new patient visits

*****$661.44 per fiscal quarter or $2,645.762 per year additional reimbursement if 4 extra steroid injections per year

******$304.80 per fiscal quarter or $1,219.20 per year additional reimbursement if 4 extra sets of shoulder x-rays completed

154
$411.36 per fiscal quarter or $1,645.44 per year additional reimbursement if 4 extra set of knee x-rays completed
Appendix S

Table 13.0

Preoperative Instructions and Potential Adverse Surgical Outcome Prevented

<table>
<thead>
<tr>
<th>Preoperative instruction</th>
<th>Adverse surgical outcome to prevent</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Take Aspirin</td>
<td>Deep Vein Thrombosis/Pulmonary Embolus</td>
</tr>
<tr>
<td>• Dressing and incision Care</td>
<td>Surgical site infection/deep joint infection</td>
</tr>
<tr>
<td>• Schedule <em>timely</em> physical therapy</td>
<td>Joint contracture poor range of motion</td>
</tr>
<tr>
<td></td>
<td>Excessive muscle atrophy</td>
</tr>
<tr>
<td></td>
<td>Loss of functional mobility</td>
</tr>
<tr>
<td></td>
<td>Excessive swelling and pain</td>
</tr>
<tr>
<td></td>
<td>Slow return to normal activities/work</td>
</tr>
</tbody>
</table>