

IMPLEMENTATION OF SHARED MEDICAL APPOINTMENTS TO ADDRESS
CARDIOVASCULAR DISEASE RISK IN PATIENTS WITH METABOLIC SYNDROME

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Abstract

Metabolic syndrome is a condition in which the components – central adiposity, insulin resistance, atherogenic dyslipidemia, and elevated blood pressure - confer increased cardiovascular morbidity and mortality. A pilot clinical practice improvement project was developed and implemented using shared medical appointments to address cardiovascular disease risk in adult patients at a rural health care clinic on the southern Kenai Peninsula, Alaska who met the diagnostic criteria for metabolic syndrome. Statistically significant improvement in self-reported minutes of exercise was demonstrated for the nominal group of participants. Participants were at least as satisfied or more satisfied with shared medical appointments compared to traditional medical appointments. Limitations aside, the Doctor of Nursing Practice (DNP) project demonstrated the feasibility of using shared medical appointments to address cardiovascular disease risk in this patient population. There is need for additional research into the “physiology,” or curricular and other structural and procedural elements of shared medical appointments for patients with metabolic syndrome that would afford decreased cardiovascular disease risk. The Doctor of Nursing Practice (DNP) project goals were in accordance with the overarching aims of the National Quality Strategy that build on the Institute for Healthcare Improvement’s Triple Aim – cost-effective, patient-centered, quality care that improves health.

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Nomenclature

<i>n</i>	designates the number of members of sample or population
<i>p</i>	designates probability value
<i>Z</i>	designates standard score
AAFP	American Academy of Family Physicians
AACN	American Association of Colleges of Nursing
ACSM	American College of Sports Medicine
ApoB	Apolipoprotein B
ACC	American College of Cardiology
ADA	American Diabetes Association
AHA	American Heart Association
AHRQ	Agency for Healthcare Research and Quality
AMA	American Medical Association
BMI	body mass index
CHD	coronary heart disease
CMA	certified medical assistant
CMS	Centers for Medicare and Medicaid Services
CVD	cardiovascular disease
DM	diabetes mellitus, or diabetes
DNP	Doctor of Nursing Practice
E&M	evaluation and management
EHR	electronic health record
EIM	Exercise is Medicine
FPG	fasting plasma glucose
HDL-C	high density lipoprotein-cholesterol
HIPAA	Health Insurance Portability and Accountability Act
HMC	Homer Medical Center
HTN	hypertension
IDF	International Diabetes Federation
IRB	Institutional Review Board
JBS	Joint British Society
LDL-C	low density lipoprotein-cholesterol
MetS	metabolic syndrome
NHANES	National Health and Nutrition Examination Survey
non-HDL-C	non-high density lipoprotein cholesterol (Total cholesterol – HDL-C)
NQS	National Quality Strategy
PCNA	Preventive Cardiovascular Nurses Association
PPRNet	Primary (Care) Practices Research Network
PSMA	physicals shared medical appointment
SMA	shared medical appointment
SON	School of Nursing
SPH	South Peninsula Hospital
QCDR	Qualified Clinical Data Registry
UAA	University of Alaska Anchorage

Overview of the Problem

Metabolic syndrome is a condition in which the components – central adiposity, insulin resistance, atherogenic dyslipidemia, and elevated blood pressure - confer increased cardiovascular morbidity and mortality. Identifying patients with metabolic syndrome doubles the prediction of cardiovascular disease, and because the components can be reversed, recognition then facilitates an effective treatment approach (Han & Lean, 2015) that is well-suited for management by the primary care clinician. The purpose of this Doctor of Nursing Practice (DNP) project was to develop and implement a pilot clinical quality improvement program using shared medical appointments to address cardiovascular disease risk in adult patients at a rural health care clinic on the southern Kenai Peninsula, Alaska, who met the diagnostic criteria for metabolic syndrome.

Background

Endocrine and biochemical abnormalities seen in metabolic syndrome include glucose intolerance, insulin resistance, hypercortisolism, hypertriglyceridemia, reduced HDL cholesterol (HDL-C), and raised small dense LDL cholesterol (LDL-C). Overt pathophysiological conditions include type 2 diabetes, coronary heart disease, polycystic ovarian syndrome, obesity, hypertension, stress, depression, and non-alcoholic steatohepatitis (NASH) (Han & Lean, 2015). Metabolic syndrome includes complex disease processes, but the core metabolic abnormality is considered to be insulin resistance (Han & Lean, 2015; Eckel, Alberti, Grundy & Zimmet, 2010). Patel et al. (2014) provided an understandable synopsis of the pathogenesis of metabolic syndrome in their article, *Metabolic Syndrome and its Impact on Cardiovascular Disease*, printed in a 2014 issue of the *Journal of Metabolic Syndrome*.

In clinical practice, obesity is the widely recognized phenotype, but it is unclear if obesity is a cause or consequence of metabolic syndrome (Falkner & Cossrow, 2014). Han and Lean (2015) have suggested that the cluster of factors that define metabolic syndrome are revealed by weight gain and age. Genetic and environmental factors play a part in metabolic syndrome; besides genetic mutations that have been associated with metabolic syndrome, it is recognized that such environmental factors as a Westernized lifestyle that is high in dietary fat and physical inactivity are contributive (Han & Lean, 2015). Regardless of whether obesity is causative or the result of metabolic syndrome, interventions focused on weight loss through diet, exercise, and/or pharmacologic means can effectively reduce cardiovascular disease risk.

Clinical Significance

The International Diabetes Federation has suggested that metabolic syndrome is driving the global epidemics of type 2 diabetes and cardiovascular disease. IDF prevalence estimates suggest 20-25% of the world's population is affected, and that affected persons are twice as likely to die from a heart attack or stroke and three times as likely to have a heart attack or stroke compared to persons without metabolic syndrome (IDF, n.d.). National Health and Nutritional Examination Survey (NHANES) data from 2003-2012 estimated the overall prevalence of metabolic syndrome in the United States was 33%, compared to 34% between 1999-2006 (Aguilar, Bhuket, Torres, Liu, & Wong, 2015). Aguilar et al. (2015) have suggested that greater awareness of metabolic syndrome and its health consequences may be responsible for improvements in optimization of treatment of metabolic syndrome components that have resulted in stability instead of worsening of prevalence in the United States in recent years. Even still, prevalence estimates suggest the need for additional intervention.

Current Clinical Family Practice

At the South Peninsula Hospital-owned Homer Medical Center outpatient clinic there are few patients whose problem list includes a diagnosis of metabolic syndrome, yet there are many who meet the diagnostic criteria for metabolic syndrome. Formal recognition and diagnosis make metabolic syndrome amenable to intervention and resultant health improvement (Han & Lean, 2015). Clinical inquiry may be defined as “a process in which clinicians gather data together using narrowly defined clinical parameters to appraise the available choices of treatment for the purpose of finding the most appropriate choice of action” (Horowitz, Singer, Makuch, & Viscoli, 1996, as cited in Melnyk & Fineout-Overholt, 2015, p. 27). Formulating a clinical question in a structured way, such as in a PICOT format, for example, can direct evidence-based practice.

PICOT Question

PICOT is an acronym for the components of a clinical question: patient population (P), intervention (I), comparison intervention or issue of interest (C), outcome (O), and timeframe, or time that it takes for the intervention to achieve the outcome (T) (Stillwell, Fineout-Overholt, Melnyk, & Williamson, 2010). The PICOT question for this project inquiry follows: In adult patients at Homer Medical Center who met the diagnostic criteria for metabolic syndrome (P), do shared medical appointments (I) carried out over the course of six weeks (T), decrease cardiovascular disease risk (O)? A comparison (C) was not indicated for this project inquiry.

Population (P). Adult patients at Homer Medical Center who met diagnostic criteria for metabolic syndrome were identified as the population of interest. The criteria that were used for diagnosis are those outlined in the paper, *Joint Scientific Statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood*

Institute: American Heart Association; World Heart Federation; International Atherosclerosis Society; and International Association for the Study of Obesity (Alberti et al., 2009). This definition for clinical diagnosis of metabolic syndrome specifies three of the following five criteria: elevated waist circumference (population- and country-specific definitions, but for these purposes defined as ≥ 94 cm male, ≥ 80 cm female); elevated triglycerides greater than 150 mg/dL, or history of treatment for same; reduced HDL-cholesterol (C) less than 40 mg/dL male or less than 50 mg/dL female, or history of treatment for reduced HDL-C; elevated blood pressure greater than 130/85 mm Hg or treatment for previously diagnosed hypertension; and elevated fasting glucose greater than 100 mg/dL or drug treatment for elevated glucose (Alberti et al., 2009). According to this definition, abdominal obesity is not a prerequisite for a diagnosis of metabolic syndrome as it is according to the International Diabetes Federation. When body mass index is greater than 30 kg/m², Han and Lean (2015) have suggested that one may assume waist circumference is above the treatment level. Most patients with diabetes meet these criteria for metabolic syndrome (Alberti et al., 2009). Alberti et al. (2009) nicely summarized the various diagnostic criteria for metabolic syndrome that have been suggested over the years by different organizations, such as the IDF and American Heart Association/National Heart, Lung and Blood Institute. These criteria for metabolic syndrome were chosen over the more widely used and recognized Adult Treatment Panel (ATP) III of the National Cholesterol Education Program (NCEP) because they are less exclusive, with criteria that comprise lower cut-offs for waist circumference and fasting plasma glucose. The criteria are directed toward cardiovascular disease prevention and diabetes prevention (Han & Lean, 2015). Note that all of the individual components are generally below treatment thresholds, but combined in metabolic syndrome,

confer an elevated cardiovascular disease risk. Metabolic syndrome confers a five-fold increased risk for type 2 diabetes (Alberti et al., 2009).

Intervention (I). Shared medical appointments took place over the course of six weeks and included patient education and counseling, peer support, and individual patient assessment and treatment that included lifestyle interventions and pharmacologic therapies as indicated. Shared medical appointments or group visits have been shown to be an effective model of care that incorporate patient education, foster peer support, and which facilitate health-related behaviors (Jessee & Rutledge, 2012; Greer & Hill, 2011). Greer and Hill (2011) and Mackey (2009) noted improved outcomes from group visits with patients who have metabolic syndrome. There is evidence-based practice support for the effectiveness of nurse practitioner-led group visits for chronic disease (Jessee & Rutledge, 2012). Group visits, then, are a likely model of care for the treatment of patients with metabolic syndrome.

Comparison (C). Comparison need not always be included in the development of focused foreground clinical questions. Such was the case with this clinical inquiry. There were no intervention comparisons for this scholarly project.

Outcomes (O). The project design included pre- and post-program assessments of several health measures including cardiovascular disease risk based on a 10-year cardiovascular risk calculator, and biometrics (waist circumference, blood pressure, weight, BMI) as well as labs (serum glucose, hemoglobin A1c, and lipids) as other quantitative measures of the efficacy of shared medical appointments for patients with metabolic syndrome. Self-reported minutes of exercise per week were correlated with this data. Satisfaction with shared medical appointments was assessed post-program using a five-point Likert scale.

Timeframe (T). The timeframe for implementation of this pilot program for metabolic syndrome shared medical appointments took place over the course of six weeks, from July 11, 2016, to August 15, 2016. Post-program comparison outcomes data were collected approximately ten weeks after the last shared medical appointment.

Conclusion

The prevalence of metabolic syndrome suggests the need for intervention to decrease the inherent cardiovascular disease burden. It is both a responsibility and a challenge for health care providers to develop effective models of care in order to improve quality of life and reduce disease burden (Ridge, 2012). Shared medical appointments are purported to include what are considered to be key components of health care – regular medical care, self-management education, and support (Ridge, 2012).

Review of the Literature

A plethora of information about metabolic syndrome exists in the literature. This has accelerated in parabolic fashion through the years from 1920 when Swedish physician Eskil Kylin noted the association of hypertension, hyperglycemia, obesity, and hyperuricemia (Nilsson, 2001), till Gerald Reaven's Banting Lecture noting the medical diagnosis termed "Syndrome X" in 1988 and recognition that the constellation of symptoms confers multiplicative cardiovascular disease risk (Reaven, 1988), up until most recent research into genetic underpinnings of metabolic syndrome (O'Neill & O'Driscoll, 2014). Although several organizations provide different definitions of metabolic syndrome, their criteria are not dissimilar, so this does not take away from the importance of focusing on recognition and treatment to reduce inherent cardiovascular disease risk. Some researchers suggest that, since it is not a disease but a syndrome, and this relationship may be influenced by other factors not included in current definitions such as age, sex, low density lipoprotein cholesterol (LDL-C), tobacco use, etc., health care providers must pay attention to any components in the definition of metabolic syndrome, even if the patient doesn't meet all diagnostic criteria for a diagnosis of metabolic syndrome (Kassi, Pervanidou, Kaltsas, & Chrousos, 2011; Ma & Zhu, 2013). Neither does any debate or controversy regarding whether or not the components of the syndrome, or the syndrome as a whole, better predicts cardiovascular disease risk take away from the important interventions to be made in this population. The literature is consistent in the recommendation for lifestyle changes primarily, and medical management secondarily, to prevent, reduce, if not reverse, cardiovascular disease (Mujica et al., 2010). The need to realize effective strategies for decreasing the incidence of metabolic syndrome was emphasized in the literature (Dunkley et al., 2011; Sperling et al., 2015). Certainly, the potential to positively affect the population of adults

with metabolic syndrome is promising, and shared medical appointments or group visits are postulated as an effective care delivery method to achieve this end.

Methodology

A review of current literature pertaining to metabolic syndrome and shared medical appointments or group visits was undertaken. The goal of this search of the literature is in accordance with the Institute of Medicine's aim to use evidence from research "to determine effective strategies for implementing system-based change to improve care processes and patient outcomes" (Institute of Medicine, 2011, as cited in Melnyk & Fineout-Overholt, 2015, p. 77). That there was no lack of information in the literature about the topic of concern created a challenge in directing the focus of inquiry on interventions directed to improving clinical practice.

Strategies. Terms used in the structured clinical question in PICOT format guided the literature review. Key words included in the literature search included metabolic syndrome, group visits, and shared medical appointments. A Quicksearch of "any content" of the University of Alaska Anchorage Consortium Library using the search term *metabolic syndrome* revealed 425,425 results. Use of the search terms *shared medical appointments* and *group visits* retrieved 36,166 and 1,018,485 articles, respectively. Databases that were included to narrow the focus of the literature search included the Cochrane Library, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, Medline, Ovid, PsycINFO, and Wiley Online Library, and Turning Research into Practice (TRIP). The initial search for the term *metabolic syndrome* in PubMed yielded 115,320 articles, 112,548 were discovered using TRIP, 131,007 in Wiley Online Library, and 71,040 articles in PsycINFO. In CINAHL, for example, with use of subject headings to describe article content, *metabolic syndrome* was converted to *metabolic*

syndrome x as its search term. None to very few additional articles were found, depending on the database, when older search terms were also used, including *Reaven syndrome*, *Syndrome X*, *dysmetabolic syndrome*, and *insulin resistance syndrome*. A DynaMed search revealed clinical practice guidelines not readily found in the above databases.

Expansion of metabolic syndrome, or “explode” in CINAHL and MEDLINE, among other databases, identified topics that included epidemiology, etiology, physiopathology, etc., and allowed narrowing of the topic as these could be selected or eliminated from the search in a focused, step-wise fashion. Limiters were set within the databases to include *evidence-based practice* results and *full-text articles*, *English language*, and *adults*, among others. The most current information was sought by limiting the search to literature published from 2010 to present. Review of the references in published articles of interest (what is often called a hand search of reference lists) also revealed relevant scholarly articles.

Other sources of external evidence came from the National Guideline Clearinghouse; the National Institutes of Health, National Heart, Lung, and Blood Institute; Preventive Cardiovascular Nurses Association (PCNA), American College of Sports Medicine (ACSM), and the American Academy of Family Physicians (AAFP). PCNA has helpful patient educational resources on components of metabolic syndrome. The AAFP, in particular, included very practical information about metabolic syndrome group visits that informed the project design, including a template for the consent form. Articles found in the search included the following: scholarly review of topic(s), evidence-based synopses, clinical Q&A/inquiry, practice interventions, practice guidelines, systematic reviews and meta-analyses, randomized controlled trials/clinical trials, prospective cohort study, and comparative studies.

Data Evaluation. Melnyk and Fineout-Overholt (2015) have espoused the idea that critical appraisal of evidence is a hallmark of evidence-based practice. Scholarly articles were evaluated in accordance with the critical appraisal criteria of Mathuna and Fineout-Overholt (2015). These criteria involved an examination of validity (whether or not results are well-founded or true), reliability (how consistently the same construct is measured) and applicability of findings (value/worth to my clinical practice). These criteria are applicable to different types of research designs, whether case studies, case-control studies, cohort studies, randomized controlled trials, or systematic reviews of the literature. Inherent in these criteria are an assessment of bias, confounding results, effect size, and confidence intervals.

Findings

The results of the literature review, although proliferative with respect to metabolic syndrome and shared medical appointments or group visits, found only a single article addressing metabolic syndrome *and* shared medical appointments or group visits - that of Greer and Hill (2011). Several papers included discussion of shared medical appointments aimed at reducing cardiovascular disease risk (Kirsch et al., 2007; Pastore, Rossi, & Tucker, 2013). There were many articles that support shared medical appointments as a model for improved care in chronic disease (Bartley & Haney, 2010; Edelman et al., 2012; Egger et al., 2015; Watts et al., 2009) including many randomized controlled trials and observational studies which document efficacy of this model of care for type 2 diabetes (Cohen et al., 2011; Edelman et al., 2012; Egger et al., 2015; Eisenstat, Ulman, Siegel, & Carlson, 2013; Riley, 2013; etc.), as well as for many other conditions. Common to both type 2 diabetes and metabolic syndrome is management of commonly-occurring comorbidities that include hypertension, hyperglycemia, and dyslipidemia

to reduce cardiovascular disease, so elements of shared medical visits for treatment of type 2 diabetes are considered applicable to metabolic syndrome.

Lifestyle changes, including exercise and weight loss, as treatment for metabolic syndrome are supported by an abundance of research (Crist et al., 2012; LeFevre, 2014; Mujica et al., 2010). These support exercise as an important, if not central intervention (Green, Fox, & Grandy, 2010). The American College of Sports Medicine (ACSM) *Exercise is Medicine* (EIM) program provides the means to supporting exercise as an effective intervention for treatment for metabolic syndrome (ACSM, 2015; Sperling et al., 2015). ACSM recommendation for exercise of at least 150 minutes per week is an intervention that can benefit all the components of metabolic syndrome (e.g., hypertension, dyslipidemia, etc.).

The Cardiometabolic Think Tank convened in June 2014 in Washington, D.C. with the goal of improving morbidity and mortality among those who have metabolic syndrome or who are at risk for metabolic syndrome (Sperling et al., 2015). The Think Tank scientists suggested many principles for implementing a new care model for which shared medical appointments are well-suited. These include treatment with lifestyle changes that focus on exercise, weight loss, and nutrition. Certain strategies were expressly included in their report, including promoting the American College of Sports Medicine (ACSM) Exercise is Medicine (EIM) initiative, and making physical activity a “vital sign” in the clinic setting. The Cardiometabolic Think Tank participants’ recommendations are concordant with shared medical appointments as a model of care delivery.

Benefits of shared medical appointments are documented in the literature with respect to counseling (LeFevre, 2014), education (Sovariova & Hrehova, 2014), and support (Eisenstat et al., 2013; Shaya et al., 2014). So too have they been shown to include effective group

interventions for weight loss (Gallagher et al., 2012). Research suggests shared medical appointments can improve outcomes compared to standard primary care practice visits (Bartley & Haney, 2010; Cohen et al., 2011; Dontje & Forrest, 2011).

Limitations

Limiting search dates for this project inquiry may have excluded some pertinent information, however prudent it was to limit the source information. By excluding a search for articles prior to 2010, some significant articles may have been excluded that would have contributed to the literature. Exception was made for several of these, including the article, *Harmonizing the Metabolic Syndrome: A Joint Interim Statement of the International Diabetes Federation Task Force on Epidemiology and Prevention from the National Heart, Lung, and Blood Institute, World Heart Federation, International Atherosclerosis Society, and International Association for the Study of Obesity*, published in 2009 (Alberti et al., 2009). Another limitation is that researchers use different definitions of, and diagnostic criteria for, metabolic syndrome.

Prevention and treatment guidelines for the components of metabolic syndrome are the standard, rather than any consensus statement for treatment of metabolic syndrome, per se. For example, *Prevention of Type 2 Diabetes Evidence-Based Nutrition Practice Guideline* resulted from a search of terms in *treatment* of metabolic syndrome (Academy of Nutrition and Dietetics, 2014). Treatment guidelines for metabolic syndrome defer to treatment of the component parts. Treatment of the components of metabolic syndrome was done in accordance with established national guidelines, including the *2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults* (James et al., 2014), the *American Diabetes Association Standards of Medical Care in Diabetes -2016* (American Diabetes Association, 2016), and the *2013 ACC/AHA*

Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: a Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Stone et al., 2014). Mid-way through the project, the ADA's 2015 *Standards of Medical Care in Diabetes* were replaced by the *Standards of Medical Care in Diabetes - 2016* when newly updated and published (American Diabetes Association, 2016).

Conclusion

This comprehensive integrated review of the literature evaluated current evidence-based information about metabolic syndrome and evidence-based practice to support an intervention through shared medical appointments to address cardiovascular disease risk in adult patients at Homer Medical Center who met diagnostic criteria for metabolic syndrome. Findings in the literature review support implementation of shared medical appointments as a model of health care delivery for metabolic syndrome.

Consistent with integrating best practice into routine care as is suggested in the *Future of Nursing* report (Institute of Medicine, 2010), treatment of metabolic syndrome in the population of interest focused on shared medical appointments as the vehicle for facilitating lifestyle changes, with attention to exercise and dietary modification as the key interventions. Medical management of metabolic syndrome components of hypertension, dyslipidemia, and insulin resistance adhered to established national guidelines. The literature review reinforced the importance of recognition and treatment of metabolic syndrome in primary care practice, and on shared medical appointments as the care delivery method to facilitate reduction in cardiovascular disease risk in patients at Homer Medical Center who meet diagnostic criteria for metabolic syndrome.

Organization Framework

Patient outcomes and the quality of health care are improved when evidence informs clinical practice (Melnyk, Gallagher-Ford, Long, & Fineout-Overholt, 2014). This is widely accepted. Conceptual models or frameworks serve to guide the design and implementation of evidence-based practice change (Graham, Tetroe, and K.T. Theories Research Group, 2007). A model that employs these steps to guide implementation and sustainability of evidence-based practice change is the *Model for Evidence-Based Practice Change*. The *Model for Evidence-Based Practice Change* was chosen as a framework to guide this nurse practitioner-facilitated, tailored intervention using shared medical appointments to address cardiovascular disease risk in patients in a primary care clinic who met diagnostic criteria for metabolic syndrome. The *Model for Evidence-Based Practice Change* was determined to be well-suited for this project in order to facilitate the move of evidence into practice.

Evidence-Based Practice Model

First published in 1999 as *A Model for Change to Evidence-Based Practice* (Rosswurm & Larrabee, 1999), Rosswurm and Larrabee's revised *Model for Evidence-Based Practice Change*: integrates principles of QI (Dang et al., 2015); includes research utilization and change theory, is well-suited to primary practice settings, and is intuitive and logical (Rempler, 2006). Rosswurm and Larrabee's original model for evidence-based practice progresses through six steps: 1) assess the need for change in practice; 2) link the problem with interventions and outcomes; 3) synthesize the evidence; 4) design practice change; 5) implement and evaluate change in practice; and 6) integrate and maintain change in practice. These steps are depicted in Figure 1 (Rosswurm & Larrabee, 1999), which follows:

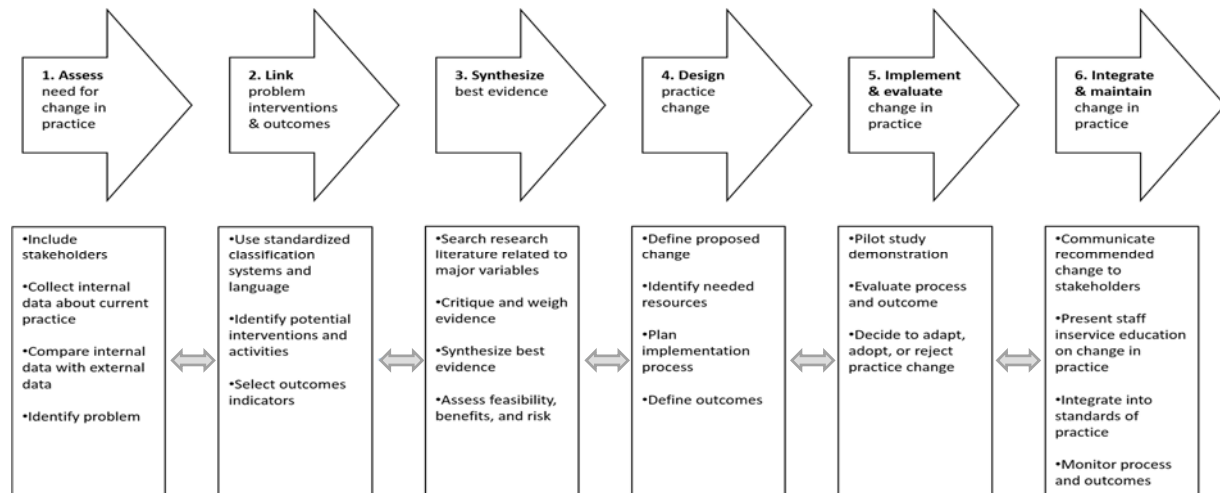


Figure 1. Schematic depicting Rosswurm and Larrabee's steps in their model for evidence-based practice

Rosswurm and Larrabee provided an appropriate framework by which this evidence-based practice change project was directed.

Step 1: Assessment of the need for change. An interest in disease prevention and health promotion by the author is at the heart of the project. In accordance with a model for evidence-based practice, the first step in the model determined, from an assessment of the need for change, that at Homer Medical Center there were few patients whose problem list included a diagnosis of metabolic syndrome but many who were at heightened cardiovascular disease risk as a result of metabolic syndrome. Prevalence estimates of patients at Homer Medical Center who met diagnostic criteria for metabolic syndrome were considered to be in accordance with national statistics. The importance of recognition of metabolic syndrome through diagnosis, and through treatment to prevent cardiovascular disease, is well-established and was thought to be amenable to intervention.

Step 2: Link the problem with interventions and outcomes. Once the problem of interest was identified, formulation of the PICOT question (Stillwell et al., 2010) directed review

and critique of the literature. The PICOT question for this project inquiry was noted earlier but is restated here: In adult patients at Homer Medical Center who met the diagnostic criteria for metabolic syndrome, do shared medical appointments, carried out over the course of six weeks, decrease cardiovascular disease risk?

Step 3: Synthesize the evidence. Findings from current evidence, which includes numerous research articles, evidence-based synopses, and practice guidelines, support an intervention through shared medical appointments to improve the cardiovascular disease profile of those who met diagnostic criteria for metabolic syndrome. A plethora of information about metabolic syndrome has been written over the past three decades, with different definitions of metabolic syndrome established. Debated is the idea that metabolic syndrome should even be labeled as a syndrome since there is inconclusive evidence to indicate metabolic syndrome confers a higher cardiovascular disease risk than the risk posed by its individual components (Larry, 2013). With prevalence estimates in the U.S. of 33%, the resultant morbidity and mortality are significant. The need to realize effective strategies for decreasing the incidence of metabolic syndrome was emphasized in the literature (Dunkley et al., 2011; Sperling et al., 2015). Epidemiological studies show that interventions that include diet and exercise reduce the risks related to metabolic syndrome. Medication management is employed secondarily. Treatment recommendations follow those of national guidelines for metabolic syndrome component parts. Research supports shared medical appointments as an effective model of health care delivery. There is evidence-based practice support for the effectiveness of nurse practitioner-led shared medical appointments for chronic disease (Jessee & Rutledge, 2012).

Step 4: Design practice change. Shared medical appointments were suggested as an effective model of care to improve the health of adult patients at Homer Medical Center who met

diagnostic criteria for metabolic syndrome. Lifestyle changes, including weight loss –with exercise and dietary modification as foci for intervention –as treatment for metabolic syndrome are supported by an abundance of research (Crist et al., 2012; LeFevre, 2014; Mujica, 2010). Shared medical appointments took place over the course of six weeks and included patient education and counseling, peer support, and individual patient assessment and treatment that included lifestyle interventions and pharmacologic therapies as indicated.

Step 5: Implement and evaluate change in practice. Support for the project was secured by the clinic’s medical director (see Institutional Support Letter, Appendix A). Implementation of the program took place during summer 2016. Post-program comparison outcomes data was collected approximately ten weeks following the sixth and final shared medical appointment. The implementation period for this program is as described, with the pilot program of shared medical appointments a model of care upon which future shared medical appointments may be offered, informed by what was learned during the pilot program. Formative evaluation is in keeping with tenets of a quality improvement program; that is, changes made to the program as it is being carried out lend themselves to process improvement in real time (Stetler et al., 2006, as cited in Holly, 2014, p. 160).

Step 6: Integrate and maintain change in practice. The goal of the pilot project was to establish a working model of health care delivery that can be used to perpetuate future successful intervention in those with metabolic syndrome. It is expected that shared medical appointments for patients with metabolic syndrome may continue into the future as a model of care, informed by what was learned during the pilot program, that which is learned in subsequent programs as information is built upon this foundation, and through continued appraisal of the literature, for which a solid foundation will have been established.

Conclusion

The *Model for Evidence-Based Practice Change* was chosen as a framework to guide the clinical practice improvement project using shared medical to address cardiovascular risk in adult patients at Homer Medical Center with metabolic syndrome. Assessment of the need for change in a primary care clinic involved recognition that significant morbidity and mortality is associated with metabolic syndrome and that an intervention that involves nurse-practitioner facilitated, shared medical appointments has good support in the literature as an effective model of health care delivery. These shared medical appointments include key components of health care – regular medical care, education, and support (Ridge, 2012). Evaluation of some components of health care was measured to assess the efficacy of the project in order to inform future practice.

Project Design

This evidence-based change project purposed to improve cardiovascular disease risk in adult patients with metabolic syndrome through their participation in shared medical visits as a health care delivery mode. The emphasis was disease prevention. Shared medical visits, defined as “a series of individual office visits sequentially attending to each patient’s unique medical needs individually, but in a supportive group setting where all can listen, interact, and learn” (Stevens, Cole, Binns, Dixon, & Egger, 2014), are considered by many to be more appropriate for chronic disease management than a traditional office visit. Steps four, five, and six of Rosswurm and Larrabee’s model for evidence-based practice focus on elements of project design, and include: (step 4) design practice change; (step 5) implement and evaluate change in practice; and (step 6) integrate and maintain change in practice (Larrabee, 2009, as cited in Dang et al., 2015; Rosswurm & Larrabee, 1999). Project design approval by the clinic’s medical director paved the way for Institutional Review Board (IRB) review and approval of the project.

Institutional Review Board

An Institutional Review Board (IRB) is a committee established to protect the rights and welfare of human research subjects (Selwitz, Epley, & Erickson, 2015). IRB review is required when studies involve research of human subjects (Hicks, 2014). Federal regulations at 45 CFR 46.102 define research as “a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge” (U. S. Department of Health & Human Services, 2010, 46.102 para. 4). This project required IRB review despite that it was not research per se, and not meant to contribute to “generalizable” knowledge. Exempt, expedited or full designation is at the behest of an IRB committee: The IRB committee

determines the level of review that is needed for a project. The IRB proposal was submitted for expedited review following successful proposal defense and later received approval of the same.

The IRB proposal included: the principal investigator's assurance statement, rationale for the project, statement of research question and hypotheses, summary of research design/approach including procedures, methodology and resources utilized, data collection methods and tools, subject selection including recruitment methods, statement of potential benefits to participants, incentives, costs, risks, participant consent, and plan for data storage and retention. The required Collaborative Institutional Training Initiative (CITI Program) Basic/Refresher Course in Human Subjects Research was successfully completed September 2015. This certificate was submitted to the IRB committee along with a letter of support from the participating institution (see Institutional Support Letter, Appendix A).

Potential Risk to Participants

No more than minimal risk to participants was assumed with this project. However, some risk was inherent with the shared medical appointments/group visits since there was potential for breach of confidentiality from participants themselves when health matters were discussed in the group setting. Participants were encouraged not to share protected information outside the group, and were made aware that the group facilitator could not guarantee confidentiality (Arwood & Panicker, 2014). Framed another way, patients were encouraged not to share others' stories, but that it was alright to share their own. Participant/patient health information became part of the patient's electronic medical record at Homer Medical Center and has implicit health information protections consistent with privacy practices that are a requirement of the Health Insurance Portability and Accountability Act (HIPAA), and which are upheld at Homer Medical Center/South Peninsula Hospital.

An identified potential harm related to financial burden. A reasonable expectation about costs could be made by the patient in advance as he/she would for a traditional visit, by patient discourse with his/her insurance representative and/or in consultation with Homer Medical Center nurse practitioner and billing staff. This information was included in the consent form. Shared medical appointments were billed to the patient's/participant's health insurance according to the standard E&M code (usually 99213 or 99214), depending on the level of complexity of the visit. Documentation in the patient's electronic health record attested to individual medical evaluation and management components of care that are provided in the context of a shared medical appointment.

Another potential harm that could occur as a result of this project related to the acquisition of blood for pre- and post-program glucose, hemoglobin A1c, and lipids. Venous blood draws or CLIA-waived fasting glucose and lipids was conducted by a licensed phlebotomist and trained certified medical assistants, respectively, by following universal precautions. Lab testing is an established health assessment tool in accordance with surveillance of metabolic syndrome components, no different than if the participant was being seen in a traditional office visit, and subject to patient consent.

Participants were reminded during the program and with written consent that their participation in all aspects of the program is voluntary, and that alternatively they may choose at any time not to participate, or they may receive treatment for metabolic syndrome in a traditional medical appointment.

Potential Benefits to Participants

Potential advantages to patients as a result of project design and implementation may have included: peer support and shared experiences from other patients (Stevens, Cole, Binns,

Dixon, & Egger, 2014); increased self-efficacy, and knowledge about metabolic syndrome in a shared “learning community” that aims “to support the growth of individual knowledge and advance the collective knowledge of the group” (Davis & Vitagliano, 2015, p. 633); increased perceived quality of health care as a result of additional time spent with a health care provider compared to a traditional office visit; and improved adherence to treatment guidelines (Pastore & Tucker, 2013). These potential benefits from participation were not all directly measured in this project.

Evidence-Based Practice Change Design

Donabedian’s framework was included to further elucidate the evidence-based practice change process. It expands on step four - practice change - of Rosswurm and Larrabee’s model for evidence-based practice. Donabedian (2003, as cited in Holly, 2010) on page 139, has suggested an examination of three key measures - structure, process, and outcomes – that can be used in a quality improvement project to determine quality in health care. *Structure* refers to the environment in which care is provided and the care providers’ qualifications to provide that care. *Process* refers to the way in which health care services are provided. Donabedian has stated that *outcomes* are the products that result from the interaction of structure and process and reflect the effect on the patient and how well the intervention was done.

Structure. For this project, *structure* describes the context in which care was provided. Organizational culture sets the stage for successful program implementation. Support for the quality improvement project started with institutional support, which was gained and which is evidenced by the letter denoted in Appendix A. The burden of organizing the shared medical appointments, as well as facilitating shared medical appointments and providing physical assessments within the larger visit was assumed by the nurse practitioner. There is evidence in

the literature supporting the efficacy of shared medical appointments/group visits facilitated by advanced nurse practitioners to improve patient outcomes (Watts et al., 2009). Brief, approximately 5-10 minute physical assessments at the beginning of a shared medical appointment as indicated. It was not necessary to solicit other health care providers to conduct some of these brief assessments, but would be if more participants attended a session.

At each session, certified medical assistants (CMAs) were responsible for assessing vital signs and participants' self-reported total minutes of exercise per week. Assessment of exercise served to reinforce American College of Sports Medicine (ACSM) promotion of *Exercise is Medicine* as a key intervention in the treatment of metabolic syndrome. Waist circumference and labs were assessed at the start of the program and approximately ten weeks after the final session was completed.

Roles and role responsibilities of those of the support team, and interprofessional teamwork are important to consider, as well as to foster, in successful project design. Information technology staff provided assistance in an electronic medical records search for patients who met diagnostic criteria for metabolic syndrome to facilitate recruitment efforts. Their assistance in the creation of templates adapted for each shared medical appointment facilitated documentation in the electronic medical record. Billing support staff were important collaborators with respect to coding as well as billing. Receptionists and lab personnel similarly collaborated. An on-site lab at Homer Medical Center facilitated lab testing, including CLIA-waived point of care testing for lipids, glucose, and hemoglobin A1c. Additional health care professionals included a registered dietician and certified diabetes educator, and registered nurse, both from South Peninsula Hospital's American Diabetes Association (ADA)-recognized diabetes education program. These two dietary services personnel were instrumental in

facilitating and assisting with shared medical appointment-related education and counseling. A psychiatric nurse practitioner delivered a presentation on mindful eating that reinforced program tenets beyond nutrition and which resonated with all in attendance.

Process. As stated, process refers to the way in which health care services are provided.

Egger et al. (2014, p. 151) suggested that:

primary care could benefit from a shift to an emphasis on process, as much as an increase in knowledge of content relating to chronic disease. Processes include self-management education, brief interventions, activity scheduling, motivational skills, counselling, health coaching, and behavioral and environmental change. This reinforces a broader multidisciplinary approach. . . . An alternative model of clinical engagement that is worthy of consideration in this respect is the shared medical appointment.

The very processes the authors mentioned are purposed in this quality improvement project. Organizational culture sets the stage for successful program implementation (International Diabetes Federation, n.d.). Shared medical visits include several minutes of individual assessment, but most of the visit took place in a group setting that included education about metabolic syndrome and lifestyle interventions that are effective in reducing cardiovascular and other disease risk. The visits took place in a group setting meant to facilitate patient self-management and peer interaction. Lifestyle changes, including exercise and weight loss, as treatment for metabolic syndrome are supported by an abundance of research (Crist et al., 2014; LeFevre, 2014; Mujica, 2010). Promotion of these lifestyle changes is an important approach in treatment of metabolic syndrome, for which the usual office visit appointment is not well-suited. Exercise was promoted as an important, if not central intervention (Green, Fox, & Grandy, 2010) for improved health. The American College of Sports Medicine (ACSM) *Exercise is Medicine* (EIM) program provided the means to supporting exercise as an effective intervention for treatment for metabolic syndrome (ACSM, 2015; Sperling et al., 2015). The ACSM

recommendation for exercise of at least 150 minutes per week is an intervention that is of benefit for all the components of metabolic syndrome (e.g., hypertension, dyslipidemia, etc.).

Medical management was in accordance with established national guidelines, including the *2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults* (James et al., 2014), the *American Diabetes Association's Standards of Medical Care in Diabetes – 2016* (American Diabetes Association, 2016), and the *2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: a Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines* (Stone et al., 2014).

Outcomes. As previously stated, Donabedian's *outcomes* refer to the products that result from the interaction of structure and process and which reflect the effect on the patient and how well the intervention was done. The goal-based evaluation of the program was formative in nature. Some points outlining formative evaluation strategies that reflect *outcomes* include: patient satisfaction with a shared medical appointment model of care using a Likert scale, pre- and post-program comparison of a 10-year cardiovascular risk score, as well as biometric data such as patient waist circumference, weight, pre- and post-program self-reported minutes of exercise per week, etc. Outcomes may also relate to effectiveness of the process learned in informing future evidence-based practice projects.

Challenges

Challenges are to be anticipated in a quality improvement initiative. Some of these challenges included increased demands on support staff time and responsibilities and staff adherence with process change. Bringing collaborative support personnel "on board" with a shared vision for improved health care served to minimize their hesitancy and strengthen their

support. Recruitment of other clinicians to assist in short patient assessments was not necessary for this intervention but would be assumed if more patients participated in any one shared medical appointment. In that case, collaborative challenges would be lessened if the patient was assigned to his/her preferred or primary care provider.

Billing for shared medical appointments can be a challenge (Jaber, Braksmajer, & Trilling, 2006). Billing was done according to summary recommendations that suggested that these visits be billed as individual office visits using existing CPT codes, 99213-99214 according to the level of care provided. Creation of customized templates helped facilitate electronic health record documentation of complexity levels for billing purposes.

Whereas shared medical appointments presented a potential challenge in maintaining the confidentiality of protected health information, since participants often share their health concerns and personal information with others in the group, no such breaches of confidentiality were known to occur. HIPAA does not specifically address shared medical appointments (Jaber, et al., 2006). A consent form was utilized, adapted from the American Academy of Family Physicians and consent templates from IRBNet, the latter accessed as a function of the University of Alaska School of Nursing DNP student project. Participants were required to review and sign the consent before participation, and privacy and protection of health information were addressed at each visit.

Drop-out rates of participants have been cited as a potential challenge. Longer times between group visits are associated with higher attrition, with patient drop-out rates for weekly group visits relatively lower (Jaber et al., 2006). Weekly shared medical appointments were conducted.

Plan for Project Evaluation

The goal of this project was to provide an evidence-based program to address cardiovascular disease risk in adult patients with metabolic syndrome through their participation in shared medical visits as a health care delivery mode. The emphasis was on disease prevention. No benchmarks were suggested against which project evaluation was measured.

Post-program patient satisfaction with the shared medical appointment model of care was assessed using a five-point Likert scale. 10-year cardiovascular risk was determined via a risk calculator (using HDL-C, systolic blood pressure, etc.) at the outset of the program, and post-program, as was biometric data such as patient waist circumference, weight, BMI, and labs including serum glucose, hemoglobin A1c, and lipids. Statistical analysis of the data was employed. Pre- and post-program self-reported weekly minutes of exercise was recorded.

Post-Intervention Plans

The goal in “piloting” this project was not only to establish that shared medical appointments are a health care delivery method that is effective for this patient population. Review of the literature suggests shared medical appointments or group visits are an effective model of care that incorporates patient education, fosters peer support, and which facilitates health-related behaviors (Jessee & Rutledge, 2012; Greer & Hill, 2011). That much is established. Goals with this pilot project were to assess the effectiveness of a program that would effectively utilize this health care delivery method of shared medical appointments to decrease cardiovascular risk in patients at Homer Medical Center with metabolic syndrome, to determine what is needed to create a sustainable program that would benefit similar cohorts of patients, as well as to create a template that can be used to provide quality care for patients with other chronic conditions.

Conclusion

The project design provided a systematic framework for implementation and sustainability of the evidence-based practice change in order to address cardiovascular disease risk in adult patients in a primary care clinic who were diagnosed with metabolic syndrome. Project design approval by the clinic's medical director paved the way for proposal defense which, in turn, allowed Institutional Review Board (IRB) approval of the proposed project. No more than minimal risk to participants occurred with this project. Donabedian's framework was included to further elucidate the evidence-based practice change process. These components expound on the organizational culture that is the *structure*, shared medical appointments with inherent support, education and individualized care as a health care delivery method that is its *process*, and an outline of project *outcomes*, respectively. Program goals included successful implementation, sustainability, and an understanding of how the process might inform and direct future projects.

Implementation Process

Donabedian's framework elucidates the evidence-based practice change process that informed this project. Donabedian (as cited in Holly, 2014) has suggested an examination of three key measures – structure, process, and outcomes– that can be used in a quality improvement project. *Structure*, delineated in chapter four, refers to the environment in which care is provided. *Process*, the topic of this chapter, refers to the way in which health care services are provided (Holly, 2014). *Outcomes* are the products that result from the interaction of structure and process and reflect the effect on the patient and how well the intervention was done (Holly, 2014). Outcomes will be addressed in chapter six. The process outlined herein relates to implementation of the program of shared medical appointments for a small group of

patients who met diagnostic criteria for metabolic syndrome. These shared medical appointments combined a private, individual assessment and treatment by the nurse practitioner, with group education and facilitated peer interaction and peer support.

Implementation

Institutional Review Board. Implementation of the Doctor of Nursing Practice (DNP) project was predicated on the University of Alaska Anchorage Institutional Review Board (IRB) approval. An expedited review process was in keeping with reasonable and appropriate protections so no more than minimal risk is conferred to participants such as from the collection of blood samples by finger-stick or venipuncture, financial burden, or from risks related to invasion of privacy and breach of confidentiality from patients participating in shared medical appointments. Modifications to the original IRB proposal emphasized protections with respect to potential financial burden from participation in the program. At the behest of the IRB, the original proposal was modified with the addition of a participant recruitment script and revision of the invitation and consent forms. Notice of final IRB approval is included in Appendix B.

Intervention team. Early on in the project came backing by the medical director of Homer Medical Center. A letter supporting implementation of the project was received from the clinic's medical director (Appendix A). The nurse practitioner served as team leader and was responsible for medical management. The supportive clinic staff, including certified medical assistant(s), biller/coder, receptionist, phlebotomist, information technology personnel, psychiatric nurse practitioner, and the business department director, among others, remained a positive factor that facilitated project implementation. In addition, South Peninsula Hospital (SPH) Chief Executive Officer approved utilization of nutrition services personnel for Homer Medical Center programs. This intervention removed a potential institutional barrier and

facilitated patient education by a registered dietician regarding patient dietary education and dietary modifications that are a cornerstone of treatment of metabolic syndrome. Contributing hospital and clinic staff were able to flex their regular work schedules to facilitate shared medical appointments that took place after normal business hours. Limited clinic space dictated that shared medical appointments were conducted after regular business hours. Limited clinic space also necessitated small group size.

Participant recruitment. Adult patients who met the metabolic syndrome criteria were personally invited to participate in the shared medical appointments by a primary care provider during a clinic visit. Noffsinger (2009) described this as the single most effective means of getting patients to attend shared medical appointments. Invitation flyers had been placed in the patient rooms (Appendix C) and a recruitment script (Appendix) had been written for clinic staff with talking points for the purpose of recruitment. The small convenience sample numbered seven participants. A sufficient minimal number of participants was obtained in this way, without the need to contact patients identified through a search of the electronic health record for patients who met IDF criteria. Implementation and evaluation of just such a pilot test is recommended before moving to larger-scale implementation (Hockenberry, Brown, & Rodgers, 2015; Noffsinger, 2009).

Shared medical appointments. The shared medical appointments for this cohort of patients with metabolic syndrome were a subset of the shared medical appointments that Noffsinger (2009) has referred to as Physicals SMA (PSMA) because they included a private, brief, several-minutes-long individual patient assessments, and treatment (when indicated) by the facilitating nurse practitioner/team leader, with the customary group education and facilitated peer interaction and peer support. These PSMA's were heretofore referred to simply as shared

medical appointments and will continue to be referred to as shared medical appointments, but consideration is given to this physical exam component. Physical assessment other than an assessment of biometric data was not by necessity carried out at each week's shared medical appointment, but each patient had one or more physical assessments in the course of the program that were deemed medically necessary. The SMAs were carried out weekly over a period of six weeks between 7/11/16 and 8/15/16. Class duration was 90 minutes.

Consent. Patient participation was predicated on informed consent (Appendix B

IRB Approval Letter



3211 Providence Drive
Anchorage, Alaska 99508-4614
T 907.786.1099, F 907.786.1791
www.uaa.alaska.edu/research/ric

DATE: April 20, 2016

TO: Jill Rife, MSN, BSN
FROM: University of Alaska Anchorage IRB

PROJECT TITLE: [867674-2] A metabolic syndrome clinical practice improvement project using shared medical appointments

SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED

DECISION DATE: April 20, 2016

EXPIRATION DATE: April 20, 2017

REVIEW TYPE: Expedited Review

Your proposal received an expedited review and was granted approval with minor revisions. Thank you for a copy of these revisions. Therefore, in keeping with the usual policies and procedures of the UAA Institutional Review Board, your proposal is judged as fully satisfying the U.S. Department of Health and Human Services requirements for the protection of human research subjects (45 CFR 46 as amended/ revised). This constitutes approval for you to conduct the study.

This approval is in effect for one year. If the study extends beyond the expiration date listed above, you are required to submit a progress report and to request continuing approval of your project from the Board. At the conclusion of your research, submit the required final report to the IRB. These report forms are available on IRBNet.

Please report promptly proposed changes in the research protocol for IRB review and approval. Also, report to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

On behalf of the Board, I wish to extend my best wishes for success in accomplishing your objectives

Ronald S. Everett, Ph.D.

Chair, Institutional Review Board

Appendix C

Invitation Flyer

beginning soon

an invitation to participate...

...IN SHARED MEDICAL APPOINTMENTS FOR THOSE WITH METABOLIC SYNDROME

Shared medical appointments are a novel approach to health care in which your medical visit takes place in a supportive group setting. These medical appointments include a private, ~5-minute assessment by a nurse practitioner, followed by a session shared with others who have similar health concerns. Attention is focused on education about metabolic syndrome, and what you can do to reduce your risk of heart disease, stroke, and other associated health risks such as sleep apnea and dementia. Sessions will last up to 90 minutes and take place weekly or every other week over the course of 6 weeks. These shared medical appointments will be billed to your insurance just like any traditional appointment.

YOU QUALIFY IF YOU HAVE 3 of 5:

- ENLARGED WAIST CIRCUMFERENCE (Men >37 inches, Women >32 inches)
- ELEVATED TRIGLYCERIDE LEVEL > 150 mg/dL, or treatment for this
- REDUCED HDL CHOLESTEROL, or treatment for this
 - Men <40 mg/dL
 - Women <50 mg/dL
- ELEVATED BLOOD PRESSURE >130/85 or treatment for hypertension
- ELEVATED FASTING GLUCOSE >100 mg/dL or treatment for elevated blood sugar

JOIN US! FOR MORE INFORMATION, CONTACT:

**HOMER MEDICAL CENTER
JILL RIFE, FAMILY NURSE PRACTITIONER
(907) 235-8586**

Appendix D

Talking Points

A CLINICAL PRACTICE IMPROVEMENT PROJECT FOR PATIENTS WITH METABOLIC SYNDROME USING SHARED MEDICAL APPOINTMENTS

TALKING POINTS:

- PROGRAM IS FOR HOMER MEDICAL CENTER PATIENTS
- PATIENT QUALIFIES IF:

LARGE WAIST CIRCUMFERENCE

(Waist circumference: Men >37 inches, Women >32 inches)

PLUS 2 OTHER HEALTH RISKS:

- ELEVATED TRIGLYCERIDE LEVEL > 150 mg/dL, or treatment for this
- REDUCED HDL CHOLESTEROL, or treatment for this
 - Men <40 mg/dL
 - Women <50 mg/dL
- ELEVATED BLOOD PRESSURE \geq 130/85 or treatment for hypertension
- ELEVATED FASTING GLUCOSE >100 mg/dL or treatment for elevated blood sugar

- PROGRAM INCLUDES 6 CLASSES OF 90 MINUTE DURATION MEETING WEEKLY
- BEGIN MID TO LATE MAY
- SHARED MEDICAL APPOINTMENTS ARE A NOVEL APPROACH TO HEALTH CARE IN WHICH THE MEDICAL VISIT TAKES PLACE IN A SUPPORTIVE GROUP SETTING.
 - THESE MEDICAL APPOINTMENTS INCLUDE A PRIVATE, ~5 MINUTE ASSESSMENT BY HEALTH CARE PROVIDER. THE REST OF THE 90 MINUTE VISIT IS SPENT IN EDUCATION ABOUT WHAT PATIENT CAN DO TO REDUCE RISK OF HEART DISEASE, STROKE, AND OTHER ASSOCIATED HEALTH RISKS SUCH AS SLEEP APNEA AND DEMENTIA.
 - THE EDUCATION, AND MAJORITY OF EACH CLASS, IS SHARED WITH OTHER PATIENTS LIKE THEM.
 - SUPPORT COMES FROM OTHER PATIENTS IN THE CLASS.
 - FINGERSTICK LIPID PANEL AND FASTING GLUCOSE WILL BE DRAWN PRE- AND POST-PROGRAM IN ORDER TO DETERMINE PATIENT'S 10-YEAR CARDIOVASCULAR DISEASE RISK (UNLESS RECENTLY DONE)
 - ANY MEDICATION MANAGEMENT WILL BE DONE IN CONSULTATION WITH PRIMARY CARE PROVIDER.
 - PROGRAM IS VOLUNTARY AND PATIENT MAY DISCONTINUE PARTICIPATION AT ANY TIME.
 - BILLING FOR SHARED MEDICAL APPOINTMENTS IS DONE IN THE SAME WAY AS FOR A TRADITIONAL MEDICAL APPOINTMENT.

If patient is interested, please provide them with a flyer and encourage them to leave a message with Jill Rife to get more information.

Please send Jill Rife a Practice Partner message letting her know the patient is a prospective participant in the program.



Appendix This consent form was read and reviewed with participants and signed before the program commenced. At the start of each weekly shared medical appointment, participants were reminded of their agreement to respect the privacy of everyone in the group and to hold confidential this health information; participants were discouraged from sharing other participants' "stories" outside of the SMA.

Metrics. Certain measures were obtained from each participant at the beginning of the program. These included fasting glucose and lipid panel, hemoglobin A1c, blood pressure, height, weight, body mass index (BMI), waist circumference, and exercise habits. End-program measures were assessed approximately ten weeks after the completion of the sixth and last shared medical appointment. Exercise habits were assessed at each appointment, and documented with other "vital signs" in the electronic health record according to activity in minutes per day and days per week. This was meant to reinforce the American College of Sports Medicine's *Exercise is Medicine* (EIM) initiative as a key intervention in the treatment of components of metabolic syndrome (American College of Sports Medicine, 2016). Coleman et al. (2012) established the validity of an exercise "vital sign" in the patient electronic health record.

Calculation of 10-year risk of cardiovascular disease was determined for each participant according to the Joint British Society (JBS)3 risk calculator as was the custom in the clinic, in order to communicate risk of endpoints that include coronary heart disease death, nonfatal myocardial infarction (MI), transient ischemic attack (TIA), and cerebrovascular accident (CVA), among others, as well as the risk reduction that can be realized with lifestyle changes (Joint British Societies for the Prevention of Cardiovascular Disease, n.d.; Wilson, 2016). The JBS3 multivariate risk assessment tool incorporated patient prediction variables including age,

gender, ethnicity, height, weight, total cholesterol and triglycerides, and blood pressure, as well as patient history of smoking status, whether or not the patient is taking blood pressure medication(s), among other health information (Joint British Societies for the Prevention of Cardiovascular Disease, n.d.; JBS3 Board, 2014; Wilson, 2016). Each patient's 10-year cardiovascular disease risk was calculated near the start of the program and approximately ten weeks after the last shared medical appointment, using data from the post-program lab draw. For most participants, a handout summarizing their personal risk criteria for a diagnosis of metabolic syndrome was provided and reviewed during that second shared medical appointment, as were lab results, and 10-year cardiovascular disease risk according to JBS3. Risk assessment equations, including JBS3, inform decision-making and provide guidelines regarding statin use (Stone et al., 2014).

Educational curricula. For this cohort with metabolic syndrome, the educational curriculum focused on providing an understanding of metabolic syndrome and its implications, disease prevention and health promotion strategies that included dietary modification and exercise to achieve and maintain a healthy body weight and body fat distribution, and personal empowerment to achieve behavior change. Curricular elements were therefore logically consistent with that of Dunkley et al. (2011) in *The Reversal Intervention for Metabolic Syndrome (TRIMS)* study. The content was also adopted from *Metabolic Syndrome: From Risk Factors to Management* (Blaha & Tota-Maharaz, 2012). Curricular elements are outlined below:

- Metabolic syndrome – Diagnostic criteria; pathophysiology (simplified) including insulin resistance and resultant hyperinsulinemia, abdominal obesity, atherogenic dyslipidemia, subclinical inflammation, etc., and consequences including increased cardiovascular disease risk and risk of type 2 diabetes, hypertension, etc.; interventions to prevent,

reduce or reverse effects; fluidity of metabolic syndrome in terms of its variable effects; and comorbidities (depression, smoking, etc.).

- Physical activity – Benefits of exercise, recommendations for exercise, barriers and facilitators, the role of physical activity in weight loss. *Exercise is Medicine* tenets were championed.
- Nutrition – Food and energy balance, food groups, food messages (media, family), making healthier food choices, recipe ingredient substitution, diets implicated in reversing metabolic syndrome, the role of nutritional choices in weight loss.
- Self-management – Identification of personal risks, behavior change theory, stages of change, goal-setting/action plan, decisional balance (pros and cons of behavior change).

Discussions were largely driven by the interests of the participants. Each group session except the beginning of the first session began and ended with personal goal setting/action plan and problem-solving to improve the participant's risk profile. Peer input was solicited.

Patient satisfaction with the shared medical appointments as a method of care delivery was ascertained via a 5-point Likert scale at the end of the program via the simple question, "Overall, how satisfied are you with your experience with the shared medical appointments in which you participated?" Also assessed was a similar query about overall satisfaction with the traditional medical appointment to provide comparison (see Questionnaire, Appendix F).

Medical management. Documentation in the patient's electronic health record attests to individual medical evaluation and management components of care that were provided in the context of a shared medical appointment. Treatment procedures with respect to medical management were in accordance with established national guidelines. These included the *2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report from*

The Panel Members Appointed to the Eighth Joint National Committee (JNC 8) (James et al., 2014), the *American Diabetes Association Standards of Medical Care in Diabetes – 2016* (American Diabetes Association, 2016), and *2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: a Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines* (Stone et al., 2014). Individual assessment and medical management (as needed) took place privately. Referrals were made, as indicated, such as to a dietician or to behavioral services.

The “ABCDE” approach developed at Johns Hopkins was used as a template for the medical management of the patient population (Blaha & Tota-Maharaj, 2012; Blaha, Bansal, Rouf, Golden, Blumenthal, & Defilippis, 2008; Tota-Maharaj, Defilippis, Blumenthal, & Blaha, 2010). The “ABCDE” approach informs management where “A” stands for individual patient *assessment* of cardiovascular risk. “A” also stands for *aspirin* therapy, when indicated, as an adjunct to inhibit platelet function and reduce thrombotic events (Blaha & Tota-Maharaj, 2012). “B” in the treatment algorithm includes *blood pressure* management/control. “C” represents *cholesterol* and the importance of treating atherogenic dyslipidemia when indicated. “C” may also stand for *cigarettes*, and should prompt counseling regarding cessation as a contributor to cardiovascular disease (National Center for Chronic Disease Prevention and Health Promotion, U. S. Office on Smoking and Health, 2014), even though cigarette smoking is not part of metabolic syndrome (Blaha & Tota-Maharaj, 2012). “D” in the treatment algorithm includes *diet* and/or *diabetes prevention and treatment*. “E” represents *exercise*. Individual assessment and medical management (as needed) took place privately. Blaha et al., 2008) describe this “ABCDE” approach to metabolic syndrome as a practical, step-wise framework for implementation of evidence-based treatment to reduce cardiovascular risk.

Protected Health Information (PHI). Participant/patient health information became part of the patient's existing electronic health record (EHR) at Homer Medical Center. PHI has implicit health information protections consistent with Privacy Practices that are a requirement of the Health Insurance Portability and Accountability Act (HIPAA) and which are upheld at Homer Medical Center/South Peninsula Hospital as outlined in the institution's Notice of Privacy Practices.

Billing/coding. Billing was done under the facilitating nurse practitioner's name and was designated by fee structure consistent with appropriate current procedural terminology (CPT) codes for each participant visit. The ICD-10 code for metabolic syndrome, E88.81, was not used. Instead, more patient-specific codes were listed, such as I10 for essential (primary) hypertension and lipocentric codes that include E78.1 for elevated triglycerides and E78.6 for low HDL cholesterol, for example, as was indicated according to patient condition.

Challenges to Project Implementation

Challenges to successful project implementation are considered to be part and parcel of project implementation. A challenge with this project included recruitment and retention of participants to a program slated to take place during the traditionally very busy Alaskan summer months. Several prospective patients declined after indicating early interest, leaving just seven participants. Reasons that these patients cited for declining to participate included: "too busy"; previously-planned activities that prevented participation in the full six-week program; work schedule conflict with the shared medical appointment early evening meeting time; cost-prohibitive nature of shared medical appointments due to lack of insurance or as yet unmet health insurance deductible.

Facilitating patient engagement is a challenge. So too is the challenge of facilitating lasting behavior change in the areas of weight loss, dietary practices and exercise (Olde, e 2013). Toward this end, the shared medical appointments included tenets of behavior change and participant support from session facilitators and peers alike.

Conducting the physical examination component of the shared medical appointment session for participants in a timely manner was a challenge. Completing the physicals during the first part of the session is considered by Noffsinger (2009) to be the most productive and least disruptive to the group, yet was difficult for a single health care provider to accomplish so that the sessions begin on time, without undue wait by participants.

Considerations That Prompted a Change in the Implementation Process

Awareness came mid-program about the *Recent Update to the U.S. Cholesterol Treatment Guidelines* (Nayor & Vasan, 2016), published May 3, 2016. This article brought into question the validity of the JBS3 10-year cardiovascular risk calculator that was utilized for patients in the program and provided clarity regarding the use of an evidence-based 10-year cardiovascular risk tool. The issue is of importance since thresholds for the use of a statin are predicated upon the recommendations in the risk calculator. Consideration was given to use of an alternative to the JBS3 for this cohort of patients and to inform future clinical practice. Further discussion on this topic can be found in ensuing chapters.

Conclusion

This DNP project implementation process is informed by Donabedian. It is the focus of chapter five and relates the processes of tailoring and implementing shared medical appointments for the cohort of seven patients with metabolic syndrome who participated in the program. IRB project approval allowed activities related to this project to commence. The six-week program of

shared medical appointments included education about metabolic syndrome informed by research and practice, facilitated group support, and medical management according to national guidelines as indicated by patient condition. The shared medical appointments were led by a nurse practitioner and included a health care team of clinic and hospital health care personnel. Metrics and an end-program questionnaire provided patient information and perceptions about the program. Challenges to project implementation and an alteration to the implementation process were identified.

Outcomes and Evaluation

Donabedian's framework elucidates the evidence-based practice change process that informed this project. Donabedian (as cited in Holly, 2010) suggests an examination of three key measures – structure, process, and outcomes– that can be used in a clinical practice improvement project such as this one. *Structure* and *process* were delineated in chapters four and five, respectively. *Outcomes* are the products that result from the interaction of structure and process and reflect the effect on the patient and how well the intervention was done (Holly, 2010). Outcomes and evaluation are addressed in this chapter as they related to the institution of a program of shared medical appointments (SMA) for a small group of patients who met criteria for metabolic syndrome. These shared medical appointments combined individual assessment and treatment by the project leader, with group education and facilitated peer interaction and peer support.

Participant Demographics

The seven patients who participated in the program were representative of the larger adult clinic population according to ethnicity and race in that each self-described as non-Hispanic, White. For each, their preferred language was English. Six were female (mean age=58 years, range 37-67 years) and one was male, age 34. The mean number of sessions attended by all participants was five; participation ranged from attendance in half of the scheduled shared medical appointments ($n=2$) to patient participation in all six weekly sessions ($n=2$). All seven participants in the program had health insurance which included: Blue Cross Blue Shield (BCBS) of Alaska ($n=5$), Moda Health ($n=1$), and Medicare/BCBS/Aetna ($n=1$).

Program Inclusion

Patients all met diagnostic criteria for metabolic syndrome according to the *Joint Scientific Statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute: American Heart Association: World Heart Federation: International Atherosclerosis Society; and International Association for the Study of Obesity*. This definition specifies three of the following five criteria must be met: elevated waist circumference (population- and country-specific definitions but for these purposes defined as ≥ 94 cm male, ≥ 80 cm female); elevated triglycerides greater than 150 mg/dL, or history of treatment for same; reduced HDL-C less than 40 mg/dL male or less than 50 mg/dL female, or history of treatment for reduced HDL-C; elevated blood pressure greater than 130/85 mm Hg or treatment for previously diagnosed hypertension; and elevated fasting glucose greater than 100 mg/dL or drug treatment for elevated glucose (Alberti et al., 2009). This definition excluded the parameters given for enlarged waist circumference as an obligatory criterion for diagnostic purposes. The consensus definition includes enlarged waist circumference as one of the five criteria, with the presence of any three out of five sufficient for a diagnosis of metabolic syndrome (Alberti et al., 2009). The seven participants met the diagnostic criteria for metabolic syndrome, including one with type 2 diabetes. Most patients with type 2 diabetes will meet these diagnostic criteria for metabolic syndrome (Alberti et al., 2009). One patient was recruited for the program based upon a history in which the patient met the International Diabetes Federation diagnostic criteria for metabolic syndrome that was originally used, but labs and assessment done at the start of the program placed the patient only at risk of metabolic syndrome. In this case, the patient's improvement in HDL-C found on lab testing –from HDL-C of 46 mg/dL 19 months prior, to 55 mg/dL at the start of the program– negated the patient's qualification for metabolic

syndrome according to International Diabetes Federation diagnostic criteria. However, she did meet diagnostic criteria for metabolic syndrome according to the consensus definition of the *Joint Scientific Statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute: American Heart Association: World Heart Federation: International Atherosclerosis Society; and International Association for the Study of Obesity* (Alberti et al., 2009). To disallow participation seemingly based on such semantics would negate the patient's elevated cardiovascular disease risk and preclude an intervention aimed at improving overall health.

One of the seven participants moved out of state at the conclusion of the shared medical appointments. The participant was regarded as "lost to follow-up" since no data was obtained six weeks after the final session. With no post-program biometric data for comparison, that participant's data was excluded from analyses. This left six participants for whom biometric data was obtained. Individual qualifiers for participation in the program according to IDF criteria as well as the *Joint Scientific Statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute: American Heart Association: World Heart Federation: International Atherosclerosis Society; and International Association for the Study of Obesity* (Alberti et al., 2009) are specified in Table 1.

Table 1

Individual Qualifiers According to Metabolic Syndrome Criteria

	Patient					
	1	2	3	4	5	6
Waist circumference ≥ 94 cm male, ≥ 80 cm female	X	X	X	X	X	X
Triglycerides ≥ 150 mg/dL or history of treatment for same	X	X	X	X	X	X
HDL-C < 40 mg/dL male or < 50 mg/dL female or history of treatment	X	X				
BP $\geq 130/85$ mm Hg or treatment for previously diagnosed HTN		X	X	X	X	X
FPG ≥ 100 mg/dL or previously diagnosed type 2 DM		X	X			

Metrics

The following metrics relate to participant outcomes with respect to components of metabolic syndrome, arranged according to central adiposity, insulin resistance, atherogenic dyslipidemia, and elevated blood pressure. Implicit as an underlying component of metabolic syndrome, exercise/inactivity is also described. The clinical phenotype (central adiposity) and biological phenotype (insulin resistance, atherogenic dyslipidemia, elevated blood pressure) contribute to a proinflammatory state, with resultant vascular inflammation that can contribute to atherosclerosis (Kaur, 2014). Measures of pro-inflammatory and prothrombotic state (e.g., hs-CRP, apolipoprotein B (ApoB), etc.) (Isordia-Salas et al., 2014) were not assessed. None of the patients had a personal history of tobacco use that contributed to cardiovascular disease risk. Tobacco use is not a part of metabolic syndrome (Blaha & Tota-Maharaj, 2012).

Central adiposity. All participants demonstrated the requisite central obesity, as determined by enlarged waist circumference (≥ 94 cm in men and ≥ 80 cm in women). All participants were either overweight ($n = 2$) or obese ($n = 4$). Throughout the course of the program no one participant changed from their pre-program BMI classification according to

obesity (BMI \geq 30 kg/m²) or overweight (BMI >25.0-29.9 kg/m²). Reduction in visceral fat is expected to bring about improvement in metabolic abnormalities, with hyperglycemia *least* sensitive to decrease in waist circumference, and lipid abnormalities *most* sensitive to such a decrease in waist circumference (Takahara & Shimomura, 2014).

Insulin resistance. At the start of the program, only two of the four participants had *fasting* serum glucose assessed. Only one of these two participants who had fasting serum glucose assessed at the start of the program met this criterion for metabolic syndrome (glucose 113 mg/dL). The other one of the two had a pre-program fasting glucose of 93 mg/dL, and thus did not meet this criterion for metabolic syndrome. Irrespective of the value of pre-program serum glucose, the patient with a diagnosis of type 2 diabetes met this inclusion criterion. Four of the six participants had *random* pre-and post-program serum glucose measures; thus, these measures could not be used as a criterion for metabolic syndrome diagnosis according to the *Joint Scientific Statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute: American Heart Association: World Heart Federation: International Atherosclerosis Society; and International Association for the Study of Obesity*. The American Diabetes Association considers fasting plasma glucose erroneous in describing chronic medical conditions (Bonora & Tuomilehto, 2011). Because, inherent in the measurement of hemoglobin A1c is the repeated assessment of fasting glucose levels, hypoglycemia, and postprandial peaks, hemoglobin A1c is a more robust measure, and therefore more reliable and representative of average glucose than fasting plasma glucose (Bonora & Tuomilehto, 2011). All participants had pre-and post-program hemoglobin A1c measurements assessed. One patient was determined to have pre-diabetes, evidenced by a hemoglobin A1c equal to 5.9% (pre-diabetes 5.7-6.4%).

Atherogenic dyslipidemia. Originally assessed using the third iteration of the JBS3 calculator, 10-year cardiovascular risk was later reassessed pre- and post-program based upon the American College of Cardiology/American Heart Association (ACC/AHA) pooled cohort 10-year cardiovascular risk equation because the latter was found to be externally validated (Munter et al., 2014; Wilson, 2016) whereas the JBS3 was not. The JBS3 risk tool had been used as was the custom of primary care providers in the clinic. JBS3 has the advantage of modifying future risk calculations based on a modification of lifestyle factors such as smoking cessation (Wilson, 2016), and acts as a helpful educational tool in that respect. Another benefit of the JBS3 risk tool is its estimation of “heart age”, as well as risk beyond the 10-year risk estimate to provide” lifetime risk” (Wilson, 2016). However, data that inform the JBS3 are from statistical models and have not been externally validated (Wilson, 2016). The National Heart, Lung, and Blood Institute (NHLBI) assessed the body of evidence related to cardiovascular risk reduction in their evidence report, *Assessing Cardiovascular Risk: Systematic Evidence Review from the Risk Assessment Work Group, 2013* (U.S. Department of Health and Human Services, 2013).

As with glucose, lipid testing varied for each patient according to pre-and post-program fasting or non-fasting random evaluation: Four patients’ lipids were assessed in a *random* state pre- and post-program; one patient had assessment of lipids in a *fasting* state pre- and post-program, and; one patient had pre-program assessment of lipids in a *random* state, whereas post-program assessment of lipids had been done in a *fasting* state. Lack of contiguity in pre- and post-program lipid testing may limit findings. Although fasting lipid values have been the conventional testing method, fasting and non-fasting random lipid values vary over time and are comparable in their prediction of cardiovascular disease risk (Nordestgaard et al., 2016). In their

joint consensus statement from the *European Atherosclerosis Society and European Federation of Clinical Chemistry and Laboratory Medicine*, Nordestgaard et al. (2016) compared fasting and non-fasting random lipid profiles and found that the mean changes one to six hours postprandially are not clinically significant (+26 mg/dl for triglycerides, -8 mg/dL for total cholesterol, -8 mg/dL for LDL-C, -8 mg/dL for calculated non-HDL-C). Using this correction, the fasting and non-fasting lipid values can be considered complimentary but not mutually exclusive (Nordestgaard et al., 2016). Nordestgaard et al. (2016) recommended the following be considered abnormal when non-fasting serum samples are obtained: triglycerides ≥ 175 mg/dL, total cholesterol ≥ 190 mg/dL, LDL-C ≥ 115 mg/dL, and calculated non-HDL cholesterol ≥ 150 mg/dL. HDL-C is not influenced by fasting/non-fasting status.

Notwithstanding limitations related to the pre- and post-program contiguity of fasting versus non-fasting random state of lipid testing, five patients were shown to have had ACC/AHA 10-year risk under the 7.5% cutoff that suggests insufficient cardiovascular disease risk to warrant pharmacologic treatment with a statin. One patient's risk exceeded this threshold, with ACC/AHA 10-year cardiovascular risk determined to be 13.2 and 13.7 pre- and post-program, respectively. In this patient, whereas the 2013 ACC/AHA guidelines do not require fasting lipids to determine criteria for statin initiation to calculate LDL cholesterol (LDL-C), the recommendation for fasting lipids is in place when non-HDL-C > 220 mg/dL or triglycerides > 500 mg/dL since these may indicate genetic propensity for hypertriglyceridemia (Nordestgaard et al., 2016). The patient with type 2 diabetes had been prescribed appropriate statin therapy and was medically managed in accordance with the *American Diabetes Association Standards of Medical Care in Diabetes – 2016*.

Elevated blood pressure. At the program start, two patients had systolic blood pressure measures above 140 mm Hg (both 146 mm Hg), with one of the two also demonstrating diastolic pressure indicative of hypertension (90 mm Hg). Neither of these patients with elevated blood pressure carried a previous diagnosis of hypertension, and they were normotensive at program end although their systolic pressures remained in the at-risk range above 130 mm Hg. Medically managed with an angiotensin-converting enzyme (ACE) inhibitor, the participant with type 2 diabetes also was normotensive. At program end, four participants remained with systolic blood pressure in the 130s and so were without significant risk reduction, in keeping with this criterion for metabolic syndrome. Elevated blood pressure is an important risk factor for cardiovascular disease. Inferences that may be made about the shared medical appointments' influence on blood pressure are limited due to noticeable alterations in blood pressure variability that are demonstrated over the short and long term and which can be attributed to behavioral, emotional, postural, and other influences (Grassi et al., 2012).

Inactivity. Exercise was documented in the electronic health record as a "vital sign" in accordance with ACSM *Exercise is Medicine* tenets. Patient participation in moderate aerobic exercise, measured throughout the program according to patient report in minutes per day and days per week, improved significantly for five participants. For one participant exercise gains were not sustained so that the patient had resumed a sedentary lifestyle six weeks following the last shared medical appointment. Post-program, only two of the six participants met the ACSM minimum recommended 150 minutes of exercise per week. Association of total minutes of exercise pre- and post-program and correlation with improvement in health measures seems an inherent teaching tool for participants in the program, as participant's time commitment to exercise is expected to result in measurable health benefits.

Statistical Analysis

SPSS Statistics software was used to perform the Wilcoxon signed rank test, also known as the Wilcoxon matched pairs ranks test, on data elements pre- and post-program. The nonparametric equivalent to the paired *t*-test, the Wilcoxon signed rank test, is appropriate since comparison was made on a nominal sample size where the distribution between the pairs were non-normally distributed (McDonald, 2014). The significance of the results is reported as a *p* - value with the conventional statistically significant values below 0.05 (Tallant, 2010). Statistically significant values, then, are highlighted in rows and designated with an asterisk (*) in Table 2:

Table 2

Summary of Intercorrelations Pre- and Post-Program using Wilcoxon Signed Rank Test

	Z value	<i>p</i> value
Weight (kg)	-1.153	.249
BMI (kg/m ²)	-1.363	.173
Waist circumference (cm)	-0.948	.343
Systolic blood pressure (mm Hg)	-0.271	.786
Diastolic blood pressure (mm Hg)	-1.786	.074
Hemoglobin A1C (%)	-1.473	.141
Total cholesterol (mg/dL)	-2.201	.028*
Triglycerides (mg/dL)	-2.201	.028*
HDL-C (mg/dL)	-0.674	.500
LDL-C (mg/dL)	-0.524	.600
non HDL-C	-2.201	.028*
Self-reported exercise (minutes per week)	-2.032	.042*
10-year cardiovascular risk (%)	-0.816	.414

*denotes statistical significance at .050

The Wilcoxon signed rank test demonstrated a statistically significant increase in total cholesterol, triglycerides, non-HDL-C, and in minutes of exercise post-program compared to the measures at the start of the program. Clearly, only the last is a desired result of the intervention. Statistically *insignificant* change in pre- and post-program values included those for weight/BMI, waist circumference, systolic and diastolic blood pressure, HDL-C, LDL-C, and ACC/AHA 10-year cardiovascular disease risk. With respect to lipids and the resultant calculated 10-year cardiovascular disease risk score, these findings may be limited by the incongruity of pre- and post-program fasting and non-fasting measures.

Post-Program Questionnaire

Three participants completed the post-program questionnaire (see Questionnaire, Appendix F). Patient satisfaction with the shared medical appointments as a method of care delivery was ascertained via a 5-point Likert scale (1-very unsatisfied, 2-unsatisfied, 3-neutral, 4-satisfied, 5-very satisfied) at the end of the program via the simple question: “Overall, how satisfied are you with your experience with the *shared medical appointments* in which you participated?” Also assessed was a similar query about overall satisfaction with the *traditional* medical appointment, to provide a comparison. Of the three surveys that were returned, two participants rated being “very satisfied” with care delivery in these shared medical appointments compared to “neutral” with care in a standard appointment, and one participant rated being similarly “satisfied” with both shared medical appointments and standard medical appointments.

Participants were asked to respond in written form to the questions, “Did you experience anything you didn’t like? Are there any drawbacks to shared medical appointments?”

Comments were as follows:

“I got bored hearing everyone’s excuses until I realized that I had been doing the same thing. Now that’s a real wake up call.”

“Quiet people don’t talk as much. More talkative people can monopolize the group.”

Asked “what did you gain from participating in the program? What worked? (consider benefits from group participation, what you learned that was helpful, presentations by other health professionals, how shared medical appointments may have motivated you to take better care of yourself)”, participants responded:

“It was helpful to feel accountable for my behavior and discuss and validate with others. Learned more about metabolic syndrome, setting personal goals, nutrition tips, action planning. Thank you.”

“New knowledge. Lots of new information on blood sugars, how body works with blood sugars, refreshers on meal/food size. The appointments helped motivate me to get moving and a reminder that it’s not just me, we can help each other. I really liked that other people were brought in to help with questions and giving out more ideas.”

“There really wasn’t much that I didn’t already know. If your [sic] overweight or have metabolic syndrome, believe me, you know what your [sic] supposed to do! I did enjoy the info. and reiteration of information to motivate me. As far as having shared appointments, don’t think that they are that beneficial. I guess I don’t play well with others. I felt we got off base on why we were there at times.”

Additional written comments included:

“Thanks for including me. Can’t stop learning – eat less, move more! Can’t get any simpler.”

An unsolicited verbal comment was made by one participant after the class which reflected her personal view related to weight loss:

“It’s not good to lose too much weight because when you get old you get all saggy-looking.”

Medical Management

Documentation in the patient’s electronic health record attests to individual medical evaluation and management components of care that were provided in the context of a shared medical appointment. Treatment procedures with respect to medical management were in accordance with established national guidelines. These included the *2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report from The Panel Members Appointed to the Eighth Joint National Committee (JNC 8)* (James et al., 2014), the *American Diabetes Association Standards of Medical Care in Diabetes – 2016* (American Diabetes Association, 2016), and *2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: a Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines* (Stone et al., 2014). The patient with type 2 diabetes was receiving optimal medical management of risks by current ADA guidelines. Overall, all patients were found to be at elevated cardiovascular risk pre-program, and they remained at risk post-program according to standard assessment parameters.

Referrals were made, as indicated, for two patients, one to a dietician, and one to behavioral services for concomitant depression. There were no disputed claims with any health insurance submission. Over the course of six weeks, patients in the program sought care

unrelated to metabolic syndrome, such as for an acute upper respiratory infection ($n=1$), annual exam ($n=1$), and pre-existing musculoskeletal condition ($n=1$).

Project Limitations

Project limitations include the nominal group size, the incongruity of pre- and post-program fasting and non-fasting lipid results, and relatively short duration of the program. Self-selection bias may be at play, as those willing to participate may manifest higher relative readiness for behavior change than the general population. There exist many confounding variables. As such, results are not generalizable to a larger population.

Conclusion

Outcomes related to implementation of the clinical practice improvement project are informed by Donabedian and outlined in chapter six. The program participants were defined according to demographics and metrics that relate to metabolic syndrome and inherent cardiovascular disease risks that include central adiposity, glucose intolerance, atherogenic dyslipidemia, elevated blood pressure, and exercise pattern. A Wilcoxon signed rank test revealed statistically significant increase in total cholesterol, triglycerides, non-HDL-C and self-reported minutes of exercise per week post-program compared to the measures at the start of the program of shared medical appointments (see Table 2). The Wilcoxon signed ranks test demonstrated no statistically significant improvement in weight/BMI, waist circumference, systolic and diastolic blood pressure, HDL-C, LDL-C, or 10-year cardiovascular disease risk. Limitations due to inconsistency in measuring pre- and post-program lipids with respect to fasting or non-fasting random values are recognized. Post-program feedback via completion of a questionnaire was received by three participants. Two participants rated being “very satisfied” with care delivery in these shared medical appointments compared to a rating of “neutral” with

care in a standard appointment, and one participant rated being similarly “satisfied” with both shared medical appointments and standard medical appointments. Patients remained at elevated cardiovascular disease risk post-program according to standard assessment parameters.

Implications for Nursing Practice

Chapter seven has as its focus a description of the *Essentials of Doctoral Education for Advanced Nursing Practice* (American Association of Colleges of Nursing (AACN), 2006) as they relate to this Doctor of Nursing Practice (DNP) project. This DNP project –implementation of a clinical practice improvement project focused on using shared metabolic appointments to address cardiovascular risk in patients with metabolic syndrome– meets all eight DNP Essentials. A synthesis of these competencies is outlined herein.

DNP Essential I. Scientific Underpinnings for Practice

DNP Essential I recognizes foundational nursing tenets, including scientific underpinnings that inform DNP practice. In this project is reflected evidence that speaks to the need for intervention in patients that meet diagnostic criteria for metabolic syndrome because of their increased cardiovascular disease risk and the data that supports the importance of these interventions. Nursing science supports the development of theories and models to guide nursing practice (AACN, 2006). In this project, Donabedian’s framework was utilized to expand further on steps in the *Model for Evidence-Based Practice Change*. Shared medical appointments were utilized as a care delivery method in accordance with the Institute of Medicine’s aim to use evidence from research “to determine effective strategies for implementing system-based change to improve care processes and patient outcomes” (Institute of Medicine, 2011, as cited in Melnyk & Fineout-Overholt, 2015, p. 77). This program included evidence-based guidelines for screening, evaluation, and medical management. In keeping with scientific underpinnings for practice is the recognition that additional research is needed to better understand what elements improve outcomes, what Kirsh et al. (2007) describe as the “physiology” of shared medical appointments that account for the clinical improvement that is evidenced in the literature.

Inherent in this project are other foundational nursing tenets outlined in DNP Essential I. These include “the patterning of human behavior in interaction with the environment”, “the wholeness or health of human beings recognizing that they are in continuous interaction with their environments”, and “the nursing actions or processes by which positive changes in health status are affected” (AACN, 2006, p. 9). These tenets must be considered – and accommodated – as they are so very relevant where lifestyle choices and behavior change impact individual health and the health of populations, and as they affect program outcomes.

DNP Essential II. Organizational and Systems Leadership for Quality Improvement and Systems Thinking

DNP Essential II expounds on the leadership that is necessary to improve health care at the organizational and systems level. It embraces the role of the DNP in the delivery of care in order to improve health care. Leadership for systems level change involved system redesign from that of traditional office visits to one of shared medical appointments. At the same time, attention remained focused on the direct care of the individual within the context of a focus on the needs of a cohort of patients (AACN, 2006). Recognizing that “improvements in practice are neither sustainable nor measurable without corresponding changes in organizational arrangements...” (AACN, 2006, p. 10), further changes will need to be made in the organizational structure as well as professional culture to accommodate additional numbers of patients in this model of care. Such a shift assumes engaged leadership.

DNP Essential III. Clinical Scholarship and Analytical Methods for Evidence-Based Practice

Scientific research and principles are the foundations upon which DNP Essential III recognizes a translation of research into practice, evaluation of practice, and practice improvement in an effort to improve care (St. John Fisher College, n.d.). In this project, it included discernment in choice of a 10-year cardiovascular risk calculator as an assessment tool

and patient teaching tool, a decision which involved a transition from a tool that was used by convention to one that is targeted to the population and externally validated. It included discernment in choice of evidence-based clinical practice guidelines. It included incorporation of self-reported minutes per week of exercise as a “vital sign” in the electronic health record (EHR). It also included incorporation of the expertise of Noffsinger (2009) with respect to program design and organizational aspects of conducting physical shared medical appointments. This included evidence supporting the recommended frequency of shared medical appointments and the personal invitation extended to participants by a primary care provider, which was suggested by Donabedian as the single most effective means of getting patients to attend shared medical appointments, etc. DNP Essential III, according to Boyer (1990, p. 21, as cited in AACN, 2006) reflects more than discovery of new knowledge but rather a paradigm in which: “the scholarship of discovery and integration ‘reflects the investigative and synthesizing traditions of academic life’; scholars give meaning to isolated facts and make connections across disciplines through the scholarship of integration; and the scholar applies knowledge to solve a problem via the scholarship of application (referred to as the scholarship of practice in nursing).”

DNP Essential IV. Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

DNP Essential IV recognizes the management, evaluation, and utilization of information technology to improve health outcomes (St. John Fisher College, n.d.). Reliance was placed on informatics in this project: through a literature search of databases in the UAA Consortium Library, data analysis using SPSS software to determine statistical significance of outcomes data, documentation of clinically-relevant patient information in the EHR, and incorporation of the validated exercise as “vital sign” in the EHR. Templates were created in the EHR to facilitate documentation at each visit. PPRNet (Primary (Care) Practices Research Network), approved by

the Centers for Medicare and Medicaid Services (CMS) as a Qualified Clinical Data Registry (QCDR) contains clinical data registry information that allowed data to be mined from the EHR and enabled a search for patients according to certain metrics like systolic blood pressure or body mass index, and so define a population of patients according to diagnostic criteria for metabolic syndrome.

DNP Essential V. Health Care Policy for Advocacy in Health Care

DNP Essential V recognizes an accountability of DNP-prepared nurses to influence policy in a way that improves the health of individuals and populations. This project acted in accordance with health care policy, rather than setting health care policy. The project implementation occurred at the institution level but has a much broader scope. Knowledge of project scope may yet inform health policy at local, state, regional, federal, and international levels, with regard to health care finance, regulation, and care delivery, etc.

Implementation of shared medical appointments to affect cardiovascular disease risk in patients with metabolic syndrome aligns with the National Quality Strategy (NQS). The NQS, mandated by the Patient Protection and Affordable Care Act, includes three overarching aims that build on the Institute for Healthcare Improvement's Triple Aim (Agency for Healthcare Research and Quality (AHRQ), 2015). With respect to the first two aims that include better care and healthy people, this DNP project supports these aims in its focus on patient-centered care, and in the provision of evidence-based interventions address behavioral, social, and environmental determinants of health, respectively (AHRQ, 2015). While a formal cost-benefit analysis was not conducted in this DNP project, shared medical appointments have been shown to support the third aim that is cost-effective care (Noffsinger, 2009). Shared medical appointments as a care delivery method advance priorities that are part of the National Quality

Strategy. Some of these strategies include: patient as a partner in care, promotion of effective prevention and treatment practices related to cardiovascular disease, and promoting best practices to facilitate healthy living (AHRQ, 2015).

DNP Essential VI. Interprofessional Collaboration for Improving Patient and Population Health Outcomes

DNP Essential VII recognizes that translation of evidence into practice through leadership requires community-building, that which Brown and Kaplan (2016) refer to as building bonds and collegial connections. Such a culture of connections is necessary for project implementation and improved health care, for professional development, and as a condition for furthering the nursing profession. The project necessitated inter- and intra-professional collaboration to reorganize the standard care structure from the traditional office visit to shared medical appointments so improvements in practice might be realized.

DNP Essential VII. Clinical Prevention and Population Health for Improving the Nation's Health

DNP Essential VII identifies with the nursing focus on health promotion and disease prevention in the context of improving healthcare at all levels. Shared medical appointments focused on individual assessment, education, and disease management within the context of the aggregate that was the larger population with metabolic syndrome. Individuals benefited from counseling and support from the interchange within the group. Implementation of the shared medical appointments for patients with metabolic syndrome addresses several Healthy People 2020 goals and objectives. These include the Clinical Preventive Services leading health indicators for adults with hypertension whose blood pressure is under control, and those with suboptimal glycemic control; and nutrition, physical activity, and obesity leading health

indicators that include adults meeting aerobic and strength training objectives, and efforts targeting adult obesity (Office of Disease Prevention and Health Promotion, 2016).

DNP Essential VIII. Advanced Nursing Practice

DNP Essential VIII recognizes the value of the highest level of nursing practice. This DNP project supported a level of specialization and depth of knowledge within the breadth of family practice nursing.

Implications

Notwithstanding the project's limitations, previously mentioned, the project demonstrates the feasibility of the use of shared medical appointments to address cardiovascular disease risk in patients with metabolic syndrome. This mode of health care delivery can be implemented for health promotion and disease management in other patient populations. The project demonstrates the translation of evidence-based research into practice and an understanding of the process by which this may take place. As such, the DNP process itself has profound implications as it informs future projects. The project allowed a deeper understanding of the state of the science related to the components or the whole of the metabolic syndrome as they apply to clinical practice. Certainly, improved provider awareness and recognition facilitates intervention. The project allowed a certain depth of knowledge within the wide breadth of the topic, and within the breadth that advance practice nursing encompasses in the field of family practice.

Conclusion

Chapter seven includes a synthesis of the *Essentials of Doctoral Education for Advanced Nursing Practice* as they relate to the DNP project. These eight DNP Essentials are considered by the AACN to be foundational outcome competencies for the DNP-prepared

advanced practice registered nurse. Implementation of the clinical practice improvement project is in accordance with aims the National Quality Strategy.

Summary and Conclusion

The application of evidence-based knowledge to clinical practice is necessary in order to further nursing science and to ensure better, more affordable care for patients and populations. The process of improving practice through application of research is at the heart of the Doctor of Nursing Practice (DNP) project. Foundational to the DNP project are the *Essentials of Doctoral Education for Advanced Nursing Practice* as they inform goals that align with the National Quality Strategy.

DNP Project Process

To move evidence-based knowledge into practice, strategies such as the one employed in the DNP project are needed. Rosswurm and Larrabee's model for evidence-based practice and Donabedian's framework were chosen to guide the intervention of using shared medical appointments to improve cardiovascular risk in patients with metabolic syndrome. Physicals shared medical appointments were carried out weekly over the course of six weeks and involved individual care including assessment and medical management in short, private sessions, and facilitated group counseling and support. Informational topics were facilitated by the advance practice registered nurse and nutrition services staff, as well as by a guest lecture on mindful eating by a psychiatric nurse practitioner. The educational curricula were consistent with that of the TRIMS study. Statistically significant improvement was noted only in the measure of self-reported exercise duration. Post-program, patients remained at elevated cardiovascular disease risk that is a condition of metabolic syndrome. Patients reported satisfaction with shared medical appointments equal to or greater than their satisfaction with traditional office visits.

The American Association of Colleges of Nursing included Boyer's vision of scholarship for the DNP program. Boyer refocused attention on the scholarship of teaching and service in

nursing, with less attention to the established traditions of research and publication (White & Zaccagnini, 2015). Boyer's (1996) reimagination of scholarship included four parts: a) the scholarship of discovery, b) the scholarship of integration, c) the scholarship of teaching, and d) the scholarship of application informs the DNP project process (Boyer, 1996). This DNP project process encompasses Boyer's four criteria, with emphasis on the scholarship of integration and the scholarship of application.

Reflection

DNP-prepared leaders are needed as change agents to tackle the complex challenges in our current health care system. The overarching challenge in today's health care environment is how to fulfill the expectations of a profession when those expectations are to bring something new to practice in order to improve the patient experience of care, improve population health, and reduce per capita costs of health care that are the aims of the Institute for Healthcare Improvement (IHI) Triple Aim Initiative (Berwick, Nolan, & Whittington, 2008; Institute for Healthcare Improvement, 2016). For a DNP-prepared advanced practice registered nurse, success may be measured by how he/she shall "think strategically, innovate, and engage stakeholders in meaningful system improvement" (Kendall-Gallagher & Breslin, 2013, p. 259). This DNP project was a very small manifestation of such strategic vision. The DNP project process outlines requisite knowledge and processes to affect change.

Conclusion

Goethe (as cited in White & Zaccagnini, 2015, p 451) is quoted as saying "Knowing is not enough; we must apply. Willing is not enough; we must do". The quote seems relevant as it applies to the DNP project intent and scope. This project reflects that translation of evidence-based knowledge into a project in accordance with aims that are consistent with improving

practice, processes, and/or outcomes (White & Zaccagnini, 2015). Its foundational tenet is the impact the process has on improving practice and reducing disease burden. This project, guided by the *Model for Evidence-based Change*, reflects that translation of evidence-based knowledge into a project whose aims are consistent with the overarching goals of the National Quality Strategy. The process that included research, design, implementation, and evaluation availed itself to a process guided by the *Model for Evidence-Based Practice Change*. It is a model that lends itself to future clinical practice improvement efforts.

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Nurse practitioner-led multidisciplinary teams to improve chronic illness care: the unique strengths of nurse practitioners applied to shared medical appointments/group visits.

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Appendix A

Institutional Support Letter

Homer Medical Center

4136 Bartlett Street, Homer, AK 99603 | (907) 235-8586 | fax: (907) 235-6639 | www.homermedical.org

December 10, 2015

School of Nursing
University of Alaska Anchorage
Anchorage, AK

To Whom It May Concern:

I am aware of and support implementation of the quality improvement project proposed by Jill Rife, a nurse practitioner in our clinic, and DNP student at the University of Alaska Anchorage (UAA). Her project aims to improve outcomes in adult patients at Homer Medical Center diagnosed with metabolic syndrome through implementation of shared medical appointments/group visits.

I understand that a proposal will be submitted to the UAA Institutional Review Board (IRB) for approval.

Sincerely,



William Bell, MD
Medical Director, Homer Medical Center



Appendix B**IRB Approval Letter**

3211 Providence Drive
Anchorage, Alaska 99508-4614
T 907.786.1099, F 907.786.1791
www.uaa.alaska.edu/research/ric

DATE: April 20, 2016

TO: Jill Rife, MSN, BSN
FROM: University of Alaska Anchorage IRB

PROJECT TITLE: [867674-2] A metabolic syndrome clinical practice improvement project using shared medical appointments

SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED

DECISION DATE: April 20, 2016

EXPIRATION DATE: April 20, 2017

REVIEW TYPE: Expedited Review

Your proposal received an expedited review and was granted approval with minor revisions. Thank you for a copy of these revisions. Therefore, in keeping with the usual policies and procedures of the UAA Institutional Review Board, your proposal is judged as fully satisfying the U.S. Department of Health and Human Services requirements for the protection of human research subjects (45 CFR 46 as amended/ revised). This constitutes approval for you to conduct the study.

This approval is in effect for one year. If the study extends beyond the expiration date listed above, you are required to submit a progress report and to request continuing approval of your project from the Board. At the conclusion of your research, submit the required final report to the IRB. These report forms are available on IRBNet.

Please report promptly proposed changes in the research protocol for IRB review and approval. Also, report to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

On behalf of the Board, I wish to extend my best wishes for success in accomplishing your objectives

Ronald S. Everett, Ph.D.

Chair, Institutional Review Board

Appendix C

Invitation Flyer

beginning soon

an invitation to participate...

...IN SHARED MEDICAL APPOINTMENTS FOR THOSE WITH METABOLIC SYNDROME

Shared medical appointments are a novel approach to health care in which your medical visit takes place in a supportive group setting. These medical appointments include a private, ~5-minute assessment by a nurse practitioner, followed by a session shared with others who have similar health concerns. Attention is focused on education about metabolic syndrome, and what you can do to reduce your risk of heart disease, stroke, and other associated health risks such as sleep apnea and dementia. Sessions will last up to 90 minutes and take place weekly or every other week over the course of 6 weeks. These shared medical appointments will be billed to your insurance just like any traditional appointment.

YOU QUALIFY IF YOU HAVE 3 of 5:

- ENLARGED WAIST CIRCUMFERENCE (Men >37 inches, Women >32 inches)
- ELEVATED TRIGLYCERIDE LEVEL > 150 mg/dL, or treatment for this
- REDUCED HDL CHOLESTEROL, or treatment for this
 - Men <40 mg/dL
 - Women <50 mg/dL
- ELEVATED BLOOD PRESSURE >130/85 or treatment for hypertension
- ELEVATED FASTING GLUCOSE >100 mg/dL or treatment for elevated blood sugar

JOIN US! FOR MORE INFORMATION, CONTACT:

**HOMER MEDICAL CENTER
JILL RIFE, FAMILY NURSE PRACTITIONER
(907) 235-8586**

Appendix D

Talking Points

A CLINICAL PRACTICE IMPROVEMENT PROJECT FOR PATIENTS WITH METABOLIC SYNDROME USING SHARED MEDICAL APPOINTMENTS

TALKING POINTS:

- PROGRAM IS FOR HOMER MEDICAL CENTER PATIENTS
- PATIENT QUALIFIES IF:

LARGE WAIST CIRCUMFERENCE

(Waist circumference: Men >37 inches, Women >32 inches)

PLUS 2 OTHER HEALTH RISKS:

- ELEVATED TRIGLYCERIDE LEVEL > 150 mg/dL, or treatment for this
- REDUCED HDL CHOLESTEROL, or treatment for this
 - Men <40 mg/dL
 - Women <50 mg/dL
- ELEVATED BLOOD PRESSURE \geq 130/85 or treatment for hypertension
- ELEVATED FASTING GLUCOSE >100 mg/dL or treatment for elevated blood sugar

- PROGRAM INCLUDES 6 CLASSES OF 90 MINUTE DURATION MEETING WEEKLY
- BEGIN MID TO LATE MAY
- SHARED MEDICAL APPOINTMENTS ARE A NOVEL APPROACH TO HEALTH CARE IN WHICH THE MEDICAL VISIT TAKES PLACE IN A SUPPORTIVE GROUP SETTING.
 - THESE MEDICAL APPOINTMENTS INCLUDE A PRIVATE, ~5 MINUTE ASSESSMENT BY HEALTH CARE PROVIDER. THE REST OF THE 90 MINUTE VISIT IS SPENT IN EDUCATION ABOUT WHAT PATIENT CAN DO TO REDUCE RISK OF HEART DISEASE, STROKE, AND OTHER ASSOCIATED HEALTH RISKS SUCH AS SLEEP APNEA AND DEMENTIA.
 - THE EDUCATION, AND MAJORITY OF EACH CLASS, IS SHARED WITH OTHER PATIENTS LIKE THEM.
 - SUPPORT COMES FROM OTHER PATIENTS IN THE CLASS.
 - FINGERSTICK LIPID PANEL AND FASTING GLUCOSE WILL BE DRAWN PRE- AND POST-PROGRAM IN ORDER TO DETERMINE PATIENT'S 10-YEAR CARDIOVASCULAR DISEASE RISK (UNLESS RECENTLY DONE)
 - ANY MEDICATION MANAGEMENT WILL BE DONE IN CONSULTATION WITH PRIMARY CARE PROVIDER.
 - PROGRAM IS VOLUNTARY AND PATIENT MAY DISCONTINUE PARTICIPATION AT ANY TIME.
 - BILLING FOR SHARED MEDICAL APPOINTMENTS IS DONE IN THE SAME WAY AS FOR A TRADITIONAL MEDICAL APPOINTMENT.

If patient is interested, please provide them with a flyer and encourage them to leave a message with Jill Rife to get more information.

Please send Jill Rife a Practice Partner message letting her know the patient is a prospective participant in the program.



Appendix E

Consent Form

A CLINICAL PRACTICE IMPROVEMENT PROJECT
FOR PATIENTS WITH METABOLIC SYNDROME
USING SHARED MEDICAL APPOINTMENTS

CONSENT FORM

This project is being conducted by Jill Rife who is a nursing student at the University of Alaska Anchorage. For questions about this project, please contact:

Jill Rife, ANP, NP-C

Family Nurse Practitioner

Homer Medical Center, Homer, Alaska

(907) 235-8586

If you have any questions about your rights as a research subject, please contact Sharilyn Mumaw, University of Alaska Anchorage Research Compliance Officer, (907) 786-1099.

PROGRAM PURPOSE:

This project is meant to evaluate shared medical appointments for treatment of metabolic syndrome. You are invited to participate because you have a condition called metabolic syndrome. For example, you may have a slightly high blood pressure but not high enough to be diagnosed with hypertension. You may have high blood sugar but not high enough to have diabetes, or you may have excess belly fat. When you have metabolic syndrome, you have a higher risk of heart attack, stroke, and dementia, among others. This program uses group visits instead of the usual individual appointment with your health care

provider. In the 90-minute appointment you will get a private, brief check up with a nurse practitioner, and the rest of the visit is spent in a supportive group with individuals who have similar health issues. You will learn what you can do about metabolic syndrome. The group will meet every week for six sessions. Sessions will last 90 minutes.

I understand that:

- My participation is voluntary.
- I can choose to have a regular office visit with my doctor or nurse practitioner.
- I may decide at any time that I do not want to take part in the program any longer without penalty.
- My health information becomes a part of my medical record at Homer Medical Center, just like any traditional medical appointment.
- There are possible risks from taking part in this program. These are thought to be minimal. Risks include potential harm from blood draws to obtain blood sugar and cholesterol values before and at the end of the program. Another risk may come from any health care information I have shared from being given out by other people in the group. By signing this form, I promise to respect the privacy of everyone in the group and to keep their health information confidential.
- No information that identifies me shall be given out by the clinic staff without my separate written consent. I understand that all information that identifies me is protected by law.
- The possible benefits to being in this program include group support. It also may include more knowledge about my health and about what I can do to improve my health. I may realize better health, and may receive better health care and improved satisfaction with my health care.
- Payment for these group visits is done in the same way as payment for traditional medical appointments. The estimated cost of \$125 to \$159 per visit will be billed to my

insurance. I understand my insurer may pay none, part, or all of the cost, but that a reasonable expectation about payment can be determined by consulting with my health insurance representative. The bill may go towards my deductible if that is still unmet. My insurance plan may require a small co-payment at the time of the office visit. Homer Medical Center billing office staff can help to determine my insurance coverage for this program. I may contact the billing office if I have questions, by calling 907-435-3055. By signing this form, I agree to pay these costs.

- I will not receive any incentives for participating in this project.

- Information from this project will be used in a project write-up that will be archived at the University of Alaska Anchorage, and which may be presented at nursing conferences or published in scientific journals.

Signature _____ Date _____

Printed name _____

Witness _____

A copy of this consent form will be given to you to keep.

Appendix F

Questionnaire

**A CLINICAL PRACTICE IMPROVEMENT PROJECT
FOR PATIENTS WITH METABOLIC SYNDROME
USING SHARED MEDICAL APPOINTMENTS**

END PROGRAM QUESTIONNAIRE

Thank you for your frank responses to the following questions:

1. Overall, how satisfied are you with your experience with the *shared medical appointments* in which you participated? (circle one)

Very Dissatisfied Dissatisfied Neutral Satisfied Very Satisfied

2. In comparison, how generally satisfied are you with *standard medical appointments*? (circle one)

Very Dissatisfied Dissatisfied Neutral Satisfied Very Satisfied

3. Did you experience anything you didn't like? Are there any drawbacks to shared medical appointments? (please describe)

4. What did you gain from your participation in this program? What worked? (consider benefits from group participation, what you learned that was helpful, presentations by other health professionals, how shared medical appointments may have motivated you to take better care of yourself?)

5. Please feel free to leave additional comments on the back of this page. Your feedback is appreciated.

Thank you for your participation in the program.