5-1-2017

The Implementation Gap Between Evidence-Based Guidelines and Primary Care Providers' Provision of Care for Adult Obese Individuals

Linda Ailene Hagemann
University of Nevada, Las Vegas

THE IMPLEMENTATION GAP BETWEEN EVIDENCE-BASED GUIDELINES AND PRIMARY CARE PROVIDERS' PROVISION OF CARE FOR ADULT OBESE INDIVIDUALS

By

Linda A. Hagemann

Bachelor of Science – Criminal Justice
University of Nebraska – Omaha
1988

Bachelor of Science – Nursing
University of Nebraska Medical Center
1993

Master of Science – Nursing
Arizona State University
2002

A doctoral project submitted in partial fulfillment
of the requirements for the

Doctor of Nursing Practice

School of Nursing
Division of the Health Sciences
The Graduate College

University of Nevada, Las Vegas
May 2017

UNLV | GRADUATE COLLEGE

Doctoral Project Approval

The Graduate College
The University of Nevada, Las Vegas

April 3, 2017

This doctoral project prepared by

Linda A. Hagemann

entitled

The Implementation Gap between Evidence-Based Guidelines and Primary Care Providers' Provision of Care for Adult Obese Individuals

is approved in partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice
School of Nursing

Jessica Doolen, Ph.D.
Examination Committee Chair

Kathryn Hausbeck Korgan, Ph.D.
Graduate College Interim Dean

Carolyn E. Sabo, Ed.D.
Examination Committee Member

Christopher Heavey, Ph.D.
Graduate College Faculty Representative

Abstract

Adult obesity has become a significant problem in the United States. To reduce health consequences and the rising cost of obesity, evidence-based guidelines to identify and treat obesity are available to primary care providers (PCPs). Despite literature supporting favorable outcomes by PCPs who address obesity at a patient's visit, studies indicate obesity counseling is occurring infrequently, particularly in military primary care settings.

Guided by the Diffusion of Innovations Theory, this research utilization project evaluated whether there is an implementation gap between use of the Department of Veterans Affairs (VA) and Department of Defense (DoD) Clinical Practice Guideline for Screening and Management of Overweight and Obesity and military primary care providers' provision of care for adult obese individuals. A retrospective review of electronic medical records was conducted at an Air Force military treatment facility and continued until 50 records were identified that met inclusion criteria (i.e., TRICARE beneficiaries age 19 and older with a body mass index (BMI) of 30 kg/m^2 or greater).

The rate of identification of adult obesity was 36%. Only 36% of individuals were offered diet and exercise counsel. Sixteen percent were offered behavioral counsel and 12% received a one-month follow-up appointment. No individuals eligible to receive pharmacologic and bariatric surgical treatment were offered these interventions. The overall composite score for obesity treatment was 0.22, indicating identification and treatment of obesity occurred an average of 22% of the time. Results of this research utilization project are consistent with other studies, suggesting the need to determine barriers and implement interventions that can assist PCPs in translating evidence to practice to reduce rates of adult obesity in the primary care setting.

Acknowledgements

I wish to thank my committee chair, Dr. Jessica Doolen, who provided me tremendous guidance and support in completing my scholarly project. She was instrumental in assisting me through the Institutional Review Board process and offered endless reassurance through tight deadlines. I would also like to thank my committee members, Dr. Carolyn Sabo and Dr. Christopher Heavey, for their insight and exceptional feedback that improved the depth of my learning, and to Ms. Nancy Flagg for her instruction and time to edit my project drafts.

I would like to acknowledge the Air Force and personnel at Joint Base Andrews, Maryland, for their support and assistance in completing this research utilization project; to Colonel (s) Candy Wilson, who provided research guidance and oversight, assisting me in navigating the Research Oversight and Compliance Division requirements; to the executive leadership staff who allowed me to conduct this project at their facility; and to the Family Practice, Population Health, Disease Management, and Systems staff for their assistance and support.

Dedication

I would like to dedicate this research utilization project to my family. I could not have accomplished this without the undying support and encouragement of my husband, Ed Hagemann; and I am forever indebted to my children, Melanie, Madison, and Matthew Hagemann, for allowing me to juggle being a student and a mother. Although I can never repay my time away from the family, I hope that I have inspired them to know they can be all that they can be—just reach for the stars, dream big, and never give up!

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Chapter I

Introduction

Clinically, body weight status (i.e., underweight, overweight, obesity) is characterized by the BMI—the ratio of an individual's weight (in kilograms) to the square of the individual's height (in meters). For adults, obesity is defined in terms of a BMI equal to or greater than 30 kg/m^2 (Centers for Disease Control and Prevention [CDC], 2012a). Since the 1990s, when the prevalence of adult obesity in the United States (U.S.) averaged 10%–14%, this rate more than tripled (Behavioral Risk Factor Surveillance System [BRFSS], 1990). In 1998, the prevalence was 15%–19%; by 2007, 20%–24%; and by 2013, 25%–35% (BRFSS, 2013). A study of a military adult active (AD) population found that from 2009 to 2012 the prevalence of obesity was 30.5%, which was lower than the general population; however, for the non-active duty population, a prevalence of 35.1% was comparable to the general population (Eilerman et al., 2014). Today, the prevalence of obesity in the U.S. is over 36%, while the obesity rate for adults age 40–59 is as high as 40.2% (Ogden, Carroll, Fryar, & Flegal, 2015).

Causes of Obesity

There are many factors influencing obesity, including physiological, psychological, sociological, and environmental associations. In a study conducted by Owen-Smith, Donovan, and Coast (2014), morbidly obese individuals reported several reasons for weight gain. The researchers grouped these into four broad categories: (a) personal responsibility and "morality" of health (e.g., individual's attitude that mitigates personal accountability); (b) role of family structure and importance of gender; (c) role of emotional distress and its impact on the body; and (d) the vicious cycle and downward spirals that compound health conditions. Respondents felt there were numerous psychosocial patterns, family history, and genetics that contributed to obesity.

Individuals reported that increased weight adversely affected physical and social aspects of daily living that led to despair. Study participants felt it was a "vicious circle" (p. 1217) that was difficult to stop.

Physiological factors. Physiologically, obesity results from overnutrition. An imbalance between caloric intake and energy expenditure leads to increased adipose tissue storage (Skolnik & Ryan, 2014). Adipose tissue and stomach regulators release chemical messengers that stimulate the brain, creating an intricate balance between starvation and satiety that regulates body weight (Chugh & Sharma, 2012; Skolnik & Ryan, 2014). When regulation becomes imbalanced, adipose tissue secretes harmful inflammatory markers that lead to metabolic dysfunction of glucose and cholesterol (Tchernof & Després, 2013). Research also indicates that through epigenetic mechanisms, maternal dietary patterns increase the susceptibility to obesity that affect offspring by inducing alterations through genetic expression (Martinez, Milagro, Claycombe, & Schalinske, 2014).

Psychological, sociological, and environmental factors. A range of diverse psychosocial and environmental factors increase the risk of obesity. Childhood socialization patterns and family roles, work patterns, and diet failures contribute to obesity (Owen-Smith et al., 2014). Insufficient sleep patterns (Chaput, 2014) and emotional stress can potentiate the effects of obesity (Chao, Grilo, White, & Sinha, 2015; Turk et al., 2012). Individuals report that weight adversely affects relationships and contributes to fear of discrimination, low self-esteem, and self-loathing (Owen-Smith et al., 2014). Business and manufacturing have also impacted obesity rates. Portion sizes served in U.S. restaurants have increased two to three times over the past two decades (National Heart, Lung, and Blood Institute, 2013). Karnani, McFerran, and Mukhopadhyay (2014) coined the term "leanwashing" (p. 5) to describe how the food industry deceives the public into believing

that the industry is helping to find ways to fight obesity—when, in fact, this industry contributes to the prevalence of obesity in the general population through marketing of unhealthy processed foods.

Consequences of Obesity

The body's inflammatory response to obesity contributes to several comorbid conditions. Heart disease, stroke, type 2 diabetes (T2DM), hypertension (HTN), dyslipidemia, metabolic syndrome, and obstructive sleep apnea (OSA) have been associated with obesity (Cawley & Meyerhoefer, 2012; Ding et al., 2015; Drager, Togeiro, Polotsky, & Lorenzi-Filho, 2013; Owen-Smith et al., 2014). Obesity also contributes to osteoarthritis and some types of cancer (Arnold et al., 2016; Hootman, Helmick, & Hannan, 2011, April 29).

Estimates of obesity-related health care costs vary significantly. For example, An (2015) estimated the health care cost of an individual with obesity in the U.S. is $1,809 higher than non-obese individuals; in contrast, Cawley and Meyerhoefer (2012) estimate the cost to be $2,741. A 2012 estimate of obesity related costs was $147 billion (CDC, 2015). The military health system spends more than $1.1 billion annually on individuals with overweight and obesity-related conditions, losing an estimated $1.1 million annually due to absenteeism and an additional $2.6 million annually due to presenteeism, where workers are less productive on the job due to health issues (Hruby et al., 2015). A cost of more than $1 billion annually is reported by the Department of Veterans Affairs (VA) for obesity-related issues (Tanofsky-Kraff et al., 2013).

Hruby et al. (2015) evaluated trends for individuals entering the Army. Administrative costs increase for recruits who cannot meet physical stature and fitness requirements, resulting in premature separation of the individual from service. It is estimated 27% of potential recruits (9 million young adults) are not eligible to enlist for military service because they do not meet weight

standards (Tanofsky-Kraff et al., 2013). This negatively influences military readiness and national security.

Benefits of Weight Loss

Weight loss has clear benefits. With each kilogram of weight gained, the risk of T2DM increases 4.5% to 9% across one to two decades (Rueda-Clausen, Ogunleye, & Sharma, 2015). Mitigation of risk for T2DM occurs with as little as 5% to 10% weight loss, which is shown to improve blood pressure, cholesterol, and glucose levels (Kushner & Sur, 2014). Weight loss has also been associated with reduced osteoarthritis, reduced urinary and fecal incontinence, and, in women, reduction in the severity of polycystic ovarian syndrome that can reduce the risk of infertility (Rueda-Clausen et al., 2015).

Given the negative influence that obesity has on health and quality of life, several obesity guidelines recommend comprehensive, high-intensive, multicomponent lifestyle interventions to reduce obesity and its consequences (VA/Department of Defense [DoD], 2014; Jensen et al., 2013; Moyer, 2012). In 2010, the U.S. Department of Health and Human Services (USDHHS) established *Healthy People 2020* goals for healthy eating and maintaining a normal weight (USDHHS, 2010), and in 2011 the Centers for Medicare & Medicaid Services (CMS) approved up to 14 visits over 6 months for obesity counseling (CMS, 2011), in an effort to minimize obesity's negative consequences.

Problem Statement

Although clinical guidelines for the management of obesity in the primary care setting exist, obesity rates continue to rise. Studies show counseling by PCPs at a clinic visit reduces the rate of obesity (Kanaya, 2012; Sprau, Tindall, Lovegrove, Watowicz, & Eneli, 2015; Wadden, Butryn, Hong, & Tsai, 2014). Kraschnewski et al. (2013) reported that there has been a

decline in weight-related counseling in the primary care setting. Rates evaluated from 1995 to 1996 and 2007 to 2008 found a decrease in counseling rates from 7.8% to 6.2%. A survey of 1,740 PCPs regarding weight screening and treatment practices noted greater than 80% of PCPs had available diet, exercise, and weight control resources; however, only 45% billed for counseling or treatment services and just 26% reported on obesity assessment or routine counseling and tracking of weight control progress (Klabunde et al., 2014). In a systematic review of 12 clinical trials conducted from 2005 to 2013, no studies utilized the recommended comprehensive lifestyle interventions of 14 sessions over a six-month timeframe (Wadden et al., 2014).

Lack of knowledge or disagreement with the guidelines, attitude or self-efficacy, anticipated outcomes, apathy, and external barriers were cited as reasons PCPs do not initiate obesity counseling (Sadeghi-Bazargani, Tabrizi, & Azami-Aghdash, 2014). Other barriers that persist are lack of time and consistency in care, individual receptivity, compliance with change, and lack of organizational support or constraints (Abruzzino & Marra, 2015; Monsen et al., 2014; Sadeghi-Bazargani et al., 2014; Sinfield, Baker, Pollard, & Tang, 2013). Collectively, these barriers contribute to an underutilized resource for the identification and treatment of obesity in the primary care setting.

Purpose Statement

The PCP plays a crucial role in reducing the rate of obesity for adults in primary care. Evidence-based recommendations are available to guide PCPs in the management of adult obesity. The purpose of this project is to examine electronic medical records (EMRs) of adults who meet criteria for obesity and compare documented treatment with treatment recommended according to the evidence-based VA/DoD obesity screening and management guideline.

Chapter 2

Literature Review

The purpose of this literature review is to define adult obesity and to compare and contrast current evidence-based obesity guidelines. This review will explore current practices for the identification and treatment of obesity by PCPs. Additionally, this review will investigate gaps and interventions available to improve translating evidence-based guidance into primary care settings.

Key terms and phrases used for the literature search were: obesity, adult obesity, definition of obesity, impact of obesity, primary care and obesity, management of obesity in primary care, obesity clinical practice guidelines, obesity treatment, evidence-based practice (EBP), barriers to use of clinical practice guidelines, interventions and clinical practice guidelines, and Diffusion of Innovations Theory. Databases searched were Annual Reviews, Business Source Complete, Cochrane Reviews, CINAHL, PsychInfo, PubMed, and ScienceDirect. Articles published in English and from the year 2011 were included. Articles dated earlier than 2011 were included only if they contained relevant historical information that support this research utilization project.

Defining Adult Obesity

Obesity has been present throughout history, uncovered even in artifacts dating back to the Stone Age. Through ancient times, obesity occurred in the higher class in Egypt. The first literature written about obesity appeared in the 18th century when Adolphe Quételet, a Belgium astronomer and mathematician, devised an equation to measure a person's height relative to their body weight called the Quételet Index, better known as the BMI (Williams & Frühbeck, 2009).

Medically defined, adult obesity is the accumulation of excess body fat in individuals aged 20 years and older (CDC, 2012b). However, quantifying obesity has been more challenging. The first measurements were established by the Metropolitan Life Insurance Company, which developed actuarial tables based on gender and weight-for-height using data from the Build and Blood Pressure Study published in 1959 (Simopoulos, 1986).

By the 1960s, a national survey utilized height and weight measurements of examined and non-examined individuals (USDHHS, 1974). This later became the National Health and Nutrition Exam Survey in the 1970s after a dietary component was included in the survey (CDC, 2014). Currently, BMI is used nationally and internationally to define obesity (CDC, 2016; World Health Organization [WHO], 2016). Obesity is categorized as Grade I obesity with a BMI $\geq$30 – 34.9 kg/m^2, Grade II obesity with a BMI $\geq$35 – 39.9 kg/m^2, and Grade III obesity, also known as morbid obesity, with a BMI $\geq$40 kg/m^2.

Other common anthropometric measures used to quantify obesity are waist circumference (WC), waist-to-hip ratio (WHR), waist-to-stature ratio (WSR), and percentage of body fat (Rueda-Clausen et al., 2015). The military takes measurements of the neck and abdomen to calculate percent of body fat for individuals who fail the weight or abdominal circumference portion of the physical fitness test (Secretary of the Air Force [AF], 2015). Mohammadifared et al. (2013) found that although BMI is a better predictor of T2DM, HTN, and dysplipidemia in men, WC is a better indicator of diabetes and hypertension in women. In an *Expert Consultation Report*, the WHO recommends use of either WC or WHR in conjunction with BMI (WHO, 2008), as these measures are viewed as more accurate indicators of cardiovascular (CV) disease risk (Nazare et al., 2015; Xu et al., 2015).

Newer technologies available to measure body fat are magnetic resonance imaging (MRI), computed tomography (CT), ultrasonography, and bone densitometry (DEXA), as well as air displacement plethysmography, known as the BodPod, and hydrodensitometry, which is a water weighing technique (Müller et al., 2013; Rueda-Clausen et al., 2015). These technologies are accurate but incur greater cost and time to obtain measurements, while the bioelectrical impedance can result in fluctuations due to hydration status (Rueda-Clausen et al., 2015). See Appendix A for advantages and disadvantages of current methods to measure obesity.

Some disadvantages when using BMI relate to an over or underestimate of body fat percentage (De Schutter, Lavie, Arce, Menendez, & Milani, 2013). Further, BMI does not discern between lean versus fat mass, resulting in inaccurate body fat analysis (Lambert et al., 2012). In non-Europeans, particularly Asians, CV risk is higher despite a normal BMI. Consideration to lower the BMI threshold to diagnose obesity at $\geq$25 kg/m^2 has been recommended for this population (WHO, 2000). Despite these known limitations, BMI remains a widely accepted anthropometric measure for its ease of use and cost-effectiveness in the primary care setting. Until an uncomplicated technology becomes available, use of BMI remains a key clinical tool to assess obesity.

Recommended Adult Obesity Guidelines

Four current obesity guidelines for clinical practice are available. These include: (a) the 2015 Endocrine Society guideline for the pharmacological management of obesity (Apovian et al., 2015); (b) the 2014 VA/DoD guideline to screen and manage adult overweight and obese individuals; (c) the 2013 American Heart Association (AHA) Task Force, American College of Cardiology (ACC), and The Obesity Society (TOS) guideline for adult overweight and obesity

management (Jensen et al., 2013); and (d) the 2012 United States Preventive Task Force (USPTF) recommendation statement on the screening and management of adult obesity (Moyer, 2012).

The Appraisal of Guidelines for Research and Evaluation II (AGREE II) Instrument is a 23-item survey to assess quality, methodological strategy, and nature of the information reported in the guidelines (Brouwers et al., 2010). The six domains for guideline evaluation are: (a) scope and purpose; (b) stakeholder involvement; (c) rigor of development; (d) clarity of presentation; (e) applicability; and (f) editorial independence. Evaluation results are available in Appendix B.

Both VA/DoD (2014) and AHA/ACC/TOS (Jensen et al., 2013) guidelines scored high in scope and purpose, rigor of development, and clarity of presentation domains. However, the VA/DoD (2014) guideline provided the most comprehensive recommendations. Treatment recommendations from VA/DoD include diet, exercise, behavioral modification, and adjunct therapies for pharmacological and surgical intervention. The AHA/ACC/TOS guideline does not include pharmacologic therapy, but when coupled with the Endocrine Society's recommendations (Apovian et al., 2015), the AHA/ACC/TOS guideline is equally comprehensive as the VA/DoD guidance. Recommendations in the USPTF guideline (Moyer, 2012) mirror VA/DoD and AHA/ACC/TOS on use of comprehensive lifestyle intervention (CLI). No guidelines addressed individual or public involvement, although the VA/DoD and Endocrine Society recommend use of shared decision-making when treating individuals with obesity. See Appendix C for an overview of the obesity guidelines.

Identification of Adult Obesity in Primary Care

Obesity is identified in the presence of a BMI $\geq$30 kg/m^2. Both VA/DoD (2014) and AHA/ACC/TOS (Jensen et al., 2013) guidelines recommend initiation of CLI and offering pharmacologic intervention for a BMI $\geq$27 kg/m^2 if an individual has comorbid conditions. The

guideline by AHA/ACC/TOS advocates for use of WC as an additional assessment tool, though there is no cut-point recommendation for this measure. Skolnik and Ryan (2014) report that a WC greater than 40 inches for males and greater than 35 inches for females has been associated with increased risk of CV disease.

McKinney (2013) discusses metabolic syndrome as a comorbid condition even when an individual does not meet BMI criteria for obesity. Identification of this syndrome can inform the PCP to intervene at earlier stages to reduce future CV risk. In addition to a WC cut-point of greater than 40 inches in males and greater than 35 inches in females, other indicators are as follows: (a) a triglyceride level above 150 mg/dl; (b) a high density lipoprotein cholesterol level less than 40 in males and less than 50 in females; (c) an elevated blood pressure above 130/85 or receiving treatment for HTN; and (d) an elevated fasting glucose above 100 or being treated for elevated glucose. Meeting three of the five criteria is diagnostic of metabolic syndrome.

Treatment of Adult Obesity in Primary Care

The AHA/ACC/TOS (Jensen et al., 2013), VA/DoD (2014), and USPTF (Moyer, 2012) guidelines recommend lifestyle interventions for the treatment of obesity. Both AHA/ACC/TOS and VA/DoD guidelines describe this as comprehensive, while USPTF describes the intervention as intensive and multicomponent. Modalities under lifestyle interventions are nonpharmacologic, including diet, exercise, and behavioral counseling. Variations among the guideline treatment recommendations exist; some initiate interventions at different cut-points and some interventions vary in degree of intensity.

The Endocrine Society supports the use of diet, exercise, and behavioral counseling but does not use the terms comprehensive or multicomponent (Apovian et al., 2015). In the presence of comorbid conditions, a cut-point BMI of $\geq$27 kg/m^2 is used to establish when CLI and

pharmacologic management should be started. A BMI of ≥40 kg/m^2 or ≥35 kg/m^2 with comorbid conditions is a cut-point for considering bariatric surgical intervention (Apovian et al., 2015; Jensen et al., 2013; VA/DoD, 2014).

Dietary and physical activity. The importance of diet and physical activity is the hallmark for obesity treatment. Prescribing a particular diet or exercise regimen can be perplexing for the PCP due to limited time or level of expertise (Plourde & Prud'homme, 2012). Fortunately, research indicates that diet is not dependent on a specific regimen to improve weight loss outcomes or reduce CV risks. Rather, it is calorie restriction and adherence to the dietary modification that equate to success (Johnston et al., 2014; Rees et al., 2013). This simple recommendation makes it easier for a PCP to provide dietary counsel.

A diet and physical activity plan that decreases caloric intake by 500 to 1,000 kilocalories (kcals)/day can reduce weight at a rate of one-half to two pounds weekly. This diet and exercise intervention can result "in a 5-10% reduction in body weight over [six] months" (VA/DoD, 2014, p. 29). The AHA/ACC/TOS guideline recommends a caloric deficit of 500 to 750 kcals/day (Jensen et al., 2013). Very low calorie diets consist of a daily caloric intake of >450 kcals but <800 kcals (Mullins, Hallam, & Broom, 2011). The VA/DoD (2014) guidance recommends offering this option only for 12 to 16 weeks under medical supervision. The AHA/ACC/TOS (Jensen et al., 2013) guideline did not find adequate evidence to recommend this as a dietary treatment. Other dietary cautions are to avoid reduced caloric intake for individuals who are pregnant or lactating or who have a history of anorexia nervosa, bulimia, or unstable illness such as cancer or recent CV events (Kushner & Sur, 2014).

The American College of Sports Medicine (ACSM) recommends 150 to 250 minutes of physical activity weekly to assist in weight loss (ACSM, 2011). Interestingly, physical activity

alone has not resulted in significant weight loss (Kushner & Sur, 2014; Plourde & Prud'homme, 2012; Thomas, Kyle, & Stanford, 2015). Weight loss through exercise requires very high intensity activity. As the body loses weight, the amount of energy expended decreases. At a 10% loss in body weight, there will be a 15% reduction in energy expenditure (McKinney, 2013). Therefore, the additive effect of energy expenditure through exercise improves continuation of weight loss (VA/DoD, 2014).

Notably, physical activity plays a larger role in maintaining weight and improving CV risks. In a study conducted by Dankel, Loenneke, and Loprinzi (2015), independent of overweight or obesity status, a decrease in activity increased the risk of all-cause mortality. Vigorous activity demonstrates a greater effect upon decreasing respiratory and CV disease risk. Any exercise that promotes muscle strength and flexibility enhances bone density and joint flexibility (ACSM, 2011).

Intensive behavioral counsel. Combining diet and physical activity with behavioral modification strengthens both weight loss and weight maintenance for adults with obesity (Roqué i Figuls et al., 2013). The frequency for intensive behavioral treatment of obesity, as established by CMS (2011), equates to one face-to-face visit weekly for the first month, then every other week for the next five months. During months 7 through 12, visits are to be face-to-face monthly, totaling 20 visits per year. This closely mirrors USPTF's recommendation (Moyer, 2012) for 12 to 26 sessions per year. VA/DoD (2014) recommends 12 visits yearly, while AHA/ACC/TOS recommends a high-intensity frequency of $\geq$14 sessions within six months (Jensen et al., 2013).

Although session frequency varies, the Diabetes Prevention Program found progression to diabetes was reduced 60% when using intensive behavioral intervention, versus a 31%

reduction with usual care (McKinney, 2013; Sussman, Kent, Nelson, & Hayward, 2015). During the Look AHEAD trial, which stands for Action for Health in Diabetes, participants experienced a statistically significant amount of weight loss for individuals with Grade III obesity receiving intensive therapy, more than individuals with Grade I and II obesity receiving a less intensive therapy (Unick et al., 2011). Further, telephone-delivered counsel is a convenient and cost-effective approach to the delivery of behavioral services (Wadden et al., 2014). Utilizing a commercial provider such as Weight Watchers was as cost-effective as standard care, leading to an average weight reduction of 4.8 – 6.6 kg across six months (Fuller et al., 2013; Jensen et al., 2013).

The importance of other behavioral strategies can increase an individual's success with weight loss and management. Assessing readiness, removing barriers to assist in reaching realistic goals, and self-monitoring are a part of intensive treatment regimens that result in greater weight loss (Jensen et al., 2013; Moyer, 2012). To assist individuals who are ambivalent about changing behaviors, use of motivational interviewing can improve weight loss efforts (Pearson, Irwin, Morrow, Battram, & Melling, 2013; VA/DoD, 2014). The 5As developed by the CMS provides counseling in a stepwise approach to help individuals make behavioral changes. The 5As address assessment and advice of the individual, agreeing to reach goals through shared decision-making, assisting in the individual's self-monitoring and goals, and arranging follow-up and referrals for obesity treatment (McKinney, 2013; Vallis, Piccinini-Vallis, Sharma, & Freedhoff, 2013).

Pharmacologic and surgical intervention. Adjunctive obesity therapies include pharmacological and surgical options. Pharmacotherapy is considered when nonpharmacologic interventions have not improved weight loss and when an individual's BMI is $\geq$30 kg/m^2 or $\geq$27

kg/m^2 associated with comorbid conditions (Apovian et al., 2015; Jensen et al., 2013; VA/DoD, 2014). A meta-analysis by Johansson, Neovius, and Hemmingsson (2014) demonstrated pharmacologic therapy also enhances weight loss maintenance. The VA/DoD currently recommends individuals continue on weight loss medication after reaching their weight loss goal to assist with weight maintenance (VA/DoD, 2014).

Medications available for long-term use are orlistat, phentermine, lorcaserin, liraglutide, or combinations of either naltrexone with bupropion or phentermine with topiramate (Apovian et al., 2015). Appendix D outlines these agents, their activity, recommended dosages, and risks and benefits. When selecting medication therapies for obese individuals with comorbid conditions, the Endocrine Society also recommends to choose options that have the least weight gain side effect and to exercise caution when prescribing stimulants for individuals with a CV history (Apovian et al., 2015). Johansson et al. (2014) did not find benefit for use of nutritional supplements. It is necessary for PCPs to have a baseline knowledge of benefits, risks, and alternatives to nutritional supplements to provide effective obesity counsel.

Bariatric surgery has shown to be an effective option for obesity treatment. Consideration is made for individuals with a BMI $\geq$40 kg/m^2 or those with a BMI $\geq$35 kg/m^2 who have comorbidities (Apovian et al., 2015; Jensen et al., 2013; VA/DoD, 2014). Although USPTF did not review surgical intervention as an obesity treatment, guideline recommendations did support this option (Moyer, 2012). The most common procedures are Roux-en-Y gastric bypass, laparoscopic band, and the gastric sleeve (VA/DoD, 2014). Depending on the procedure, a 20% to 35% sustained weight loss across two to three years' post-surgery is reported (Ryan, 2014). Additionally, there is greater reduction of T2DM and

metabolic syndrome, and improved quality of life, than with nonsurgical interventions alone (McKinney, 2013; Ryan, 2014).

Surgical intervention can increase weight loss; however, the individual must understand there are inherent risks with this option. The occurrence of surgical complications, along with ulceration, malabsorption of micronutrients following gastric bypass, treatment failure, and adverse psychological events have been reported (McKinney, 2013; Jensen et al., 2013; Ryan, 2014; VA/DoD, 2014). It is important for PCPs to understand the risks and benefits of surgical treatment, as well as the management of surgical candidates post-operatively. Guidelines for post-operative care through The Obesity Society, the American Society for Metabolic & Bariatric Surgery, and the American Association of Clinical Endocrinologists are available to assist PCPs (Ryan, 2014).

Needs Assessment

The prevalence rate of obesity in the AD population is slightly below the civilian community, while the non-AD military population is comparable to the civilian sector (Eilerman et al., 2014). Even though evidence-based guidelines exist and it is known that weight loss endeavors are more likely to occur when PCPs engage individuals on obesity (Dutton et al., 2014), the literature indicates this has declined 12% from 2008 to 2013 (Fitzpatrick & Stevens, 2017). With rising health care costs from comorbidities associated with obesity, it is critical for military PCPs to address this issue at clinic visits.

Population identification. Eilerman et al. (2014) indicates the AD military's prevalence rate of obesity was 30.5% from 2009 to 2012. Smith et al. (2012) found that while overweight rates for AD declined from 2002 to 2005, obesity rates rose significantly. Where 40% of the AD military population report a healthy weight, only 33% of military dependents are at a healthy

weight (Eilerman et al., 2014). For purposes of this research utilization project, TRICARE beneficiaries 19 years of age and older (i.e., AD, AD dependent, retirees, retiree dependents, and TRICARE-for-Life) will be included.

Identification of the project sponsor/key stakeholders. Evaluation will be conducted at a military treatment facility (MTF) located in Maryland. Key stakeholders include the organization's executive leadership, the AF Diabetes and Obesity Research Working Group, Population Health Working Group, PCPs, nursing and technician staff, nutritional and behavioral medicine, and TRICARE beneficiaries. External stakeholders are United Health Care and the VA/DoD.

Organizational assessment/assessment of available resources. The MTFs provide primary care services for TRICARE beneficiaries. The current model of care is the AF Medical Home model. The medical home is comprised of a grouping of individual provider teams, which include one physician and either a physician assistant (PA) or nurse practitioner (NP), or a combination of the two. Enrollment for each PCP in the Family Practice Clinic is 1,250 TRICARE beneficiaries.

The PCPs utilize an EMR, which automatically calculates BMI. Clinic visits are 15 to 20 minutes in length. A PCP's support team is comprised of administrative, nursing, and medical technician staff. Internal referral services are available for nutritional and behavioral medicine services. These services are offered dependent on availability of nutritional and behavioral medicine staff. No exercise physiologist is available, but all TRICARE beneficiaries possess a military identification card that affords access to the base fitness center. Physical therapy services are available, but access is limited for exercise management. Although PCPs may prescribe pharmacologic options, this option is not a covered benefit under TRICARE

(TRICARE, 2016). A nonformulary request can be placed by the PCP to assist individuals with coverage of their pharmacologic treatment but is dependent on pharmacy approval. Bariatric surgical options are covered for individuals whose BMI is $\geq$ 35 kg/m^2 with comorbid conditions or whose BMI is $\geq$ 40 kg/m^2. Dietary services and exercise physiology referrals outside the facility are not a routine, covered TRICARE benefit.

Team selection and formation. The committee is comprised of a Committee Chair, an expert committee member on the topic, and an outside neutral committee member from the University of Nevada Las Vegas (UNLV). Consultation and coordination is accomplished as needed with the AF Research Oversight and Compliance Division and the representative of the MTF's Clinical Research Office and Health Insurance Portability and Accountability Act (HIPAA) to assist in processing the project's approval at the MTF level. Assistance from Information Systems, Population Health/Disease Management, Family Practice Clinic leadership, and nutritional and behavioral medicine representatives is available as needed.

Cost – benefit analysis. This research utilization project will be part of a larger long-term project to generate a reduction in obesity rates. Future interventions will be evaluated if findings from this project indicate a gap in the implementation of evidence-based guidelines for the identification and treatment of adult obesity. Considerations for future cost-benefit analyses include reduction in therapies for individuals diagnosed with comorbid diseases associated with obesity. Additionally, reduced number of prescriptions required to manage chronic disease, a reduction in specialty services, or reducing person-hours required to manage chronic disease in the

MTF may be considered. No cost-analysis will be conducted for this research utilization project due to the purpose and length of the project.

Scope of the project. The scope of this project is to determine if there is an implementation gap between documented identification and treatment and recommended identification and treatment of obesity according to the evidence-based VA/DoD obesity screening and management guideline.

Mission/Goals/Objectives

Mission. The mission of this research utilization project is to reduce the paucity of literature related to adult obesity identification and treatment in the military population and to identify if a gap exists between actual and recommended identification and treatment of adult obesity in accordance with the VA/DoD evidence-based screening and management guideline.

Goals. One goal for this research utilization project is to evaluate if military PCPs identify and treat obesity in adults in the primary care setting according to the VA/DoD adult obesity guideline. Additionally, it is anticipated this project will help to reduce gaps in the literature related to military PCPs and the identification and treatment of adult obesity in accordance with the VA/DoD adult obesity guideline.

Objectives. To meet the goal of this project, a retrospective chart audit was conducted to establish a baseline for military PCPs' identification and treatment of obesity in adults in the primary care setting according to the VA/DoD adult obesity guideline. The chart audit began after project approval was granted by the UNLV Biomedical Sciences Institutional Review Board (IRB) and the AF Research Oversight and Compliance Division approval. See Appendix E for research utilization project timelines and Appendix F for approval letters.

Chapter 3

Theoretical Underpinnings

Introduction

One approach to solving clinical problems is the use of evidence-based practice (EBP), which incorporates the best research evidence available with integration of clinical expertise and individual preference (Ahmed, Andrist, Davis, & Fuller, 2013; Polit & Beck, 2017). Sources that yield the best evidence are meta-analyses, systematic reviews, and clinical guidelines based on randomized controlled research (Zaccagnini & White, 2014). Other sources of evidence come from well-designed quasi-experimental and descriptive research (Dearholt & Dang, 2012). Where EBP is used to "inform clinical, administrative, and educational" practice (Dearholt & Dang, 2012, p. 4), research utilization allows research study findings to be translated or applied in response to clinical issues (Ahmed et al., 2013; Polit & Beck, 2017).

Several models guide translation of research knowledge into practice. One such model is the diffusion of innovations theory, developed by Everett Rogers in 1962 (Rogers, 2003). This theory focuses on the process whereby an innovation is accepted and integrated as a part of or as a whole of the original research. It also allows adaptation when implementing evidence to address local needs and resources (Polit & Beck, 2017). Rogers' theory describes the process by which an innovation becomes the fabric of a social system and provides ways to bridge gaps between research and utilization (Dingfelder & Mandell, 2011).

Diffusion of Innovations Theory

There are four major elements described in the diffusion of innovations theory: (a) innovation; (b) communication channel; (c) time; and (d) the social system (Rogers, 2003). The innovation can be a product, practice, program, policy, or service introduced to individuals or

groups. It is not a prerequisite for the innovation to be new; rather, the innovation should improve quality for those who adopt the innovation (Leggott et al., 2016). The innovation must demonstrate advantage(s) over other options, be compatible with the values of the users, be trialed and easy to use, and have adequate visibility of its success to smooth the path to adoption (Rosen & Goodson, 2014). Communication is the second element of the theory, which occurs when individuals or groups receive information about the innovation (Rogers, 2003). An important principle of this element is that individuals or groups have access to this information and that the communication is two-way (Kim, Quinn, Chandrasekar, Patel, & Lam, 2016).

The third element is time, which considers the length of exposure required for individuals or groups to adopt or reject the innovation. Rogers (2003) enumerates the steps in the innovation-decision process to adopt an innovation as: (a) knowledge; (b) persuasion; (c) decision; (d) implementation; and (e) confirmation. The speed by which the innovation is adopted depends on attributes of the adopter. Innovators are the first adopters who embrace the innovation. Early adopters accept the innovation sooner than the early majority, while the later majority tends to be slower in innovation adoption. The laggards are the skeptics or critics of the innovation (Rogers, 2003).

The fourth element of the diffusion of innovations theory is the social system. Within the system are leaders that influence the adoption process. Opinion leaders help diffuse innovations among individuals or groups through active and passive communication methods (Nejad, Sherrell, & Babakus, 2014). Change agents garner support from opinion leaders to influence adoption of the innovation. Innovation champions are charismatic and can overcome barriers to boost innovation adoption (Rogers, 2003).

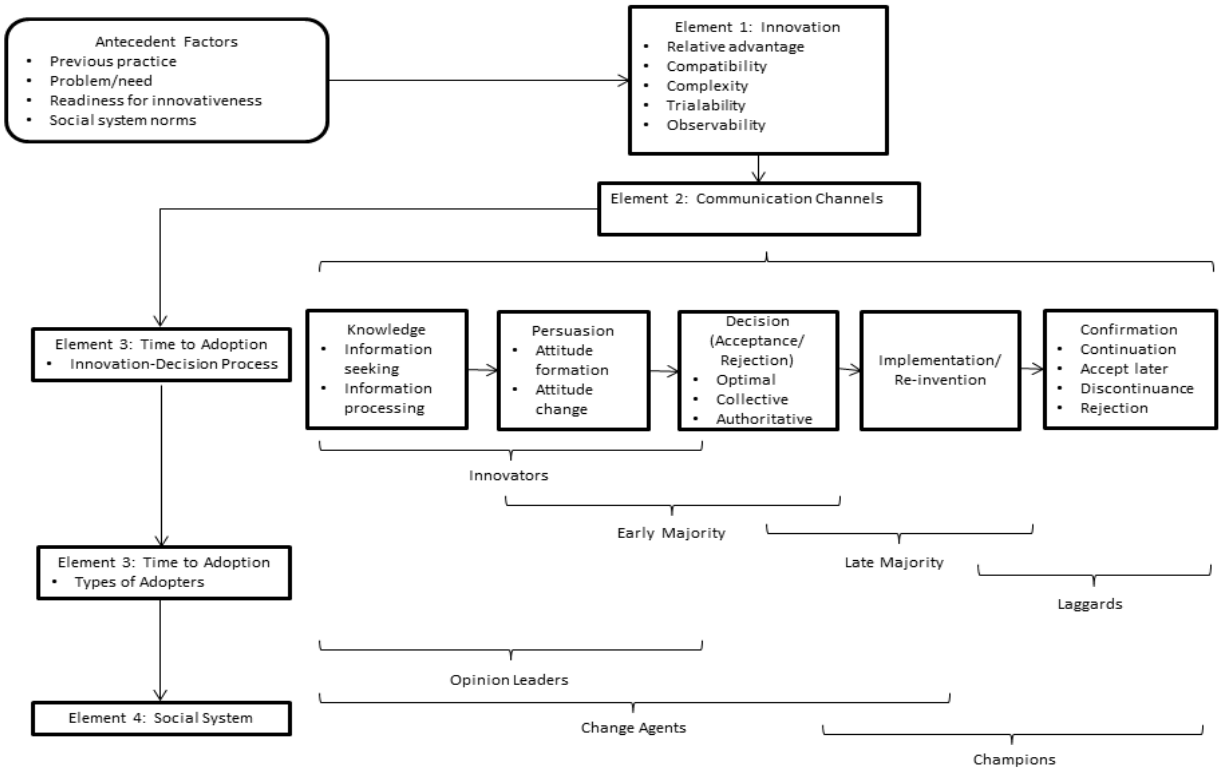

Figure 1. Diffusion of Innovations Theory (adapted from Rogers, 2003).

Application of Diffusion of Innovations Theory

Many studies have examined various aspects of the four elements within the diffusion of innovations theory. Some studies serve to explore or explain attributes of the innovation, communication methods, and rates of adoption. Other studies help to describe characteristics of adopters, opinion leaders, change agents, or champions who influence the social system to better explain how the process of diffusion and adoption of an innovation occurs. Collectively, these studies help to understand the dynamic process by which an innovation is translated into practice.

The current project examines the implementation gap between use of the VA/DoD evidence-based guideline and PCPs' provision of care for adult obese individuals. The VA/DoD

guideline has been in existence since 2006, with the most recent update in 2014 (VA/DoD, 2014). However, the literature suggests PCPs may not adhere to the established guideline. One factor that influences adoption of the innovation is the concept of observability. One study using the diffusion of innovations theory explored the adoption of EBP by nursing students in an international setting. The researchers addressed components of the first element of the theory including advantage, compatibility, complexity, trialability, and observability as they relate to adoption of the EBP innovation. Components of Element 1 directly affect persuasion and adoption of EBP. Additionally, knowledge of EBP was significantly related to adoption and implementation of the innovation (Pashaeypoor, Ashktorab, Rassouli, & Alavi-Majd, 2016).

Although knowledge can impact adoption and implementation, a study by Nichol et al. (2011) reinforced that knowledge alone is not the catalyst for change, but rather exposure to ongoing communication within social systems is required to keep the innovation viable. Following initiation of a glucose screening protocol, target glucose screenings for individuals with a psychiatric diagnosis increased from 46% to 67% but remained below the targeted 70% threshold. When the researchers increased reinforcement tools to include reminder notifications and information published in a monthly newsletter, as well as provided reported screening rates to individual providers during the second and third year, screenings increased to the 90% threshold. Clinics that did not receive reinforcement tools averaged 26% to 38% lower on glucose screenings.

This theory has been used in the fields of business and technology, as well. The need to understand the adoption and implementation of the Radio Frequency Identification (RFID) technology was critical before marketing it to the public. A questionnaire tested concepts of the adoption phase of the theory. The adoption steps of knowledge, design, decision, and implementation were positively associated with adoption of RFID technology. Interestingly,

persuasion had a negative influence. This demonstrates that uncertainty in adopting newer technology can occur when the element of communication to convey innovation benefits is suboptimal (Bhattacharya, 2015).

Leggott et al. (2016) used a mixed methods study to investigate the rate of diffusion of innovation when adopting a new anesthetic procedure for surgery. Adopters in this study perceived the new innovation to be safer, more efficient, and easier to use than the older anesthetic technique. Because adopters felt this innovation was better than the previous procedure, the year this technique became available there was more than a 15% adoption rate that rose to 70% almost a decade later. Results of this study have been validated by other research. When an innovation is perceived to be credible and adopters are trusting of its use, it is much more likely to be implemented (Kim et al., 2016).

Characteristics of adopters, opinion leaders, change agents, and champions affect diffusion of an innovation. In a survey of 88 nurses, Andrews, Tonkin, Lancastle, and Kirk (2013) identified 18 adopter characteristics. Although not generalizable, some of the characteristics noted are possessing greater knowledge and confidence to adopt the innovation into practice. Level of competence and accessibility to the opinion leaders are critical for others to adopt an innovation (Rosen & Goodson, 2014). Equally important is to identify positive as well as negative influences that opinion leaders, change agents, and champions have about the diffusion process (Nejad et al., 2014). Diffusion of innovations theory supports the need to continue identifying and addressing variables that impact the diffusion process in order to successfully implement and sustain an innovation (Dingfelder & Mandell, 2011).

Theoretical Constructs

The theoretical constructs of the diffusion of innovations theory for this project will be as follows. The innovation is operationalized as the VA/DoD obesity guideline. To determine if PCPs are implementing the VA/DoD guideline, evaluation of the decision, implementation, and confirmation to adopt the innovation will be operationalized as the identification of obesity, defined as a BMI $\geq$ 30 kg/m^2, as well as use of treatment indicators. The treatment indicators are operationalized as offering diet, exercise, behavioral modification, and pharmacological treatment for individuals with a BMI $\geq$ 30 kg/m^2 and bariatric surgical intervention for individuals with a BMI $\geq$ 35 kg/m^2 with comorbid conditions or a BMI $\geq$ 40 kg/m^2.

Chapter 4

Project Plan

Setting

This research utilization project was conducted at an AF MTF located in Maryland and accomplished with retrospective chart review of EMRs. The documented treatment of adults with obesity was compared to evidence-based treatment guidelines adopted by the VA/DoD for screening and management of obesity (VA/DoD, 2014). The population of interest was adults who receive care under the military health insurance known as TRICARE. Inclusion criteria for this evaluation project were EMRs of adults, defined as age 19 years and older with a BMI $\geq$ 30 kg/m^2, the entry BMI for a diagnosis of obesity.

Protection of Human Subjects

Approval from the UNLV IRB was granted on 5 September 2016. A HIPAA waiver for the retrospective review was requested and granted by the UNLV IRB on 24 October 2016. Permission to access electronic health records, including the Armed Forces Health Longitudinal Technology Application (AHLTA), Composite Health Care System (CHCS), and the CarePoint database, was subsequently approved by the AF Research Oversight and Compliance Division and the MTF's HIPAA representative on 23 December 2016.

Per the AF Research Oversight and Compliance Division, collection of data could only occur on records prior to the UNLV IRB approval date of 5 September 2016. Therefore, retrospective review was on records between 1 April to 31 August 2016. Data collection began after 1 January 2017. To ensure protection of any personally identifiable information, data was de-identified, stored securely under password protection, and available only to the primary and co-investigators.

Data Sources, Sampling, and Data Collection

A retrospective examination of the MTF's EMRs was conducted using AHLTA, CHCS, and the CarePoint databases to identify adults defined as age 19 and older with obesity, defined as a BMI of $\geq$ 30 kg/m^2, who are under the care of a PCP in the MTF's Family Practice Clinic. Review of EMRs continued until 50 records had been identified that met inclusion criteria for this project. Use of the Obesity Treatment Audit Form (see Appendix G), based on the VA/DoD obesity guideline, was used to examine the MTF's EMRs to determine if treatment of obese adults proceeded according to the evidence-based guideline recommendations. The Obesity Treatment Audit Form did not contain any private or personal information that could link the data collected on individuals or PCPs.

Each record audited was assigned a number (i.e., Record 1, Record 2, Record 3, etc.) to ensure all information was de-identified when written on the Obesity Treatment Audit Form. The record number on the audit form was not linked to the EMR. To provide additional protection of confidentiality, electronic data collected is password protected and secured in a locked facility at the MTF during data collection. Following completion of MTF data collection, data will then be stored in a locked facility at UNLV for two years post completion of this project. After the designated storage time, the electronic information gathered will be electronically deleted and hard copy information will be shredded and recycled.

Measures

Seven treatment indicators on the Obesity Treatment Audit Form were collected: (a) diagnosis of obesity if BMI $\geq$ 30 kg/m^2 ; (b) diet/nutritional counsel/consult offered; (c) exercise counseling offered; (d) one-month follow-up appointment; (e) behavioral modification counsel/consult offered; (f) pharmacologic intervention discussed for all eligible individuals with

a BMI $\geq$ 30 kg/m^2, and (g) bariatric surgery option discussed for individuals with a BMI $\geq$ 35 kg/m^2 with comorbid conditions or a BMI $\geq$ 40 kg/m^2.

First, a yes or no was annotated for each indicator to evaluate actual treatment of obesity according to the VA/DoD obesity guideline. These indicators were then tallied and a percentage was scored as a calculation of the actual treatments received over total potential recommended treatments, known as the Obesity Treatment Composite Score. This provided comparison between actual treatment and treatment according to the guideline recommendations. For instance, if an individual met four of the five potential indicators, the percentage would be recorded as 0.80. If an individual met four out of seven potential indicators, the percentage would be recorded as 0.57. Other variables such as age, gender, and beneficiary category were recorded in the IBM® Statistical Package for the Social Sciences, Version 24 (SPSS® 24) database, (IBM®, 2016).

Statistical Analyses

Analyses of the Obesity Treatment Audit Forms were conducted using SPSS® 24. Descriptive data of age, gender, BMI, and beneficiary category were used. To identify if a gap existed between actual treatment of obese adults and treatment according to VA/DoD guideline recommendations, frequencies were run for each indicator, as well as a scored percentage of the actual versus recommended indicators accomplished. A composite score could range from 0, indicating absence of guideline adherence, to 1.0, indicating full guideline adherence.

Chapter 5

Summary

Implementation

Data collection took place over two days and was accomplished by the co-investigator. Records were selected from 1 April to 31 August 2016. Using the EMR known as AHLTA, records were queried, sorting by the Family Practice PCP's name and the inclusive dates to be reviewed. Records were selected randomly; however, to avoid all data being collected from one month, 10 records were selected throughout each of the five-month data collection timeframe. Records were selected from the pool of all PCPs available during the data collection period to avoid evaluating records from only one or two PCPs in the Family Practice Clinic. In order to ensure records evaluated met eligibility criteria, records were selected on individuals 19 years of age or older. The BMI was only identified once the record was opened to review the note. Therefore, a total of 119 records were reviewed in order to obtain 50 records meeting BMI criteria of 30 kg/m^2 or greater. Information was gathered using the Obesity Treatment Audit Form. Additional variables of age, gender, beneficiary category, PCP credential type (i.e., physician, PA/NP), and reason for visit were collected and entered in a SPSS® 24 database for data analysis.

Results

Individual visits. Of the 50 records studied, 54% (n=27) were male and 46% (n=23) were female. Age of individuals ranged from 21 to 68 years, with an average age of 50 years. Twenty percent were active duty (n=10), 8% active duty dependent (n=4), 40% retiree (n=20), and 30% retiree dependent (n=15). There was one individual whose beneficiary category was deceased family member and was categorized as other.

BMI. Obesity is defined as Grade I (BMI ≥30 – 34.9 kg/m^2), Grade II (BMI ≥35 – 39.9 kg/m^2), and Grade III (BMI ≥40 kg/m^2). The average BMI for the records reviewed was 33.08 kg/m^2, with a range of 30.18 to 55.65. Sixty-four percent of individuals' BMI fell between 30 and 34.9 kg/m^2 (n=32), 20% between 35 and 39.9 mg/m^2 (n=10), and 16% at 40 mg/m^2 and above (n=8). Distribution of BMI by gender, age, and beneficiary category are noted in Table 1.

Table 1

Individual Visit Variables

	Age	Beneficiary Category	Grade I BMI 30-34.99 kg/m^2	Grade II BMI 35-39.99 kg/m^2	Grade III BMI 40 kg/m^2 and above
Gender					
Male	20-29	AD (2)	2	0	0
	30-39	AD (4)	3	1	0
	40-49	AD (2)	2	0	0
		Retiree (6)	5	1	0
	50-59	AD (1)	1	0	0
		Retiree (8)	5	2	1
	60+	Retiree (4)	1	1	2
Female	20-29	AD Dependent (1)	1	0	0
	30-39	AD Dependent (1)	0	0	1
	40-49	AD Dependent (2)	1	0	1
		Retiree Dependent (3)	2	1	0
	50-59	AD Dependent (1)	0	1	0
		Retiree (1)	1	0	0
		Retiree Dependent (8)	4	2	2
	60+	Retiree (1)	1	0	0
		Retiree Dependent (4)	2	0	2
		Other (1)	0	1	0
Total		50	31	10	9

PCPs. A total of 119 records were reviewed between 1 April to 31 August 2016 at an AF MTF located in Maryland until 50 records were identified that met project eligibility criteria. At the time of data collection, there were a total of seven family physicians, six PAs, and one NP. Of the data collected from the resultant 50 records, 52% (n=26) of patients were cared for by family physicians and 48% (n=24) were cared for by PAs and NPs. Individuals were seen for annual or wellness visits 20% of the time (n=10), acute issues 56% of the time (n=28), and for chronic issues 24% of the time (n=12). Of note, family physicians cared for more chronic issues while PA/NPs cared for more physical or wellness exams (Table 2). The frequency of identification and diagnosis by provider type was similar for both family physician and PA/NPs (Table 3).

Table 2

Provider Type and Reason for Individual Visit

	Reason for Visit			
Provider Type	Physical	Acute Issue	Chronic Issue	Total
Family Physician	3	14	9	26
PA/NPs	7	14	3	24
Total	10	28	12	50

Table 3

Provider Type and Obesity Identification/Diagnosis

	Obesity Identification/Diagnosis		
Provider Type	Yes	No	Total
Family Physician	8	18	26
PA/NPs	10	14	24
Total	18	32	50

Obesity Treatment Composite Score. The PCPs diagnosed obesity for 36% of visits (n=18). Of the 18 individuals identified and diagnosed with obesity, 100% received both dietary and exercise counsel, 44% (n=8) received or were offered behavioral counseling, and 33% (n=6) received a one-month follow-up appointment. When considering the entire sample, only 36% of individuals were offered diet and exercise counsel, 16% were offered behavioral counsel, and 12% were offered or received a one-month follow-up appointment. The majority of the follow-up appointments were with the Disease Manager, as these individuals were identified with comorbid conditions such as diabetes or hypertension; however, one individual had a stand-alone diagnosis of morbid obesity when seen for follow-up evaluation.

Of the 50 records reviewed, only 40 individuals were eligible for pharmacologic management due to AF guidance on use of medication therapy in the AD population.

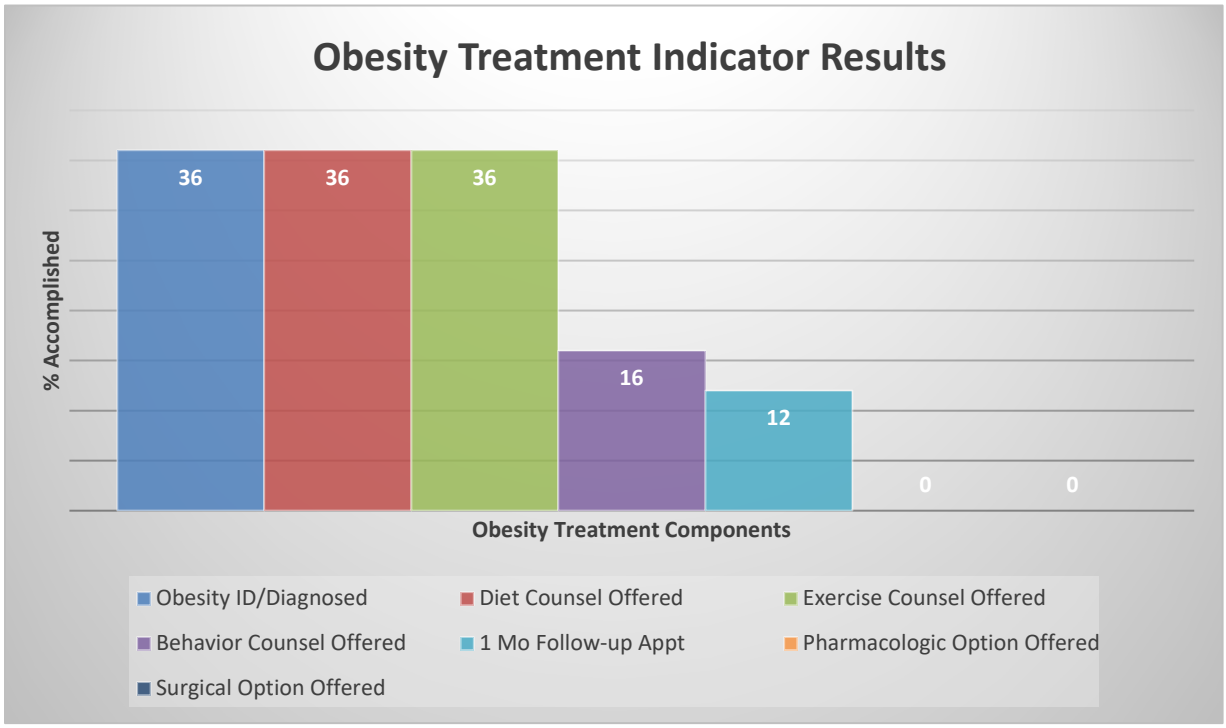

Figure 2. Obesity Treatment Indicator Results indicate individuals received obesity treatment according to the VA/DoD guideline less than 50% of the time.

Of those 40 individuals, there was no recommendation for pharmacologic management. Based on TRICARE eligibility requirements for surgical management, 14 individuals were eligible to receive this recommended option. No eligible individuals were provided this recommended option for obesity management. It should be noted that one individual had received bariatric surgery and was categorized as not applicable. Another individual had received a bariatric surgery consult more than two years prior, but this was not readdressed at the visit and was categorized as not being offered surgical intervention. See Figure 2 depicting the obesity treatment indicator results.

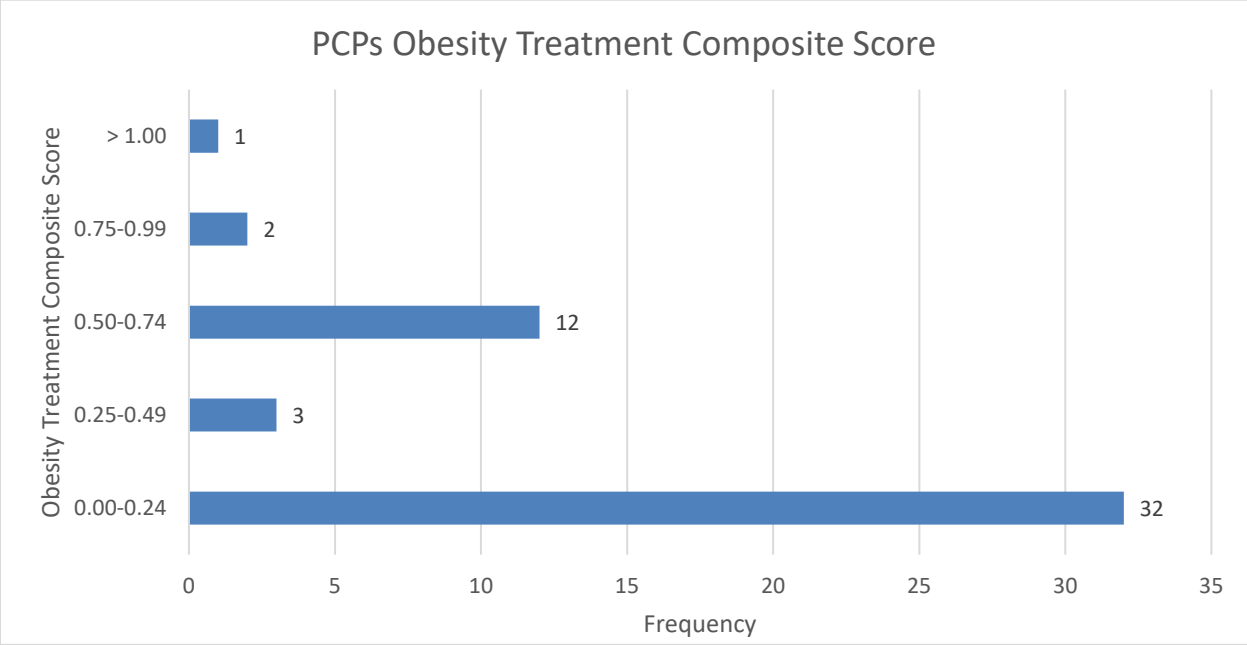

Figure 3. PCPs Obesity Treatment Composite Score indicates the majority of individuals received one indicator or less for their obesity identification and treatment.

The Obesity Treatment Composite Score averaged 0.22, ranging from 0.00 to 1.00. When categories were grouped, 56% (n=28) scored 0.00, 8% (n=4) ranged from 0.01 to 0.24, 10% (n=3) ranged from 0.25 to 0.49, 24% (n=12) ranged from 0.50 to 0.74, 2% (n=2) ranged from 0.75 to 0.99, and 2% (n=1) met 100% of the interventions recommended by the VA/DoD

guideline (see Figure 3 for PCP Obesity Treatment Composite Score results). The average composite score was 0.22 and 0.23 for physicians and PA/NPs respectively.

Discussion

The purpose of this research utilization project was to determine if military PCPs are identifying and treating obesity in adults in the primary care setting according to the VA/DoD adult obesity guideline. Obesity has been associated with several cardiovascular, metabolic, and functional issues such as T2DM, dyslipidemia, osteoarthritis, and depression (Bray, Look, & Ryan, 2013; Rueda-Clausen et al., 2015). In the military population, obesity affects recruitment and the readiness mission (Stefan, 2016). In one cohort study of military members who were followed for a period of 36 years beginning at age 22, it was found that males with early adulthood obesity were at increased risk for developing ischemic heart disease and congestive heart failure (Schmidt, Bøtker, Pedersen, & Sørensen, 2014). However, effects of obesity can be mitigated with a small amount of weight loss, accomplished with just a brief mention of obesity and treatment advice at a primary care visit (Aveyard et al., 2016).

Identification/Diagnosis of Obesity. Primary care providers are well-positioned to discuss weight management with patients, because they are the individual's first-line assessment (Asselin, Osunlana, Ogunleye, Sharma, & Campbell-Scherer, 2015). Yet findings from this research utilization project indicate PCPs identify and diagnose obesity only 36% of the time. This result is better than or comparable to other studies demonstrating rates ranging from 23.8% to 42% (Farran, Ellis, & Barron, 2013; Fitzpatrick & Stevens, 2017; Klabunde et al., 2014; Petrin, Kahan, Turner, Gallagher, & Dietz, 2016). Records evaluated from one study required hand calculation of the BMI. Interestingly, of those that met obesity criteria, less than 1% were

identified and diagnosed; however, 12 records included an obesity diagnosis but had no recorded BMI (Barnes, Theeke, & Mallow, 2015).

It was not determined in this research utilization project whether PCPs understood the definition of obesity, but in a study by Meadows and Weiss (2015), 86% of the providers were able to correctly define overweight and obesity. An interesting finding, though, was that only 37% of the nonprovider staff were able to correctly define overweight and obesity. In a military Family Practice Clinic setting, increased reliance on medical support staff is made when taking an accurate medical history. When medical support staff bring clinical problems to the attention of the PCP, there is greater opportunity for an issue such as obesity to be addressed when both parties are knowledgeable.

Diet, Exercise, and Behavioral Counsel. For individuals in this research utilization project whose obesity was identified and diagnosed during a visit, 100% of them were provided diet and exercise counsel. However, of the total obese individuals studied, only 36% were offered information on diet and exercise, and 16% were offered behavioral counseling. This suggests diet, exercise, and behavior modification counsel were only offered if the diagnosis of obesity was made, and not as a routine part of healthy lifestyle advice. No records noted advice given for commercial weight loss programs or meal replacement regimens (Tsai et al., 2016). This could be a reflection that TRICARE does not provide coverage for such programs.

Findings from this research utilization project were similar to a study conducted by Magee, Everts, and Jamison (2012). The authors found PCP advice on weight loss interventions occurred 34.4% of the time, but the study did not specify which interventions were offered (Magee et al., 2012). Farran et al. (2013) reported a much lower intervention rate for diet, exercise, and behavior modification counsel at 8.6%, 4.8%, and 1% respectively. Although

Magee et al. (2012) found a significant difference between interventions offered by physicians and NPs (x^2[1, n=180] = 56.69, $p < 0.001$), little difference in obesity practice between physicians (0.22 average composite score) and PA/NPs (0.23 average composite score) were noted in this research utilization project.

Pharmacotherapy. The VA/DoD obesity guideline (2014) recommends adjunct treatment with pharmacotherapeutics for individuals who are obese, those whose BMI is $\geq$ 27 kg/m^2 with comorbid conditions. There were no individuals in this research utilization project who were offered adjunct medication therapy. Six of the medications currently approved by the Federal Drug Administration are phentermine, orlistat, lorcaserin, naltrexone-bupropion, phentermine-topiramate, and liraglutide (Apovian et al., 2015). A systematic review and meta-analysis for five of these medications demonstrated at least a 5% weight loss that was sustained across nearly an entire year (Khera et al., 2016). Despite demonstrated efficacy, under TRICARE guidelines weight loss medications are not a formulary item (TRICARE, 2016b). A PCP may write a prescription to be filled at a local network pharmacy, but the individual would be responsible to cover the cost of the prescription.

Irrespective of systematic barriers, other strategies can be considered to achieve options for pharmacologic treatment (Tsai et al., 2016). Phentermine is a relatively inexpensive medication, and many individuals who have no contraindications may desire this as an adjunct therapy. Orlistat has a preparation that is an over-the-counter product that can be suggested as an option for the individual. A final strategy is for the PCP to place a nonformulary request with justification for the medication. If approved, this could provide the individual with adjunct therapy. Developing regional expertise and educating PCPs can enhance utilization of medication therapy (Tsai et al., 2016).

Bariatric Surgery. Bariatric surgery is recommended for individuals who are morbidly obese, or individuals whose BMI is > 35 kg/m^2 with comorbid obesity conditions and who have attempted to lose weight without improvement (VA/DoD, 2014). It is reported nationally the prevalence rate for morbid obesity is 6.4%, yet the rate of bariatric surgery is only 1.5% for those qualified to receive this treatment option (Idzik & Davenport, 2011; Petrin et al., 2016). For this research utilization project, there were no PCPs who recommended bariatric surgery as a treatment option. As observed with pharmacologic therapy, one might initially speculate that this treatment option is not a covered TRICARE benefit. However, TRICARE does cover bariatric surgery (TRICARE, 2016a) per the VA/DoD guideline recommendations (VA/DoD, 2014), thus consideration should be made regarding PCP education and attitude toward obesity treatment to assist in designing interventions to improve the identification/diagnosis and treatment of obesity in military primary care settings (Salinas, Glauser, Williamson, Rao, & Abdolrasulnia, 2011).

Implications/Sustainability/Need for Future Evidence-Based Projects

Use of an obesity guideline assists PCPs in the identification and effective treatment of obesity in the primary care setting (Kushner & Ryan, 2014). In this project, identification and treatment of obesity occurred 22% of the time. This reflects that translating the guideline into clinical practice is challenging. The Diffusion of Innovations Theory addresses four elements by which the VA/DoD obesity guideline could be diffused into the military social system, including aspects of the innovation itself, communication, adoption process, and influence of the social system.

Areas that may have limited the use of the VA/DoD obesity guideline are lack of familiarity or provider agreement, patient receptivity and stigma, patient compliance with

change, and system or organizational constraints can influence use of guidelines (Abruzzino & Marra, 2015; Gunther, Guo, Sinfield, Rogers, & Baker, 2012; Idzik & Davenport, 2011; Monsen et al., 2014; Sadeghi-Bazargani et al., 2014; Sinfield et al., 2013).

A PCPs decision to accept or reject use of the guideline is dependent on their knowledge and attitude toward the guideline. Studies show education and peer reviews alone may produce variable outcomes in adherence to use of a guideline (Idzik & Davenport, 2011; Monsen et al., 2014). However, education and training, in conjunction with tools such as outreach, reminders, and sustained support, be implemented to improve providers' adherence to guidelines (Farran et al., 2013; Idzik & Davenport, 2011; Monsen et al., 2014). Additionally, a PCP's skill influence the offering of weight loss advice to patients (Dutton et al., 2014; Farran et al., 2013). Brief training on motivational interviewing and use of the 5As approach can offer PCPs additional tools that build skill and confidence to counsel obese patients on guideline recommendations (Edwards, Stapleton, Williams, & Ball, 2015; Gudzune, Clark, Appel, & Bennett, 2012; Vallis et al., 2013).

Finally, guidelines that are easy to follow with limited organizational constraints can enhance utilization (Gunther et al., 2012; Klabunde et al., 2014). Implementation of enhanced collaborative and consultative mechanisms can increase the provider's confidence to refer individuals for additional care and shifts sole responsibility from the PCP to a coordinated organizational response (Gunther et al., 2012; Monsen et al., 2014).

Further evaluation needs to be conducted to identify the barriers unique to this MTF. Without understanding the barriers, it can make targeting effective interventions difficult. By focusing future evidence-based projects on these areas, it may enhance the diffusion of the

obesity guideline into practice and ultimately reduce the consequences of obesity for this population.

Limitations

This research utilization project has several identified limitations. The small number of records audited may limit providing an accurate clinical picture of obesity management. It could be possible that the identification/diagnosis and treatment of adult individuals in this sample setting was actually higher or lower than reported. The need for sampling a larger number of records is indicated. Additionally, there are approximately 75 MTFs in the AF Medical Service. Findings from this population may not be reflective of practices at other DoD medical facilities. However, the data collected, although random, were somewhat systematic to ensure audits were conducted throughout each month of the data collection period, as well as to ensure each PCP was audited equally to avoid targeting only one or two. Further, more explicit details of the intervention were not addressed in this research utilization project. If dietary counsel was documented, this was counted as an intervention. However, it was not specific to whether the PCP offered calorie information, use of food logs, use of commercial products, or other dietary counsel. It is possible one dietary intervention may offer greater benefit than another.

A historical bias that may have influenced project outcomes is that this particular MTF site is one of the locations staffed with a research division that spawned research related to diabetes and obesity under the Diabetes and Obesity Research Working Group established in 2010 (True, Cranston, & Hatzfeld, 2013). It is possible project outcomes may have been influenced by some of the working group's activities.

Dissemination of Future Scholarly Activity and Results

Following defense of this research utilization project, it is anticipated that the findings will be formally presented to the MTF's executive leadership as well as to the Population Health Working Group. Locally, results will be forwarded to the MTF's EBP and Quality Councils. Future evidence-based interventions are being planned to improve PCPs' adherence to guidelines for the identification and treatment of obesity. Following additional planned interventions, the principal investigator (PI) anticipates seeking publication of the findings in the peer-reviewed journal, Military Medicine. If program interventions are successful, this author plans to collaborate with the Diabetes and Obesity Research Working Group to advance policy at AF and possibly DoD levels to improve obesity rates for TRICARE beneficiaries. Finally, this author plans to request for either podium or poster presentation at the American Association of Nurse Practitioners National Conference in 2018 and other appropriate professional presentation opportunities that impact cardiometabolic health.

Appendix A

Obesity Assessment Tools: Advantages and Disadvantages

Assessment Tool	Advantage	Disadvantage
BMI	Easy, inexpensive; estimates abdominal subcutaneous fat	Lean body mass can lead to elevated measurement; does not account for non-European stature; less predictive for central obesity
WC	Easy, inexpensive; predictive of central obesity; race specific	Reduced reproducibility
WHR	Predictive of central obesity	Reduced reproducibility
WSR	Easy, inexpensive; good for non-obese; race specific	Reduced reproducibility
Skinfold thickness	Inexpensive	Timely; requires training; variability; reliability low in severely obese; not reliable for central obesity
MRI	Accurate	Expensive; time consuming
CT	Accurate	Expensive; exposure to radiation; time consuming
Ultrasound	Accurate to measure subcutaneous fat	Expensive; less accurate with skin compression and fat plasticity
DEXA	Accurate; safe except in pregnancy; can assess central obesity	Expensive; time consuming
Air Densitometry	Accurate; no water immersion	Expensive; cannot determine body composition
Hydrodensitometry	Very accurate	Expensive; time consuming; must be underwater to measure; poor determinant of body composition
Bioelectrical Impedance	Fast, easy	Not accurate; dependent on hydration status; equipment cost

Sources: Adapted from Müller et al., 2013; Rueda-Clausen et al., 2015

Appendix B

AGREE II Appraisal of Obesity Guidelines

Domain	Item	AGREE II Rating			
		Endocrine Society	VA/DoD	AHA/ACC/ TOS	USPTF
Scope and Purpose	1. The overall objective(s) of the guideline is (are) specifically described.	6	7	7	5
	2. The health question(s) covered by the guideline is (are specifically described).	1	7	7	7
	3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.	5	6	6	6
	Total (21)	**12**	**20**	**20**	**18**
Stakeholder Involvement	4. The guideline development group includes individuals from all the relevant professional groups.	4	6	6	4
	5. The views and preferences of the target population (patients, public, etc.) have been sought.	2	2	2	2
	6. The target users of the guideline are clearly defined.	7	7	7	7
	Total (21)	**13**	**15**	**15**	**18**
Rigor of Development	7. Systematic methods were used to search for evidence.	7	7	7	7
	8. The criteria for selecting the evidence are clearly described.	6	7	7	6
	9. The strengths and limitations of the body of evidence are clearly described.	6	6	6	6
	10. The methods for formulating the recommendations are clearly described.	5	6	6	5
	11. The health benefits, side effects and risks have been considered in formulating the recommendations.	6	6	6	6
	12. There is an explicit link between the recommendations and the supporting evidence.	5	6	6	5
	13. The guideline has been externally reviewed by experts prior to its publication.	5	5	7	6
	14. A procedure for updating the guideline is provided.	4	7	6	6
	Total (56)	**44**	**50**	**51**	**47**
Clarity of Presentation	15. The recommendations are specific and unambiguous.	6	6	6	5
	16. The different options for management of the condition or health issue are clearly presented.	6	7	7	5
	17. Key recommendations are easily identifiable.	7	7	7	5
	Total (21)	**19**	**20**	**20**	**15**
Applicability	18. The guideline describes facilitators and barriers to its application.	3	4	3	6
	19. The guideline provides advice and/or tools on how the recommendations can be put into practice.	4	4	4	6
	20. The potential resource implications of applying the recommendations have been considered.	1	1	1	1
	21. The guideline presents monitoring and/or auditing criteria.	4	4	4	4
	Total (28)	**12**	**13**	**12**	**17**
Editorial Independence	22. The views of the funding body have not influenced the content of the guideline.	7	3	7	7
	23. Competing interests of guideline development group members have been recorded and addressed.	7	1	7	1
	Total (14)	**14**	**4**	**14**	**8**
Total Composite Score (161)		**95**	**102**	**112**	**108**
Overall Guideline Assessment	1. Rate the overall quality of this guidance.	4	5	6	5
	2. I would recommend this guideline for use (please respond: yes, yes with modifications, or no).	Y	Y w/mod	Y w/mod	Y w/mod

Appendix C

Obesity Guideline Recommendations

Recommendation	Endocrine Society	VA/DoD	AHA/ACC/ TOS	USPTF
Clinic Assessment	Not applicable	BMI	BMI, WC	BMI
Diet	Counsel BMI ≥25	Counsel all Variety[b]	CLI[f] as indicated x 6 month	CLI for BMI ≥25
Exercise	Counsel BMI ≥25	Counsel all Variety[c]	High-intensity ≥14 sessions x 6 month	CLI for BMI >25
Behavioral Counsel	Counsel BMI ≥25	MI[d]	May use commercial product	CLI for BMI >25
Pharmacologic Options	Meds at BMI ≥27 wc[a], >30	Meds at BMI ≥27 wc[a], ≥30	Not available at time of publication	Balance risk/benefit
Surgical Options	BMI ≥35 wc[a], >40	BMI >35 wc[a], >40	BMI ≥40	Not reviewed
Follow-up	Every 1 month, then every 3 months, stop if no change	Annual; CLI[e] every month for 12 months	Face-to-face or telephone support	No evidence to support frequency of screening; CLI 12-26 sessions/yr
Shared decision-making	Yes	Yes	Not discussed	Not discussed

Sources: Apovian et al., 2015; Jensen et al., 2013; Moyer, 2012; VA/DoD, 2014.

[a]wc = with comorbidity (i.e. T2DM, HTN, dyslipidemia, OSA); [b]low carb, low fat, DASH diet, low calorie, meal replacement; [c]10 minute short burst to longer continuous; [d]MI = motivational interview; [e]Comprehensive Lifestyle (diet, exercise, behavioral counsel) Intervention w/moderate activity 150-300 minutes/week; [f]CLI w/high-intensity activity 200-300 minutes/week, include smoking cessation counsel

Appendix D

Pharmacologic Agents for Treatment of Obesity

Medication	Activity	Recommended Dose	Benefits	Risks
Orlistat OTC[a]	Lipase inhibitor	60 mg 3 times daily	Weight loss 2-3% Decrease in LDL-C[b] Good safety profile Non-systemic Inexpensive	Gastrointestinal (GI) upset: Oily stools, bowel urgency
Orlistat (prescription)	Lipase inhibitor	120 mg 3 times daily	See above	See above More expensive than Orlistat OTC
Phentermine	Sympathomimetic agent	15 mg daily, increase as indicated 30 mg daily 37.5 mg (resin) 75 mg daily max	Inexpensive Weight loss 3-5%	Elevated heart rate/palpitations/ blood pressure, insomnia GI upset Caution in use with CV disease
Phentermine/ topiramate[c] extended release	Sympathomimetic agent/carbonic anhydrase inhibitor	3.75 mg/23 mg daily for 2 weeks, then increase as tolerated 7.5 mg/46 mg daily 11.25 mg/69 mg daily 15 mg/92 mg daily	Weight loss >5%	Expensive Same as Phentermine Altered taste Paresthesia Depression/anxiety Teratogenic
Lorcaserin[c]	Serotonin 5HT-2C receptor agonist	10 mg 2 times daily	Weight loss Improved Hgb A1C[d] Tolerability good	Expensive May experience headache, nausea, dry mouth, constipation Risk of serotonin syndrome w/ other serotonergic meds
Naltrexone/ Bupropion	μ-opioid antagonist/ dopamine & noradrenaline reuptake inhibitor	8 mg/90 mg 1 tablet for 1-2 weeks, then 2 tablets for 3-4 weeks, then 2 tablets 2 times daily	Weight loss >5% Treatment for food addiction	Mid-range cost Headache, nausea/vomiting, dizziness
Liraglutide	Glucagon-like peptide-1 agonist	0.6 mg daily, increase to max 3 mg subcutaneous daily	Weight loss	Expensive Injection Thyroid medullary cancer Nausea/vomiting Pancreatitis

Sources: Adapted from Apovian et al., 2015; Chugh & Sharma, 2012; McKinney, 2013; Ryan, 2014.

[a]OTC = over-the-counter; [b]LDL-C = low density lipoprotein cholesterol; [c]Discontinue if ineffective after 12 weeks; [d]Hgb A1C = glycated hemoglobin

Appendix E

Detailed Research Utilization Project Timeline

Task Date(s)	Category/Objective	Task
4 Jan – 11 Apr 2016	Proposal Defense	Draft Chapter 1 – Introduction Draft Chapter 2 – Literature Review Draft Chapter 3 – Theoretical Underpinnings Draft Chapter 4 – Project Plan Committee Approval Proposal Defense Presentation
1 Jun - 22 Sep 2016	IRB Approval	Submit IRB application with requested modification to UNLV IRB
6 - 30 Sep 2016	Update Chapter Drafts	Update Chapter 1 - Introduction
1 - 31 Oct 2016	Update Chapter Drafts	Update Chapter 2 – Literature Review
20 - 24 Oct 2016	IRB/AF Research Oversight and Compliance Division Approval	Submit UNLV IRB approval letter with requested modification to AF Research Oversight and Compliance Division
1 Nov - 30 Nov 2016	Update Chapter Drafts	Update Chapter 3 – Theoretical Underpinnings
1 Dec - 17 Dec 2016	Update Chapter Drafts	Update Chapter 4 – Project Plan
1 Dec - 23 Dec 2016	AF Research Oversight and Compliance Division Approval	Coordinate with MTF Clinical Research Office and AF Research Oversight and Compliance Division for final approval to conduct research utilization project
9 Jan - 29 Jan 2017	Data analysis	Analyze demographic and audit data
30 Jan - 3 Apr 2017	Research Project Defense	Draft Chapter 5 – Results Committee Approval Project Defense Presentation
4 Apr - 21 Apr 2017	Research Project Dissemination	Finalize edits Prepare presentation for MTF Executive Staff Prepare research project for dissemination to Military Medicine journal Initiate expansion of research utilization project to improve AF obesity rates

Appendix F

University of Nevada – Las Vegas Institutional Review Board and AF Research Oversight and Compliance Division Approval Letters

UNLV Biomedical IRB - Exempt Review
Exempt Notice

DATE:	September 5, 2016
TO:	Jessica Doolen, PhD
FROM:	Office of Research Integrity - Human Subjects
PROTOCOL TITLE:	[949366-1] Implementation gap between evidence-based guidelines and primary care providers' provision of care for clients with obesity
ACTION:	DETERMINATION OF EXEMPT STATUS
EXEMPT DATE:	September 5, 2016
REVIEW CATEGORY:	Exemption category #4

Thank you for your submission of New Project materials for this protocol. This memorandum is notification that the protocol referenced above has been reviewed as indicated in Federal regulatory statutes 45CFR46.101(b) and deemed exempt.

We will retain a copy of this correspondence with our records.

PLEASE NOTE:
Upon final determination of exempt status, the research team is responsible for conducting the research as stated in the exempt application reviewed by the ORI - HS and/or the IRB which shall include using the most recently submitted Informed Consent/Assent Forms (Information Sheet) and recruitment materials. The official versions of these forms are indicated by footer which contains the date exempted.

Any changes to the application may cause this protocol to require a different level of IRB review. Should any changes need to be made, please submit a **Modification Form**. When the above-referenced protocol has been completed, please submit a **Continuing Review/Progress Completion report** to notify ORI - HS of its closure.

If you have questions, please contact the Office of Research Integrity - Human Subjects at IRB@unlv.edu or call 702-895-2794. Please include your protocol title and IRBNet ID in all correspondence.

Office of Research Integrity - Human Subjects
4505 Maryland Parkway . Box 451047 . Las Vegas, Nevada 89154-1047
(702) 895-2794 . FAX: (702) 895-0805 . IRB@unlv.edu

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

23 December 2016

MEMORANDUM FOR UNIVERSITY OF NEVADA – LAS VEGAS
ATTN: LINDA HAGEMAN, MSN, RN-C

FROM: AFMSA/SGE-C
Research Oversight & Compliance Division
7700 Arlington Blvd. Ste. 5151
Falls Church, VA 22042-5151

SUBJECT: Implementation gap between evidence-based guidelines and primary care providers' provision of care for clients with obesity, **FSG20160047E**

References: (a) 32 CFR 219, Protection of Human Subjects
(b) DoDI3216.02_AFI40-402, Protection of Human Subjects and Adherence to Ethical Standards in Air Force Supported Research

The above-referenced protocol and supporting documents was reviewed by AFMSA/SGE-C for the applicability of human subject's protection regulations.

This project will involve retrospective review of electronic medical records (EMRs) of adult patients (age 19 and older), with obesity (BMI $\geq$30 kg/m^2) in military primary care settings of family practice, flight medicine and internal medicine for the purpose of examining the gap between actual treatment prescribed by primary care providers (PCPs) and the treatment recommended according to the evidence-based VA/DoD obesity guidelines.

The University of Nevada – Las Vegas IRB determined that the protocol is exempt under section 101(b)(4) of Reference (a). The HRPO cannot concur with Exempt determination.

The HRPO determined the project is not research as the activities do not constitute a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge in accordance with section 102(d) of Reference (a). The project may proceed with no further requirement for review by the HRPO.

Please ensure this activity is conducted in compliance with the relevant requirements in accordance with 45 CFR Part 164, Security and Privacy, under the Health Insurance Portability and Accountability Act of 1996 (HIPAA), Public Law 104-19. In order to understand what these requirements are, please seek guidance from the Privacy Officer or Privacy Board at your institution

No further life cycle actions are required for this protocol unless there are significant changes to the study design which would impact the HRPO determination.

Please contact our office at usaf.pentagon.af-sg.mbrx.afmsa-sge-c@mail.mil with any questions.

Peter Marshall

PETER MARSHALL, CIP
Program Manager AF Research Oversight &
Compliance Division

Appendix G

Obesity Treatment Audit Form

Obesity Treatment Audit Form

Review Date												
Assigned Record #												

1. **Diagnosis** in EMR made if BMI $\geq$ 30 kg/m^2?												
2. **Diet/Nutritional counsel/consult** evident if BMI $\geq$ 30 kg/m^2?												
3. **Exercise** counsel evident if BMI $\geq$ 30 kg/m^2?												
4. **Behavioral modification** counsel/consult if BMI $\geq$ 30 kg/m^2?												
5. **1 month f/u appt** recommended if BMI $\geq$ 30 kg/m^2?												
6. **Medication therapy** discussed if BMI $\geq$ 30 kg/m^2?												
7. **Bariatric surgery** discussed if BMI $\geq$ 35 kg/m^2 with comorbid conditions, or BMI $\geq$ 40 kg/m^2?												
Total Indicators with Yes Response												
Total Potential Indicators												
Indicator Score (Range 0-100%)												

Legend: **Y** – Compliant **N** – Not Compliant **N/A** – Not Applicable

Record #	**Comments: (Do not document any identifiable patient/provider information):**

QUALITY ASSURANCE DOCUMENT-EXEMPT FROM DISCOVERY IAW 10 U.S.C. SECTION 1102
DO NOT RELEASE WITHOUT REVIEW/PERMISSION OF THE INSTITUTIONAL REVIEW BOARD

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CURRICULUM VITAE

PERSONAL INFORMATION:

Name/Rank: Linda A. Hagemann, Lt Col, USAF, NC
AFSC: M46Y3A
Phone: 801-920-2727
E-Mail: linda.a.hagemann.mil@mail.mil
Current assignment: Master Clinician, Women's Health
1060 W. Perimeter Rd.
Joint Base Andrews, MD 20762

OBJECTIVE: Continue clinical expertise as an advanced nurse practitioner, pursue doctoral work in clinical practice, and become an academic instructor

QUALIFICATIONS:

- Professional/technical WHNP; provides comprehensive care for 10.2K OB/GYN beneficiaries
- WHNP consultant/preceptor; evaluates nat'l/local performance/quality standards for 1.1K MDG staff
- Adjunct faculty/guest lecturer; critically reviews competencies/performance Adv Practice nurse students
- Facilitates collaboration; promotes evidence-based practice/quality care to improve patient outcomes

EDCATION AND TRAINING:

FORMAL EDUCATION:
University of Nevada Las Vegas, Doctorate of Nursing Practice, 2014 (enrolled)
Uniformed Services University, Bethesda, MD, Post-master, FNP, 2011
Arizona State University, Tempe, AZ, MS, WHCNP, 2002
University of Nevada Las Vegas, Las Vegas, NV, FNP graduate studies, 1997-1999
University of Nebraska Medical Center, Omaha, NE, BSN, 1993
University of Nebraska-Lincoln, Lincoln, NE, BS, 1989

MILITARY EDUCATION:
Combined Senior Leadership Course, 2016
Nurse Practice Oversight Course, 2016
Nurse Practice Oversight Course, 2015
Air War College, 2014
Intermediate Executive Symposium, 2012
Air Command and Staff College, correspondence, 2008
Squadron Officer School, correspondence, 2000
Nursing Service Management, residence, 1996
Nursing Management Fundamentals, correspondence, 1995

CONTINUING MEDICAL EDUCATION:
ICEA/Lamaze International Childbirth Conference, 2015
NAMS Annual Meeting, 2014
Advances in Health Care in Women over 40, 2014
Mayo Clinic 8th Annual Dermoscopy Conference, 2013
AANP National Conference, 2013
Contemporary Forums Pharmacology, 2012
(Additional CEU's upon request)

MILITARY EXPERIENCE:

Women's Health Master Clinician, 779 Medical Group, JB Andrews, MD, 2016-Pres
Chief Nurse, 61 Medical Squadron, Los Angeles AFB, CA, 2015-2016
Medical Services Flight Commander, 355 Medical Group, Davis-Monthan AFB, AZ, 2012-2015
FNP, Family Health Clinic, 355 Medical Group, Davis-Monthan AFB, AZ, 2011-2012
Graduate student, Family Health, AFIT, Uniformed University of the Health Sciences, MD, 2010-2011
Element Chief, Gyn Services, 75 Medical Group, Hill AFB, UT, 2005-2006/2007-2010
Medical Director, Gyn Services, 75 Medical Group, Hill AFB, UT, 2007
Element Chief, Women's Health Clinic, 7 Medical Group, Dyess AFB, TX, 2003-2005
WHCNP, Women's Clinic, 7 Medical Group, Dyess AFB, TX, 2002- 2003
Graduate student, Women's Health, AFIT, Arizona State University, AZ, 2000-2002
Clinical Nurse, Obstetrics, 99th Medical Group, Nellis AFB, NV, 1996-2000
Clinical Nurse, Medical/Surgical, 75th Medical Group, Hill AFB, UT, 1994-1996
Clinical Nurse, Primary Care Clinic, 23rd Medical Group, Pope AFB, NC, 1994-1994

CIVILIAN EXPERIENCE:

Night Charge Nurse, Oncology, Cape Fear Valley Medical Center, Fayetteville, NC, 1994
Clinical/Charge Nurse, Medical/Surgical, Moore Regional Hospital, Pinehurst, NC, 1993-1994

PROFESSIONAL HONORS:

AFSPC Nursing Excellence in Leadership Award, 2016
355 Desert Lightening Team Field Grade Officer of the Quarter, 2015 (2nd)
Tucson Fabulous 50 Nurse of the Year, 2015
355 MDOS Field Grade Officer of the Year, 2014
355 MDG Field Grade Officer of the Quarter, 2014 (3rd)
355 MDOS Field Grade Officer of the Quarter, 2011 (4th), 2013 (2nd), 2014 (3rd)
NAMS/Pfizer DNP/Fellowship Scholarship, 2014
Distinguished Academic Performance Award, USUHS, 2011
AFMC Advanced Practice Nurse of the Year, 2009
AFMC Advanced Practice Nurse of the Year, 2008
75Medical Group Company Grade Officer, 3rd Quarter, 2006
Recipient, Inspirations in Women's Health Award, NPWH, Sep 2005
ACC Advanced Practice Nurse of the Year, 2004
Outstanding Performer, Health Services/JCAHO Inspection, Apr 2004
7 MDOS Company Grade Officer, 1st Quarter, 2004
Recipient, National Perinatal Association's Young Investigator's Award, Dec 2002
Nominee, University Microfilms International Distinguished Master's Thesis Award, Jun 2002
Recipient, ASU College of Nursing Scholarship Award, May 2002
Recipient, Nancy Melvin Research Award for Excellence in Nursing Research Scholarship, May 2001

OTHER MAJOR PROFESSIONAL ACTIVITIES NOT PREVIOUSLY STATED:

- "The Implementation Gap Between Evidence-Based Guidelines and Primary are Providers' Provision of Care for Adult Obese Individuals." Co-investigator, University of Nevada Las Vegas, Nevada.
- Interim Family Nurse Practitioner Consultant to the AF Surgeon General – Provide manning, career, standard of care, and education counseling to AFSG/AFMS Family Nurse Practitioners.
- "Improving Access to Care: A Novel Delivery System." Project Chair, 779th Medical Group/Institute for Healthcare Improvement/Military Health Service Access to Care Learning Partnership, JB Andrews, MD.
- Referral reduction evidence-based process improvement, 61 MDS—reduced referral rate by 25%, 2016
- Coordinated Breast Cancer Luncheon for 355 MDG—increased prevention awareness for 36 staff, 2014
- AFSO-21 improvement process to reduce G6PD medication errors; decrease risk for >100, 2014

- Nexplanon trainer--provided contraceptive education for 27 staff/residents at D-M and Nellis AFB, 2014
- Trained 40 RNs on suicide prevention/precepted 63 hours for USUHS FNP student, 2013
- Organized Pharmacy/Marana coverage--maintained 100% access w/ 50% staff reduction, 2013-2014
- Created 6 nurse run clinic protocols; enhanced nurse triage skills/recouped $360K annually, 2013
- Coauthored pregnancy chapter, 4th ed., Primary Care, Elsevier, 2013
- Brief on iron deficiency anemia—incorporated updates on pathophysiology/management updates, 2011
- Literature review on child maltreatment in the military; authored paper/briefed 28 family health students
- Assisted USUHS instructors in FNP curriculum—individually tutored 15 students on women's health topics, taught cervical cancer guidelines/gyn assessment to 100 family health students, 2010-2011
- Implemented 4 Gyn algorithms to improve safety/standard of care for three 75 MDG clinics, 2007-2008
- Spawned educational program for public and professionals on women's health/cancer awareness at Dyess AFB, 2003-2005/Hill AFB, 2007-2008
- Authored cervical/breast cancer prevention articles for 75 MDG and Joint Base Balad, Iraq, 2006-2008
- Completed thesis, Information and Support given by Inpatient Nurses, Maternal Factors, and Breastfeeding Success; use of 8 clinical facilities; professional knowledge shared to improve teaching content and practices for healthcare personnel involved in perinatal care, 2002
- Streamlined patient care for antepartum population on OB unit, decreasing patient wait time, 1997-2000; tracking ensured increased staffing by 4.0 FTE for antepartum management
- Steering Committee Chair, Reducing time from Incision to Decision for Improved Cesarean Section Outcomes, 1998; established hospital protocol to ensure safe delivery for unplanned cesarean sections.
- Created a unit based inpatient education program for medical/surgical and obstetrical outpatient and inpatient populations, Aug 1995 (Hill AFB) and Dec 1997 (Nellis AFB)
- Coauthored 99th Medical Group Childbirth and Siblings course curriculum, Feb 1998
- Chair, multidisciplinary team to improve standards in delivery of total parenteral nutrition, Apr 1996
- Investigated and selected patient controlled analgesia selected for most effective postoperative pain management therapy—excellence in practice recognized by Health Services Inspection Team, Dec 1995

PROFESSIONAL ORGANIZATIONS:
American Academy of Nurse Practitioners, 2011
National Association of Nurse Practitioners in Women's Health, 2002
International Childbirth Education Association, 1997
Sigma Theta Tau International Nursing Honor Society, 1993