University of Kentucky

UKnowledge

College of Nursing

2015

Examining the Effectiveness of an Intervention to Increase Provider Assessment of Overweight and Obesity in the Primary Care Setting

Kristena R. Lea
University of Kentucky, kristarlea@gmail.com

Recommended Citation

STUDENT AGREEMENT:

I represent that my DNP Project is my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained and attached hereto needed written permission statements(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine).

I hereby grant to The University of Kentucky and its agents a royalty-free, non-exclusive and irrevocable license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless a preapproved embargo applies. I also authorize that the bibliographic information of the document be accessible for harvesting and reuse by third-party discovery tools such as search engines and indexing services in order to maximize the online discoverability of the document. I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Assistant Dean for MSN and DNP Studies, on behalf of the program; we verify that this is the final, approved version of the student's DNP Project including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Kristena R. Lea, Student

Dr. Kathy Wheeler, Advisor

Final DNP Project Report

Examining the Effectiveness of an Intervention to Increase Provider Assessment of

Overweight and Obesity in the Primary Care Setting

Kristena Lea, RN, BSN

University of Kentucky

College of Nursing

Spring 2015

Kathy Wheeler, PhD, RN, APRN, FAANP – Committee Chair

Sharon Lock, PhD, APRN – Committee Member

Stephanie Rose, MD, MPH – Committee Member/Clinical Mentor

Dedication

I would like to dedicate my capstone project to my husband Brian, without his unwavering support this would not be possible. Thank you for helping make this dream a reality. To our parents – I have no idea where we would be without your love and countless hours of babysitting the last 5 years. Thank you does not begin to cover it. To my brother Tyler, who from an infant inspired me to be a nurse. Lastly, to Lucas and Annabelle, our sweet children, thank you for being so patient with mommy. I love you to the moon and back.

Acknowledgements

I would like to thank Dr. Kathy Wheeler who has been my advisor throughout the course of the DNP program. Dr. Wheeler also served as my capstone committee chair. Thank you for always being considerate of my life outside the program. Your support and patience are greatly appreciated. I would also like to thank Dr. Sharon Lock and Dr. Stephanie Rose for taking the time to be part of my capstone committee. To the remainder of faculty at the University of Kentucky College of Nursing – thank you for all you do to make this program wonderful.

Table of Contents

List of Tables

List of Figures

List of Appendices

Project Overview

Obesity is an epidemic among adults in the United States. It leads to a multitude of chronic health issues and drives up healthcare costs into the billions of dollars each year. The fundamentals of primary care are based on prevention. Thus, primary care providers are in a unique position to identify patients who are overweight/obese. Despite this necessity, overweight/obesity are continually overlooked in the primary care setting. The shortage of primary care providers, along with the growing number of insured patients is making primary care busier than every. Providers often do not take the time to initiate discussion related to overweight/obesity due to the staggering number of other issues they are faced with on a daily basis when managing patient care. In addition, this can be an uncomfortable topic to address with patients. Body mass index (BMI) is an objective tool used to determine weight status based on height and weight. Now that computerized medical records and documentation are the mainstay in healthcare, BMI can be automatically calculated by the electronic medical record with entry of height and weight. The use of BMI is simple, low cost, and endorsed by the CDC (2011) as an effective means of screening for overweight/obesity. BMI is an objective means for providers to approach overweight/obesity discussion with patients. Approaches must be found to increase utilization of this tool and find ways for primary care providers to add overweight/obesity conversation into their daily practice.

After exploring literature related to lack of identification and intervention related to adult overweight/obesity, the basis for this capstone project was formed. Three manuscripts represent this project. The first manuscript is an integrative review of literature related to the use of BMI as a tool to diagnose obesity in primary care. Many

gaps in the literature related to identification of adult overweight/obesity were uncovered while performing the literature review for this manuscript. This prompted further curiosity and a need for more research to create change in practice. The second manuscript evaluated and analyzed the most current practice guideline related to adult overweight/obesity. The 2013 guideline published by the American Heart Association, American College of Cardiology, and The Obesity Society was the first published guideline on adult overweight and obesity in 15 years. The guideline focused on the obesity epidemic, urging providers to address the many co-morbidities that accompany overweight/obesity. Further, the guideline makes the recommendation for primary care providers to measure BMI on every patient at least annually to identify overweight/obesity (Jensen et al., 2013). The last manuscript outlines a quality improvement study that was conducted at a family practice clinic to improve provider documentation of overweight/obesity diagnosis and treatment through use of a sticky note prompt alerting providers to patient BMI. Chart reviews were conducted pre and post intervention to determine outcomes. An anonymous, post-intervention survey was distributed to providers to determine their perception of usefulness of the intervention. Although providers did not recommend maintaining this intervention in daily practice, they did find it useful and results yielded a statistically significant improvement in practice.

Manuscript 1

Using Body Mass Index to Diagnose Obesity: An Integrative Review

Kristena Lea, RN, BSN

University of Kentucky

Abstract

Obesity is a prevalent health condition that can lead to many chronic health problems and complications. Although it is a condition that can be prevented, research shows obesity is often overlooked and underdiagnosed by health care providers. The measure of body mass index (BMI) to screen for obesity can increase the rate of diagnosis and treatment referral. This integrative review explores research related to current trends in practice for obesity screening and diagnosis. It uncovers gaps in practice and applies the principles of evidence-based practice to generate ideas for positive changes that promote an increase in obesity screening and diagnosis.

Using Body Mass Index to Diagnose Obesity: An Integrative Review

Obesity is a global epidemic; one that is preventable. A study based on national measurements of height and weight among males and females in the United States, ages greater than or equal to 20 years old, found that from 2003-2004, 66.3 percent were either overweight or obese (Ogden et al., 2006). Obesity can lead to a multitude of poor health outcomes, such as hypertension, diabetes, and hyperlipidemia. Obesity is an issue that health care providers tend to avoid discussing with their patients due to fear of jeopardizing rapport with the patient, lack of time, or simply avoidance. Obesity is a growing problem in the face of health care that must be addressed.

In order to treat obesity, it must first be diagnosed. Screening is crucial in the diagnosis of obesity. The measurement of body mass index (BMI) is an easy and cost-effective screening method that can be used to diagnose obesity. BMI is assessed by getting a height and weight on patients, and then either performing the simple BMI calculation or using a calculation tool. Patients are considered overweight if their BMI is between 25 and 29.9 kg/m^2; and obesity is diagnosed with a BMI 30 kg/m^2 or greater (National Institutes of Health [NIH], National Heart, Lung, and Blood Institute [NHLBI], & North American Association for the Study of Obesity [NAASO], 2000). Although a central tenet of obesity diagnosis, the measurement of BMI is often overlooked in the clinic setting (Gesensway, 2008). It is a simple task that could be completed during the check-in process where vital signs and history of present illness are assessed. According to Gesensway (2008), "without measurement, counseling doesn't occur, treatment isn't initiated, and prevention isn't preached" (para. 2). Screening for BMI should be performed with every new patient encounter, and every few years for established patients

(Gesensway, 2008). The National Institutes of Health, National Heart, Lung, and Blood Institute, and National Association for the Study of Obesity produced clinical guidelines in 2000 for assessment and treatment of obesity. The guidelines identify ten steps in treating overweight and obesity in the primary care setting, and the first step is to measure the patient's height and weight in order to calculate BMI (NIH, NHLBI, & NAASO, 2000). This guideline asserts the entire screening process starts with the two most fundamental vital signs: height and weight. The need for consistency in measuring height and weight to screen for BMI is a problematic gap in practice. It is imperative that this screening be completed in order to start the process of diagnosis and intervention.

Obesity is a prevalent health concern that holds great significance for advanced practice nurses, especially those in the primary care setting. Advanced practice nurses are in a position of opportunity to implement interventions that will increase BMI screening in order to increase the diagnosis of obesity. The purpose of this integrative review is to evaluate the most current literature and research related to the use of BMI and the diagnosis of obesity in the primary care setting in order to uncover reasons for lack of screening and diagnosis. The aim is to formulate ideas from current practice to improve future practice in the screening and diagnosis of obesity.

Critique of Relevant Research Literature

The studies identified in this review are helpful in providing a picture of current practice and barriers to screening and diagnosing obesity. Key words including obesity, overweight, BMI, prompts, primary care, diagnosis, and medical record were used as search criteria in the databases of PubMed and CINAHL. Among the studies reviewed

and retained, only one provided an intervention. However, the other studies were useful in gaining a better grasp on current mindset and practice related to obesity.

A 2010 cross-sectional study by Smith, O'Halloran, Hahn, Grasmick, & Radant used an email-based survey to determine attitudes related to screening for obesity using BMI along with perception of feasibility of obesity screening in the adult population. The survey was conducted on a sample of Wisconsin family physicians who were members of their state chapter of the American Academy of Family Physicians (AAFP). The survey was conducted on the sample population before and after they received the Americans In Motion – AIM to Change Toolkit, a tool that was distributed by the AAFP in order to raise awareness related to the need for increased obesity screening using BMI. The researchers aimed to identify if positive changes were seen in physicians' attitudes related to obesity screening and diagnosis after use of the toolkit (Smith et al., 2010).

This study was an assessment of physician attitudes and was obtained through convenience sampling. Since the participants chose whether or not to respond to the survey, this sampling method was weaker than random sampling. However, it still produced valuable information (Burns & Grove, 2009). Although this study discussed the use of the AIM toolkit, it did not suggest a new intervention but rather surveyed responses to a previously implemented intervention. There was no randomization or control group, limiting the researcher's ability to test for causality, and therefore limiting generalizability to the population (Burns & Grove, 2009). However, survey findings revealed an increase in positive attitudes related to the need for obesity screening. Also, the consideration of BMI as a useful vital sign along with agreement related to the need for recording BMI on all patients increased (Smith et al., 2010).

Limitations in this study included low response rates, a further barrier to generalization; possibility of bias related to similarity in demographics of sample population; and uncertainty of accuracy of data related to self-reporting (Smith et al., 2010). Also, the study did not mention the origin of the survey too, so reliability and validity could not be determined. Although not a randomized intervention study, it still provided useful information about attitudes related to obesity screening and diagnosis along with groundwork for future intervention-based studies.

A 2009 prospective, cross-sectional study by Melamed, Nakar, & Vinker examined the frequency of identification and documentation of BMI measurement and obesity diagnosis along with factors that affect BMI documentation. The sample included a group of family practice physicians from seven different practices in an Israeli health group. Patients were approached while in the waiting rooms of the participating practices to obtain consent for participation in the study. Research staff audited patient charts after clinic visits to determine if BMI and a diagnosis of obesity (where applicable) were recorded. Both the physicians and patients were blinded to the objectives of this study, a great strength of the study (Melamed et al., 2009). Physicians could not document a BMI and obesity diagnosis any more than they normally would because they did not know what was being evaluated in the study. It also prevented patients from prompting physicians to do these things. The aim was to evaluate if lack of obesity screening and underdiagnosis was taking place among this group of physicians.

As with the first study, this study also used a convenience sampling method, which limited the ability to generalize the findings back to the population. The fact that this was a cross-sectional, non-intervention study also limited the usefulness of the

findings. However, this study still provided useful information for the purposes of this review. Findings revealed the physicians failed to identify most of the overweight and obese patients, and the patients who were documented as overweight or obese had a much higher BMI than those who were not documented (Melamed et al., 2009). These findings further reiterated the point that BMI is not being documented and obesity is not being diagnosed to the degree necessary.

Limitations in this study included no identification of a direct link between BMI documentation and weight counseling. The discussion would have been more valuable if this relationship had been addressed. The number of co-morbidities in the study population could have limited generalizability. A possible change in mindset of providers related to a gap between the time the study was conducted and published should have also been considered (Melamed et al., 2009). Although there was no intervention in this study, it provided information from a moderate sample size to reveal a gap in practice and the need for further research and intervention related to this problem.

A 2009 study conducted by Schriefer, Landis, Turbow, & Patch implemented the use of a BMI chart prompt in the electronic medical records of a group of obese patients (intervention group). The study also had a comparison (control) group that received the same treatment as the intervention group except they did not get the BMI chart prompts placed in their electronic medical records. The BMI chart prompt was placed in the charts alongside the other vital signs prior to the physician seeing the patient. The purpose of the chart prompt was to increase the chances of qualifying patients being diagnosed with obesity and referred for treatment (Schriefer et al., 2009).

This study had several strengths. First, the researchers used random sampling and an intervention that tested causality and retrieved results that could be generalized to the population. Also, the sample size was relatively large, at 846, leading to greater ability to generalize findings. Study findings revealed patients in the intervention group were much more likely to receive an obesity diagnosis and referral for treatment than patients in the comparison group (Schriefer et al., 2009).

A major limitation of this study was that data was only collected for the first office visit during the study period, so it was possible that the patient could have been diagnosed with obesity and referred for treatment before or after this visit. Also, the study was limited to a single family practice residency clinic, so it was possible the findings are atypical of those in other family practice clinics (Schriefer et al., 2009). The sample was random, but it included only known obese patients, weakening the study to some degree. Lastly, the study provided no information related to the origin or reliability/validity of the BMI chart prompt, perhaps limiting the strength of findings. However, this study was a valuable asset to this review because it provided evidence-based results for effective interventions that could be applied to practice in the aid of increasing obesity screening and diagnosis.

A 2005 qualitative study by Epstein & Ogden used a phenomenological approach to assess London General Practitioners (GPs) regarding attitudes about obesity management. The sample consisted of GPs from one inner London primary care trust with varying demographic statuses. Information was obtained from the participants through the use of in-depth, semi-structured interviews. Qualitative research strictly involved subjective information as provided by the participants. There were no numbers

or statistical analyses involved. Study findings revealed GPs viewed obesity management in terms of responsibility, placing that responsibility on the patient. The GPs also showed dissatisfaction in all current treatment options for obesity, and they did not view obesity as a medical problem that they should be managing. The GPs also expressed concern for hurting their rapport with the patients related to disagreement over obesity treatment (Epstein & Ogden, 2005).

Limitations to this study included a small sample size, decreasing the ability to generalize findings and possible influence of GPs response by the researchers (Epstein & Ogden, 2005). Although this was a different type of study that provided no intervention, it was still a valuable asset to this review. Researchers were able to compare and relate their findings from this study to research that was current at the time of the study. The study provided subjective information from providers detailing their difficulties in managing obesity, which could be useful when designing clinical interventions and formulating future research studies.

A 2003 cross-sectional study by Lemay et al. examined the frequency of obesity diagnosis among different provider types (attending physician, nurse practitioner, and resident physician) at a family practice residency site. The study also looked at the reasons related to the providers making an obesity diagnosis. The sample consisted of patients who were scheduled for a clinic visit during a specific week. Patients were not directly involved in the study, but their medical records were audited to obtain data (Lemay et al., 2003). Although not directly stated, it is assumed that convenience sampling was used since the sample was limited to patients in one clinic. The study was unclear related to specific details on sampling, which is a limiting factor for the study.

However, it was a moderately large sample, 465, strengthening the study and findings. The charts were audited looking at the 6 month period prior to the patients' upcoming appointment to collect provider diagnosis of obesity and measurement of height and weight. Four registered nurses who received training on auditing, which increased the reliability of their auditing skills and findings, audited the charts. The nurses used an extensive abstraction tool for auditing. This tool was found to be reliable and valid through calculated statistics, which greatly increased confidence in relation to accurate findings. Study findings revealed obesity was grossly underdiagnosed, a diagnosis was not made when indicated by BMI, and 37% of charts did not have a height and weight. Obesity was most frequently diagnosed by attending physicians followed by nurse practitioners, and then resident physicians (Lemay et al., 2003).

Limitations to the study included possibility of bias related to chart abstraction process; limited ability to calculate BMI related to lack of documented heights and weights; and the fact that the study was conducted at only one site (Lemay et al., 2003). It is also important to acknowledge that this study was from 2003, and though it provided applicable information, it is possible attitudes, opinions, and practice standards have changed over this time period. This study was another significant addition to the review. It provided further useful data related to the lack of obesity screening and diagnosis. It also provided data specific to three different provider types, which could aid in choosing target populations for education or future studies.

Synthesis of Research Findings

The research studies examined in this integrative review all yielded similar findings, but they each had a unique contribution to the whole. The common theme for

12

each study was obesity screening and diagnosis. However, the qualitative study focused more on attitudes related to obesity management. Each of the studies exhibited great need for more focus on obesity. Refer to Table 1 for summary and comparison of research studies used in this discussion.

The Smith et al. (2010) study, which used before and after attitudinal surveys, yielded positive results related to providers being exposed to material endorsing obesity screening and diagnosis using BMI. Although the toolkit intervention was not actually a component in this study, researchers evaluated its effects. This study was helpful in providing future ideas for research as well as interventions for clinical practice. The 2009 Melamed et al. study focused on chart audits to determine if BMI and obesity diagnosis were being documented. The study determined BMI was infrequently documented and obesity was underdiagnosed (Melamed et al., 2009). These findings demonstrate gaps in current practice and support the purpose of this review. The Schriefer et al. (2009) study outlined the implementation of an intervention aimed at improving practice. Researchers found the use of a BMI chart prompt increased recognition of BMI and diagnosis of obesity. However, researchers conceded the rate of increase was still not to their satisfaction, and further research was necessary (Schriefer et al., 2009). This study was vital to the review because it provided a feasible intervention with outcomes that are necessary for improving a process or creating change. The Epstein & Ogden (2005) study intertwined a qualitative approach into the review. It provided subjective opinions related to obesity management and responsibility. This study was also essential to the review because it identified problems with current practice that could be targeted when trying to implement an intervention related to diagnosing and

13

treating obesity. The dissatisfaction expressed by the subjects in this study related to obesity management further solidified a need for review of current practice. The Lemay et al. (2003) study consisted of chart audits to determine frequency of obesity diagnosis. Researchers concluded obesity was grossly underdiagnosed by providers. The age of this study compared to current time reveals an ongoing trend and problem with practice. These five studies demonstrate obesity is a prevalent problem that is highly overlooked and needs a great deal of attention.

These articles exhibit much strength, even though only one involved an intervention. One of the main strengths is they all discussed obesity in relation to the adult population in the primary care setting, providing consistency and evidence for an area that needs improvement. Also, several of the articles had moderate sample sizes, which improved the value of findings and the ability to generalize to the population. The researchers in each study were knowledgeable in consistently identifying the needs for improvement with obesity screening and diagnosis using BMI. The main weakness noted in these studies was that most provided no intervention. They were helpful for obtaining background information, which is truly important when beginning a research study, but this growing issue needs intervention. The gap in practice is that BMI is not being measured enough and obesity is not being diagnosed enough, resulting in a lack of easy and effective interventions to improve practice.

Recommendations for Evidence-based Nursing Practice

Based on the literature provided in this integrative review, a change in nursing practice is recommended. The Lemay et al. (2003) study found nurse practitioners were only diagnosing and documenting obesity in 33%, which is extremely low. This same

study found only 37% of the patients in the sample had both a height and weight in the chart, which is also low, especially for findings that are imperative for calculating a BMI (Lemay et al., 2003). This finding reveals a significant gap in practice since height and weight are vital signs that should be documented frequently. According to Melamed et al. (2009), "identifying obesity could be simplified by determining the BMI in physician-patient encounters. This should lead to a discussion about weight issues with patients in a non-judgmental manner that could motivate patients to pursue a healthier lifestyle" (p. 621). This statement also applies to advanced practice nurses since they have equal responsibility to diagnose and treat patients. Weight is often an uncomfortable topic to discuss with patients, and it can be a barrier to obesity diagnosis. Lemay et al. (2003) explained primary care providers would more frequently address obesity with patients if they are taught how to do the BMI calculation and given education on the importance of diagnosing obesity. These are simple implementations that could be put into practice to create positive changes.

The data gathered from the literature consistently agreed on the need for more frequent BMI calculation, obesity diagnosis, and referral for obesity treatment. These outcomes are most applicable to policy change in the clinic setting, and in designing an intervention that would be easily adopted by clinic providers. However, it could apply to policy change at the legislative level as well to promote the addition of BMI to the current national vital signs. It is imperative clinic staff receive education related to proper BMI calculation and its importance in the diagnosis of obesity. Education should also detail why it is so important to diagnose patients with obesity, along with the many co-morbidities associated with obesity and the need for treatment referral. Academic

detailing, peer education, is an effective method that could be used to provide clinic staff with obesity information along with guidelines for a new intervention. It is most effective to speak with staff individually prior to holding a group intervention in order to better gain their full attention for maximum education. The BMI prompt from the Schriefer et al. (2009) study is an effective tool that could be implemented in the clinic setting. Staff must be thoroughly trained on the use of the tool as well as reasons for change in practice. Obesity is a prevalent health issue that exhibits major gaps in practice by health care providers. Advanced practice nurses must take an active role in applying evidence-based practice interventions to overcome this problem.

Table 1

Complete Summary of Research Methods

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
Research purpose, question, or hypothesis	To determine trends in physician attitudes toward screening for obesity using body mass index (BMI) and attitudes related to feasibility of obesity screening in adults before and after receiving the AIM to Change Toolkit	To determine the frequency that family physicians document patient BMI and diagnose obesity and to determine factors that affect BMI documentation	To determine if adding a chart prompt to the electronic medical record indicating BMI as a vital sign would increase the diagnosis of obesity with referral for treatment	To determine GPs attitudes about obesity, specifically related to management of obesity, responsibility, and patient interaction	To determine the frequency of obesity diagnosis based on provider type (physician, nurse practitioner, or resident) to determine who was most likely to make the diagnosis and how they were making the diagnosis
Study design	3 cross-sectional attitudinal surveys: October 2005 (baseline), April 2007, & December 2007 (after receiving AIM Toolkit, some had received it and some had not prior to getting these surveys)	Prospective cross-sectional study	Intervention Design – Randomized Clinical Trial (RCT)	Qualitative study using in –depth, semi-structured interviews	Cross-sectional design

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
Independent/Dependent Variables	Not addressed in the study. Not applicable related to type of design.	Not addressed in the study. Not applicable related to type of design.	IV: Presence of BMI chart prompt in the participant's medical record DV: whether or not the patient received a diagnosis of obesity and whether or not patients received a referral for obesity treatment options	Not applicable	Not addressed in the study. Not applicable related to type of design.
Sample & Setting	Sample: Wisconsin Family Physicians received survey via email, October 2005 n =1429, April 2007 n = 1797, & December 2007 n = 1580. Although not explicitly stated, the sample was a convenience sample since it was sent out to a target group and people responded by choice. Setting: Wherever the provider desired to complete the online survey	Sample: 289 patients assigned to 19 physicians from 7 family practice clinics of Clalit Health Services in Israel, an affiliate of the Department of Family Medicine at Tel Aviv University. Sample was compiled using convenience sampling (although this is not directly stated). Researchers approached a total of 384 patients in the waiting rooms of the 19 participating physicians. 303 patients consented for the study and 289 was the final	Sample: 846 obese patients, *Intervention group n = 379 *Comparison group n = 467 *Participants gathered from 14,000 active patient database *Only active patients included in the study (one who made at least 1 office visit within the previous 3 years) *Inclusion criteria: 20 years of age or older and BMI = 30 or greater *Exclusion criteria: pregnancy Setting: Family	Sample: *21 GPs from 15 different practices (only 2 participants per practice allowed) from one inner London primary care trust list *10 males, 11 females *Broad age range *Mostly white (n = 15), with 5 Asian and 1 African American *Training backgrounds	Sample: *465 adult patients who were scheduled to be seen in the clinic during a specific week *Study does not specify how the sample was chosen or if this was every patient scheduled to be seen that week Setting: Family practice residency site at a federally funded community health center

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
		number eligible. Inclusion criteria (provider): 1- year tenure in family practice and a year - long rapport with the patients enrolled in the study. Inclusion criteria (patient): all patients scheduled to see a participating physician Exclusion criteria: pregnancy, < 18 years of age, not being fluent in Hebrew Setting: office site of participating physicians	medicine residency program clinic in North Carolina	from various countries Setting: inner London primary care trust	
Conceptual framework	Not explicitly stated	Not explicitly stated	Not explicitly stated	Phenomenology	Not explicitly stated

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
Methods & Measures	*Use of 3 cross-sectional surveys to assess attitudes and practice implementations. *Baseline survey inquired about routine measurement of height, weight, and BMI; tools used to calculate BMI; perceived usefulness of BMI in practice; and opinions on statements related to importance of obesity screening and usefulness of BMI. *Demographics including physician's practice type, location, race, ethnicity, and gender were also compiled. *The 2007 surveys asked the same questions from the baseline and additional questions related to use of the AIM toolkit	*Physicians and patients were blinded to the objectives of the study *After each clinic visit, research staff recorded patients' height, weight, and BMI *BMI documentation along with documentation of obesity diagnosis was also extracted from the patients' electronic medical record *Patient co-morbidities, demographics, social history, and clinic visits in the last 6 months were also gathered by the research staff	*Study took place over a 2 month period in the first part of 2006 *Two physician teams assigned to intervention group (n = 18) and two assigned to comparison group (n = 19) by drawing from a hat *Physician teams consisted of a faculty member along with first, second, and third year residents ages 28 to 64 *Patients were considered to be in the intervention or comparison group based on their assigned physician *Intervention group: patient's height, weight, and BMI were taken, calculated, and entered into the chart. When the physician saw the chart, the BMI would appear alongside the other vital signs. *Comparison group: Collected and recorded	*Saturation was reached after analysis of the last five or six interview transcripts *Interviews were audiotaped and then transcribed *During the interview, specific questions were asked about recent obese patient encounters and general obesity management *Open-ended questions were mainly used, but prompts were added as needed	*The 465 participant's charts were audited looking at the 6 month period prior to their upcoming visit *The following data was collected from the chart audit: provider diagnosis of obesity, heights and weights, number of primary care visits in that 6 month period, demographics, co-morbidities *Charts were audited by four registered nurses who had been trained in reviewing medical records *They used an extensive abstraction tool that had been used for a broader study on

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
			height and weight in chart. No BMI prompt for physician *In both groups, the physicians examined the patients, made a diagnosis, determined a plan of care, then documented their findings in the chart *Data was collected through review of the medical record for the first visit only		outcomes of interdisciplinary, collaborative team practice
Reliability & Validity	Not explicitly stated. The authors only talk of the survey components. The origin and reliability/validity of the survey are not addressed.	Not explicitly stated. The study made no mention of using any surveys or tools.	Not explicitly stated. The study was not specific about where the BMI chart prompt originated or about its reliability/validity. They were also not specific about the BMI calculation tool that they provided to the office staff, so reliability/validity on that is unknown as well	Not explicitly stated/not applicable related to subjective nature of the study. There were no surveys used in the study. It is unclear where the interview questions originated.	*Interrater reliability analyses were conducted for ordinal and continuous variables *Reliability results revealed 0.86 to 0.99 intraclass correlations *Kappa statistics were 0.88 to 0.94 *Meetings were held with the nurse auditors to review data collection techniques

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
Statistical analysis	*SAS version 9.1 was used for statistical analysis. *Descriptive statistics were calculated for each item. *A 2-sample test for proportions was used to calculate the change in data from 2005-2007 *Chi-square was used to calculate the response difference for those who received the AIM toolkit before and after the April 2007 survey was administered	*Statistical Package for the Social Sciences (SPSS) version 15.0 was used to analyze the data. *Each possible predictor of BMI calculation was assessed in univariate models – Chi-Square was used for categorical variables and the t-test for continuous variables * Stepwise logistic regression model was used to assess univariate predictors – this was expressed as odds ratio and 95% confidence interval with a p-value of < .05 significant	* Chi-square test of independence was used to study the relationship between the presence/absence of BMI chart prompt and obesity diagnosis *Chi-square also used to study relationship between presence/absence of BMI chart prompt and referral for treatment by physician *Logistic regression analysis performed to assess if sociodemographics and co-morbidities were predictors of an obesity diagnosis and referral for treatment	*Interpretative phenomenological analysis approach *At first, a few of the interview transcripts were read and significant information was highlighted with comments placed in the margins *Then each transcript was read independently and a list of themes/categories was created *Emerging themes were noted	*Statistical Package for the Social Sciences (SPSS) was used for data analysis *Patient cohort was described using a frequency distribution *Chi-square and t-tests were used to compare groups *Kappa statistic
Key findings	*October 2005: 19.5% or 278 of 1429 responded; April 2007: 21.7% or 390 of 1797 responded; December 2007: 14.3% or 226 of 1580 responded. *Positive attitudes toward obesity screening increased from 91% to 96% *Endorsement to record BMI on all patients increased from 72% to 81% * BMI being considered a useful vital sign went up from 45% to 59%	* Mean BMI = 27.7 * 126 patients were overweight (BMI 25 – 29.9) and 78 were obese (BMI $\geq$ 30) * 102 (35.3%) had BMI calculated and documented by the physician: 14 = normal BMI; 49 = overweight;	*There was a significant difference between groups, with the patients in the intervention group being much more likely to receive an obesity diagnosis; obesity diagnosis in intervention group =	*Management of obesity was described by the GPs in terms of responsibility *Most felt that obesity was ultimately the patient's responsibility,	*Providers diagnosed obesity in 83 of the 465 patients (18%) *Providers infrequently made a diagnosis of obesity in the chart when indicated by BMI

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
	*Weight alone considered an adequate measure decreased from 13% to 6% *Increase in height measurement from 57% to 74% *Increase in routine BMI calculation from 50% to 70%	39 = obese * The mean BMI of patients that were documented in the chart was higher than that of patients without documentation *BMI was documented in men more than women *The number of clinic visits in a 6 month period was higher among patients having a documented BMI * Predictors of BMI documentation included being elderly, chronic medication use, obesity, hypertension, and diabetes *Physicians often rely on physical appearance to diagnose obesity and manage the condition more in heavier patients	16.6% and comparison group = 10.7% *Patients in the intervention group were more likely to be referred for obesity treatments of diet and exercise than patients in the comparison group, 14% vs. 7.3% and 12.1% vs. 7.1%, respectively *The greater the increase in BMI, the more likely that patients were to be diagnosed with obesity *Demographics did not affect the rate of diagnosis *Researchers concluded that the BMI chart prompt increased the likelihood for obesity diagnosis and treatment referral	but that patient's wanted the GP to take ownership *The GPs felt frustrated by patients not taking responsibility to eat right and exercise *They did not feel that any of the treatment options were effective *The GPs did not see obesity as a medical problem that they should be managing *They feel conflicted because they want to maintain a good rapport with their patients	*There was a significantly higher mean BMI in the patients diagnosed with obesity, which suggests that diagnosis could have been made based on appearance *Only 1 in 465 charts noted a specific BMI with an obesity diagnosis *173 of 465 (37%) did not have both height and weight in the chart *All providers underdiagnosed obesity-Diagnosis of obesity as determined by BMI: physicians 46%, nurse practitioners 33%, and residents 17%
Limitations	*Low response rates *Possibility of bias related to demographic similarity in respondents and sampling frame	*No direct evidence from the study population linking BMI determination and	*Data was only collected for the first office visit during the study period, so it is	*Small sample size, which creates difficulty in generalizing	*Possibility of bias related to chart abstraction process

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
	*Uncertainty related to accuracy of data related to self-reporting	weight counseling by the physicians *Unknown if physicians possibly provided weight counseling without calculating BMI and putting an obesity diagnosis in the chart *Study did not assess if physicians measured waist circumference *Study population has a great number of co-morbidities which could limit ability to generalize findings *Study was done in 2004 and obesity has received a great deal of public attention since, so providers may have a different mindset	possible that the patient could have been diagnosed with obesity and referred for treatment in previous visits or visits happening after the first visit of the study period *Study was limited to a single practice residency clinic, so it is possible that the findings are not the same as what might happen in a typical family practice clinic	the findings to the population *Views and perspectives of the researchers could have influenced the response of the GPs or how data was interpreted	*Limited ability to compute BMI related to lack of documented heights and weights *Study was conducted at only one site which can limit the ability to generalize findings
Implications	The results from the study provided insight from a sample of family practice physicians regarding attitudes toward using BMI as a screening tool along with the feasibility for obesity screening. The AIM toolkit was effective in increasing positive attitude toward screening and promotion of screening. These tools could be applied to other groups of providers to test their effectiveness in possibly changing practice.	The researchers concluded that the study should be conducted on a younger and healthier population to compare rates of BMI calculation and obesity diagnosis. They also suggest doing another study with the same type population as this study to reassess for changes that could have	Although the researchers found the BMI chart prompt to be an effective tool for increasing obesity diagnosis, they stated that it was still not increased to a desirable level. Now that it is proven that this is an effective tool, more research must be	The researchers suggested that this study be conducted using a larger population of GPs in order to obtain more generalizable results. They also suggest, based on their	The researchers concluded that this study should be conducted in other clinics and with more residents to get a better perspective. They also express the importance of diagnosing obesity and

Authors	Smith, O'Halloran, Hahn, Grasmick, & Radant, 2010	Melamed, Nakar, & Vinker, 2009	Schriefer, Landis, Turbow, & Patch, 2009	Epstein & Ogden, 2005	Lemay, Cashman, Savageau, Fletcher, Kinney, & Long-Middleton, 2003
		occurred over time. The study also discusses how measuring BMI is a useful avenue for bringing up the topic of weight management, which can often be sensitive. This study reiterates the importance of using BMI and making a diagnosis of obesity.	conducted to find a way to better increased its effectiveness in the clinic setting. It may be that motivational interviewing and academic detailing are needed before the intervention is implemented.	findings, that more effective/trustworthy obesity management interventions be developed for providers to use that they will feel good about.	overweight in order to prevent chronic health conditions. Calculation of BMI is encouraged in order to create an avenue for discussion and education with the patient and to improve the diagnosis of obesity.

References

Burns, N., & Grove, S. K. (2009). *The Practice of Nursing Research: Appraisal,*

    Synthesis, and Generation of Evidence (6th ed.). Philadelphia: Saunders Elsevier.

Epstein, L., & Ogden, J. (2005). A qualitative study of GPs' views of treating obesity.

    British Journal of General Practice, 55, 750-754. Retrieved from

    http://www.ncbi.nlm.nih.gov /pmc/articles/PMC1562352/?tool=pubmed

Gesensway, D. (2008, January). Assessing BMI, waist size, vital to prevent worsening

    obesity. *ACP Internist*. Retrieved from http://www.acpinternist.org

    /archives/2008/01/measuring.htm

Lemay, C. A., Cashman, S., Savageau, J., Fletcher, K., Kinney, R., & Long-Middleton,

    E. (2003). Underdiagnosis of obesity at a community health center. *Journal of*

    the American Board of Family Medicine, 16, 14-21. Retrieved from

    http://www.jabfm.org /cgi/content/full/16/1/14

Melamed, O. C., Nakar, S., & Vinker, S. (2009). Suboptimal identification of obesity by

    family physicians. *American Journal of Managed Care, 15*, 619-624. Retrieved

    from http://search.ebscohost.com.ezproxy.uky.edu

    /login.aspx?direct=true&db=aph&AN=44785046&site=ehost-live&scope=site

National Institutes of Health, National Heart, Lung, and Blood Institute, North American

    Association for the Study of Obesity. (2000). *The practical guide: Identification,*

    evaluation, and treatment of overweight and obesity in adults (NIH Publication No.

    00-4084). Retrieved from http://www.nhlbi.nih.gov/guidelines/

    obesity/prctgd_c.pdf

Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K.

    M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004.

    JAMA, 295, 1549-1555. Retrieved from http://jama.ama-

    assn.org.ezproxy.uky.edu/cgi/content/

    full/295/13/1549

Schriefer, S. P., Landis, S.E., Turbow, D. J., & Patch, S. C. (2009). Effect of a

    computerized body mass index prompt on diagnosis and treatment of adult obesity,

    Family Medicine, 41, 502-507. Retrieved from

    http://www.stfm.org/fmhub/fm2009/July/Susan502.pdf

Smith, P. D., O'Halloran, P., Hahn, D. L., Grasmick, M., & Radant, L. (2010). Screening

    for obesity: Clinical tools in evolution, a WREN study, *Wisconsin Medical Journal,*

    109, 274-278. Retrieved from http://www.ncbi.nlm.nih.gov /pmc/articles

    /PMC3026048/?tool=pubmed

Manuscript 2

Analysis of a Clinical Practice Guideline for Obesity

Kristena Lea, RN, BSN

University of Kentucky

Analysis of Clinical Practice Guideline for Obesity

Title of Guideline: *2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults*

Developing Organization(s): National Heart, Lung, and Blood Institute (NHLBI), American College of Cardiology (ACC)/ American Heart Association (AHA) Task Force on Practice Guidelines, and The Obesity Society (TOS)

Date Published/Revised: November 2013

Introduction

Obesity is a chronic disease defined by a body mass index (BMI) of 30 kg/m^2 or greater, and overweight is defined as a BMI of 25 – 29.9 kg/m^2 (National Institutes of Health [NIH], National Heart, Lung, and Blood Institute [NHLBI], & North American Association for the Study of Obesity [NAASO], 2000). The most typical etiology of obesity occurs when caloric consumption exceeds caloric expenditure (Fleisher, 2012). Society has evolved to one of convenience, showcasing large portions of high calorie foods accompanied by sedentary lifestyle. However, it is important to evaluate for other contributing factors to obesity such as genetics, disease processes, medications, and access to healthy foods (Fleisher, 2012). Obesity is an overwhelming health issue. Primary care providers must empower patients with solutions to better their lifestyle and promote weight loss. Clinical guidelines serve as an evidence-based tool to help providers properly diagnose and manage diseases. The purpose of this paper is to analyze a clinical guideline associated with adult obesity, and determine its usefulness in the clinical setting.

Scope and Purpose

Obesity is a growing problem in the United States. In the last three decades, obesity prevalence has increased by 110 percent (Stein & Colditz, 2004). Data from the 2009-2010 National Health and Nutrition Examination Survey (NHANES) confirms that the majority of the United States adult population is overweight or obese with prevalence rates of 63.7 percent for women and 73.9 percent for men (Fryar, Carroll, & Ogden, 2012). On the state level, Kentucky has an obesity rate of 31.3%. Further, Kentucky holds rank as the ninth most obese state in the United States (Levi et al., 2013). These numbers are devastating to the health of the population.

Obesity is an epidemic that can lead to multiple co-morbidities and deaths. Further, it accounts for billions of dollars in annual healthcare costs. Although it is a vital component to healthcare, specifically primary care, overweight/obesity discussion and treatment is often overlooked by providers. It is imperative that primary care providers take advantage of clinical guidelines as a tool to aid in discussion and management of obesity.

The objective of the AHA/ACC/TOS guideline is to provide an updated, evidence-based approach to promote adoption of a healthy lifestyle in order to facilitate weight loss and improve cardiovascular health. Specifically, the guideline gives primary care providers a standardized approach to identify co-morbidities associated with overweight and obesity, and a means to determine the amount of weight loss and the appropriate management plan specific to patient needs (Jensen et al., 2013).

Stakeholder Involvement

The primary stakeholders in the development of this guideline include the ACC, AHA, and TOS. The NHLBI also played a key role in funding as well as research for guideline development. In addition, the guideline is endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American Pharmacists Association, American Society for Nutrition, American Society for Preventive Cardiology, American Society of Hypertension, Association of Black Cardiologists, National Lipid Association, Preventive Cardiovascular Nurses Association, The Endocrine Society, and Women Heart: The National Coalition for Women with Heart Disease (Jensen et al., 2013). The list of professional involvement is comprehensive. However, it may have been useful to gain input from the American Diabetes Association as well, since type 2 diabetes is so prevalent among obese patients.

Rigor of Development

This guideline was developed using a teamwork approach from various organizations. The Guidelines Executive Committee from the NHLBI chose an Obesity Panel embodied by professionals from varying domains. The panel used the *Clinical Practice Guidelines We Can Trust* process from the Institute of Medicine to develop their methodology for constructing the guideline. The panel developed five critical questions (CQs) most relevant to primary care and centered their search for evidence around these questions. Electronic search methods were used to find randomized-controlled trials, meta-analyses, and qualitative observational studies from January 1998 to October 2011. Specific databases used in the search are not mentioned. Once the data search was completed, evidence was selected using the NHLBI grading format and ACC/AHA Class

of Recommendation/Level of Evidence systems to develop evidence statements (ES) that support the CQs. Independent raters were used to ensure that data was valid and relevant. Once all data was retrieved, a subcommittee of the ACC/AHA Task Force on Practice Guidelines stepped in to help review all of the evidence and write recommendations (Jensen et al., 2013).

The team collaboration between the NHLBI and the ACC/AHA completed a rigorous process for formulating recommendations. They reviewed all abstracts, then created evidence tables, which were further analyzed to become summary tables specific to each CQ. The ESs were then developed based on the information from the summary tables, and the evidence was graded for quality. Finally, clinical recommendations were written and graded for strength based on each ES (Jensen et al., 2013). This process ensured that only the best and most relevant evidence was used in guideline development.

The guideline provides a quick look table to display the link between recommendations and supporting evidence. The table is complete with grading and rating for quality and strength of evidence as well as classification for recommended use of each statement. Many of the recommendations were labeled as *Grade A (strong)* and *Class I*, which demonstrates highly valuable evidence that should be used in practice for patient benefit (Jensen et al., 2013, p. 6 & 7). The use of outside evidence raters ensured that ratings were valid and unbiased. Due to the process used in searching for evidence based on the core CQs, the recommendations are appropriate and applicable to practice. Specific recommendations based on each CQ are nicely displayed for providers to use as a convenient means to find which component is most relevant to a specific patient and use the recommendation accordingly. Table 1 displays these recommendations.

The guideline was finalized and approved by all endorsing parties, including professional organizations. The guideline did not specify how frequently updates would occur. However, it did state that a new update would commence in 2014 since the most recent data used in the guideline is from 2011 (Jensen et al., 2013). Although obesity management does not vary a great deal over time, it is still important to provide updates with the most current literature to support providers in their endeavors.

Clarity and Presentation

The *Summary of Recommendations* table (Table 1) provides a quick overview of this otherwise dense guideline. The table outlines each CQ with corresponding recommendations. This is the component that is most valuable for providers to use in practice. The table is clear and user-friendly. Specifically, it provides many facts related to BMI and risks as well as multiple counseling points and treatment options. In addition, an algorithm (Figure 1) is provided to simplify the process of overweight and obesity diagnosis and management in the primary care setting. The guideline provides complete clarification of this algorithm by giving rationale for each box within the diagram.   If the table and algorithm were not available, providers would unlikely be able to get through all of the material and properly implement the guideline into practice.

Application

The guideline does not discuss potential organizational barriers or cost implications associated with application of the recommendations. The guideline makes reasonable recommendations that are unlikely to present problems related to barriers for application or cost. This guideline serves as an educational support tool for providers. It strongly promotes the concept of prevention, encouraging weight loss in order to avoid

the many associated health risks. This alone is cost effective since the co-morbidities associated with overweight and obesity can significantly increase healthcare costs. The guideline provides evidence-based and cost-effective diagnostic and management options for overweight and obesity. Recommendations do not promote any significant cost implication on the patient or provider unless bariatric surgery is recommended. These factors help eliminate the likelihood of organizational barriers in application. However, it is important to note that since overweight and obesity diagnosis and management are often overlooked in the primary care setting, the guideline may not be used to its full potential. Thus, further research is needed to find ways to promote provider adherence. Providers must be urged to utilize this guideline, as it is a highly valuable tool that could be standardized into practice.

Theoretical Framework

The diffusion of innovations theory is a seminal model used to create change by turning ideas into reality. The concept of the model is to extensively research a new idea, and then formulate a plan to bring the idea to life. The next step is to obtain supporters, put the plan into action, and either maintain use or reject the idea (Rogers, 1995). This framework for change is ideal in implementing use of the overweight/obesity guidelines into clinical practice.

For example, if a clinician in a primary care setting reviews this guideline, and decides that it should become standard of care in their practice, they could recruit an early adopter for support to get others in the practice on board with guideline use. A meeting could be conducted with providers in the practice to explain the guideline and to emphasize ease of use, quality of evidence, and cost-effectiveness. Once the practice is

on board with standardizing the use of the guideline, all providers should receive copies of the *Summary of Recommendations for Obesity* and *Treatment Algorithm*, Figure 1 (Jensen et al., 2013). These tools will help promote use of the guideline in daily practice.

Editorial Independence

The development of this guideline was sponsored and fully funded by the NHLBI, ACC, AHA, and TOS. There is not an explicit statement in the guideline denying organizational influence of guideline development. However, it is stated that outside expert reviewers were enlisted to confirm that the guideline had undergone extensive peer review. Further, a disclaimer is made stating that the guideline is meant to be a tool to help guide clinical practice, and should never be accepted as the rule or exceed clinician judgment (Jensen et al., 2013).

In order to account for conflicts of interest, any person participating in the writing or voting of recommendations had to provide relationships of authors with industry and other entities (RWI) disclosure. The developing organizations requested RWIs in the beginning of the development process, 2008, and once again before publication in 2013. This was done in order to maintain the utmost integrity of the guideline. Further, the guideline provides a table documenting all RWIs, and states that any authors with relevant relationships did not vote on recommendations related to their RWI (Jensen et al., 2013). It is apparent that developing organizations extended a great deal of effort to ensure publication of a virtuous guideline that will commensurate or exceed existing guidelines.

Recommendation

When searching for other guidelines of similarity, two credible obesity guidelines emerged to serve as a comparison with this guideline. The oldest and most extensive of the two guidelines is, *The practice guide: Identification, evaluation, and treatment of overweight and obesity in adults*, published in 2000 by the NIH, NHLBI, & NAASO. This guideline was developed in response to the severity of adult obesity in the United States, along with the neglect of obesity by primary care providers. This guideline caters to the adult population. It is an essential tool for primary care providers to aid in obesity assessment and management. The guideline follows a sequential format from obesity prevalence to diagnosis, then to various management therapies. In addition, the first few pages outline a ten step summary on how providers should assess and manage obesity in the primary care setting. Thus, if providers only have a small window of time to meet with the patient, they can quickly reference this section as a starting point. The guideline emphasizes the point that obesity is a chronic condition requiring lifetime management by provider and patient in order to gain and maintain success. It continues further to devote an entire section to providers on how to partner with patients to achieve results. The guideline is specific in management options, creating a course of action for primary care providers to follow. It provides copious amounts of information for providers related to each suggested management technique. Above all else, the guideline stresses the importance of providers using the elements of this tool to create individualized plans that best meet the needs of each patient (NIH, NHLBI, & NAASO, 2000). Despite the age of this guideline, it is an invaluable tool for primary care providers filled with resources needed to properly assess and manage patients with obesity. This guideline

employs similar concepts to those identified in the AHA/ACC/TOS guideline. In regards to its fundamental elements and target to primary care, it is somewhat superior. However, due to the age of this guideline and changes in technology, it is no longer the first choice.

The second guideline under discussion is *Screening for obesity in adults: Recommendations and rationale*, created by the United States Preventive Services Task Force (USPSTF) in 2003, along with the 2012 update. The USPSTF (2003) recommends using BMI as the primary screening tool for obesity. Furthermore, they suggest that all adult patients should receive obesity screening along with intensive counseling and behavioral interventions as needed. Nutrition education, diet and exercise counseling, and behavioral strategies for change are among recommended patient weight loss strategies (USPSTF, 2003). The 2012 USPSTF update expands upon previous recommendations to include that patients with a BMI greater than or equal to 30 should receive intervention with multicomponent behavioral interventions such as setting weight loss goals, improving diet, increasing physical activity, addressing barriers to change, self-monitoring, and strategizing how to maintain lifestyle changes (Moyer, 2012). The USPSTF guideline serves as a reference to primary care providers for obesity assessment and management, citing the same basic principles similar to other existing guidelines. However, it is far less comprehensive than the AHA/ACC/TOS guideline.

The AHA/ACC/TOS obesity guideline is the optimum choice in guidelines for all clinicians in the primary care setting, including nurse practitioners. It provides a clear path to follow, and allows for individualization to best suit patient needs. In addition, the guideline is insurmountable in attention to evidence-based literature, which is a central

tenet of nurse practitioner principles. The nurse practitioner has the ability to bring this guideline into practice and make it a standard in the primary care setting.

Conclusion

Guideline analysis is a valuable tool for providers to enlighten them on the process that organizations use in formulating practice guidelines. Upon appraisal, it quickly becomes apparent which guidelines will promote best practice. The AHA/ACC/TOS obesity guideline is an excellent tool that enables clinicians in the primary care setting to provide the most evidence-based care, which leads to superior patient outcomes.

Table 1

Summary of Recommendations for Obesity

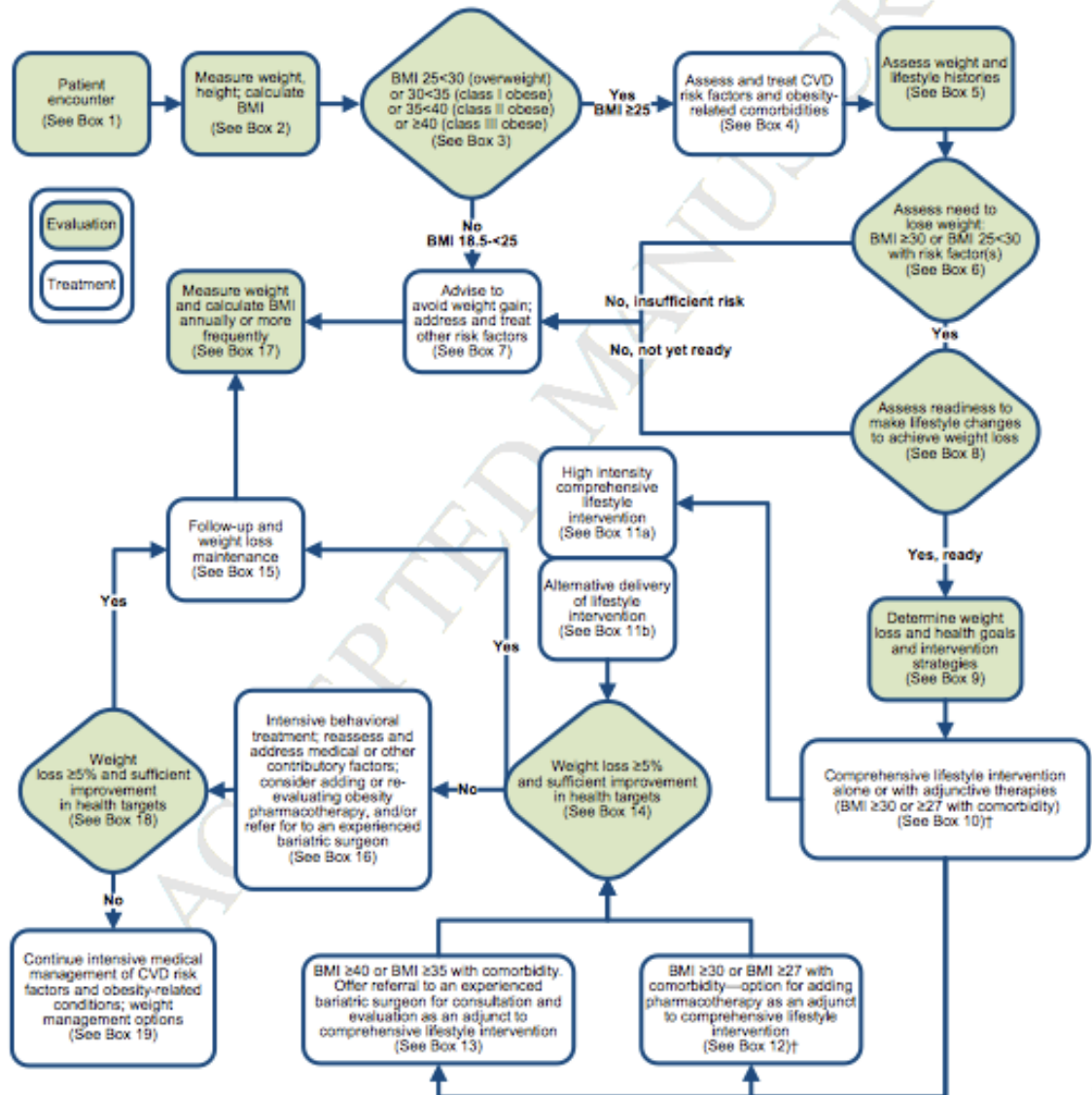| Recommendations	NHLBI Grade	NHLBI ES	ACC/AHA COR	ACC/AHA LOE
Identifying Patients Who Need to Lose Weight (BMI and Waist Circumference)				
1a. Measure height and weight and calculate BMI at annual visits or more frequently.	E (Expert Opinion)	CQ2	I	C
1b. Use the current cutpoints for overweight (BMI >25.0-29.9 kg/m²) and obesity (BMI ≥30 kg/m²) to identify adults who may be at elevated risk of CVD and the current cutpoints for obesity (BMI ≥30) to identify adults who may be at elevated risk of mortality from all causes.	A (Strong)	CQ2	I	B
1c. Advise overweight and obese adults that the greater the BMI, the greater the risk of CVD, type 2 diabetes, and all-cause mortality.	A (Strong)	CQ2	I	B
1d. Measure waist circumference at annual visits or more frequently in overweight and obese adults. Advise adults that the greater the waist circumference, the greater the risk of CVD, type 2 diabetes, and all-cause mortality. The cutpoints currently in common use (from either NIH/NHLBI or WHO/IDF) may continue to be used to identify patients who may be at increased risk until further evidence becomes available.	E (Expert Opinion)	CQ2	IIa	B
Matching Treatment Benefits With Risk Profiles (Reduction in Body Weight Effect on CVD Risk Factors, Events, Morbidity and Mortality)				
2. Counsel overweight and obese adults with CV risk factors (high BP, hyperlipidemia and hyperglycemia), that lifestyle changes that produce even modest, sustained weight loss of 3%-5% produce clinically meaningful health benefits, and greater weight losses produces greater benefits. a. Sustained weight loss of 3%-5% is likely to result in clinically meaningful reductions in triglycerides, blood glucose, HbA1C, and the risk of developing type 2 diabetes; b. Greater amounts of weight loss will reduce BP, improve LDL–C and HDL–C, and reduce the need for medications to control BP, blood glucose and lipids as well as further reduce triglycerides and blood glucose.	A (Strong)	CQ1	I	A

39

Diets for Weight Loss (Dietary Strategies for Weight Loss)				

3a. Prescribe a diet to achieve reduced calorie intake for obese or overweight individuals who would benefit from weight loss, as part of a comprehensive lifestyle intervention. Any 1 of the following methods can be used to reduce food and calorie intake:
  a. Prescribe 1,200–1,500 kcal/day for women and 1,500–1,800 kcal/day for men (kcal levels are usually adjusted for the individual's body weight);
  b. Prescribe a 500 kcal/day or 750 kcal/day energy deficit; or
  c. Prescribe one of the evidence-based diets that restricts certain food types (such as high-carbohydrate foods, low-fiber foods, or high-fat foods) in order to create an energy deficit by reduced food intake.
	A (Strong)	CQ3	I	A

3b. Prescribe a calorie-restricted diet, for obese and overweight individuals who would benefit from weight loss, based on the patient's preferences and health status and preferably refer to a nutrition professional* for counseling. A variety of dietary approaches can produce weight loss in overweight and obese adults, as presented in CQ3, ES2.	A (Strong)	CQ3	I	A
Lifestyle Intervention and Counseling (Comprehensive Lifestyle Intervention)				
4a. Advise overweight and obese individuals who would benefit from weight loss to participate for ≥6	A (Strong)	CQ4	I	A
months in a comprehensive lifestyle program that assists participants in adhering to a lower calorie diet and in increasing physical activity through the use of behavioral strategies.				
4b. Prescribe on site, high-intensity (i.e., ≥14 sessions in 6 months) comprehensive weight loss interventions provided in individual or group sessions by a trained interventionist.†	A (Strong)	CQ4	I	A
4c. Electronically delivered weight loss programs (including by telephone) that include personalized feedback from a trained interventionist† can be prescribed for weight loss but may result in smaller weight loss than face-to-face interventions.	B (Moderate)	CQ4	IIa	A
4d. Some commercial-based programs that provide a comprehensive lifestyle intervention can be prescribed as an option for weight loss, provided there is peer-reviewed published evidence of their safety and efficacy.	B (Moderate)	CQ4	IIa	A
4e. Use a very low calorie diet (defined as <800 kcal/day) only in limited circumstances and only when provided by trained practitioners in a medical care setting where medical monitoring and high intensity lifestyle intervention can be provided. Medical supervision is required because of the rapid rate of weight loss and potential for health complications.	A (Strong)	CQ4	IIa⁥	A
4f. Advise overweight and obese individuals who have lost weight to participate long-term (≥1 year) in a comprehensive weight loss maintenance program.	A (Strong)	CQ4	I	A

4g. For weight loss maintenance, prescribe face-to-face or telephone-delivered weight loss maintenance programs that provide regular contact (monthly or more frequent) with a trained interventionist† who helps participants engage in high levels of physical activity (i.e., 200-300 minutes/week), monitor body weight regularly (i.e., weekly or more frequent), and consume a reduced-calorie diet (needed to maintain lower body weight).	A (Strong)	CQ4	I	A
Selecting Patients for Bariatric Surgical Treatment for Obesity (Bariatric Surgical Treatment for Obesity)				
5a. Advise adults with a BMI ≥40 or BMI ≥35 with obesity-related comorbid conditions who are motivated to lose weight and who have not responded to behavioral treatment with or without pharmacotherapy with sufficient weight loss to achieve targeted health outcome goals that bariatric surgery may be an appropriate option to improve health and offer referral to an experienced bariatric surgeon for consultation and evaluation.	A (Strong)	CQ5	IIa§	A
5b. For individuals with a BMI <35, there is insufficient evidence to recommend for or against undergoing bariatric surgical procedures.	N (No Recommend ation)	CQ5	N/A	N/A
5c. Advise patients that choice of a specific bariatric surgical procedure may be affected by patient factors, including age, severity of obesity/BMI, obesity-related comorbid conditions, other operative risk factors, risk of short- and long-term complications, behavioral and psychosocial factors, and patient tolerance for risk as well as provider factors (surgeon and facility).	E (Expert Opinion)	CQ5	IIb	C

Note. Reprinted with permission from "2013 AHA/ACC/TOS Guideline for the management of overweight and obesity in adults," by M. D. Jensen et al., 2013, *Journal of the American College of Cardiology*, pp. 14-17. Copyright 2013 Elsevier.

Figure 1

Treatment Algorithm – The Chronic Disease Management Model for Primary Care of

Patients with Overweight and Obesity

References

Fleisher, L. A. (2012). Obesity and nutrition disorders. In I. Y. MEng & A. C. Sinha

(Eds.), *Anesthesia and Uncommon Diseases* (6ᵗʰ ed.) (p. 215–224). Philadelphia,

PA: Elsevier.

Fryar, C. D., Carroll, M. D., & Ogden, C. L. (2012, September). Prevalence of

overweight, obesity, and extreme obesity among adults: United States, trends

1960–1962 through 2009–2010. National Center for Health Statistics Health E-

Stat. Retrieved from http://www.cdc.gov/nchs/data/hestat

/obesity_adult_09_10/obesity_adult_09_10.htm

Jensen, M. D., Ryan, D. H., Apovian, C. M., Loria, C. M., Ard, J. D., Millen, B. E., . . .

Yanovski, S. Z. (2013). 2013 AHA/ACC/TOS Guideline for the management of

overweight and obesity in adults. *Journal of the American College of Cardiology*.

doi: 10.1016/j.jacc.2013.11.004

Levi, J., Segal, L. M., Thomas, K., St. Laurent, R., Lang, A., & Rayburn, J. (2013). F as

in fat: How obesity threatens America's future. Retrieved from

http://fasinfat.org/states/ky/

Moyer, V. A. (2012). Screening for and management of obesity in adults: U. S.

Preventive Services Task Force recommendation statement. *Annals of Internal

Medicine, 157*(5), 373–378. Retrieved from

http://search.ebscohost.com.ezproxy.uky.edu/

login.aspx?direct=true&db=aph&AN=79682949&site=ehost-live&scope=site

National Institutes of Health, North American Association for the Study of Obesity,

National Heart, Lung and Blood Institute. (2000). The practical guide:

Identification, evaluation, and treatment of overweight and obesity in adults (NIH

Publication No. 00-4084). Retrieved from http://www.nhlbi.nih.gov

/guidelines/obesity/prctgd_c.pdf

Rogers, E. M. (1995). *Diffusion of Innovations* (5th ed.). New York, NY: Free Press.

Stein, C. J., & Colditz, G. A. (2004). The epidemic of obesity. *The Journal of Clinical

Endocrinology & Metabolism, 89*(6), 2522-2525. doi: 10.1210/jc/2004-0288

United States Preventive Services Task Force. (2003). Screening for obesity in adults:

Recommendations and rationale. *Annals of Internal Medicine, 139*(11), 930-932.

Retrieved from http://search.ebscohost.com.ezproxy.uky.edu/

login.aspx?direct=true&db=aph&AN=11543075&site=ehost-live&scope=site

Manuscript 3

Examining the Effectiveness of an Intervention to Increase Provider Assessment of

Overweight and Obesity in the Primary Care Setting

Kristena Lea, RN, BSN

University of Kentucky

Abstract

Background: The majority of the United States adult population is either overweight or obese. This epidemic leads to multiple co-morbidities and drives up healthcare costs. Primary care providers are at the forefront of identifying overweight/obese patients and initiating early treatment options. However, overweight/obesity are frequently overlooked. Body mass index (BMI) is an objective measure used to evaluate patient weight status. Primary care is a busy environment where overweight/obesity discussion can easily get lost. Simple prompts with BMI can be used as a tool to facilitate overweight/obesity discussion with patients in the primary care setting.

Objective: The purpose of this study was to improve provider documentation of overweight/obesity diagnosis and treatment in the patient chart with a simple intervention alerting providers to patient BMI before entering the exam room.

Method: A total of 146 charts of overweight/obese patients were reviewed prior to the intervention to determine the proportion seen in the clinic who had a documented overweight/obesity diagnosis and treatment plan. The three day intervention period consisted of nurses placing a sticky note prompt on exam room doors of patients who had a BMI $\geq$ 25 and met inclusion criteria. A total of 54 charts were reviewed of those patients seen during the intervention period to determine change in practice.

Results: Documentation of overweight/obesity diagnosis increased from 4.8% to 13% (p = .04). Documentation of a treatment plan for overweight/obesity increased from 4.8% to 35.2% (p = < .001).

Conclusion: A simple, low cost intervention was effective in changing practice and improving recognition of overweight/obesity in the primary care setting.

Examining the Effectiveness of an Intervention to Increase Provider Assessment of

Overweight and Obesity in the Primary Care Setting

Obesity is a growing problem among adults in the United States. In the last three

decades, obesity prevalence has increased by 110 % (Stein & Colditz, 2004). Data from

the 2009-2010 National Health and Nutrition Examination Survey (NHANES) confirms

the majority of the United States adult population is overweight or obese with prevalence

rates of 63.7 % for women and 73.9 % for men (Fryar, Carroll, & Ogden, 2012). Obesity

can lead to a multitude of chronic health problems such as hypertension, coronary artery

disease, obstructive sleep apnea, various forms of cancer, type 2 diabetes, and

osteoarthritis (Hoenig, 2012; Mitchell, Catenacci, Wyatt, & Hill, 2011). In fact, this

epidemic causes 300,000 deaths per year, and accounts for $147 billion in annual

healthcare costs (Finkelstein, Trogdon, Cohen, & Dietz, 2009; Stein & Colditz, 2004).

Despite these facts, overweight and obesity are not being adequately addressed in the

primary care setting (Lemay et al, 2003; Melamed, Nakar, & Vinker, 2009). Primary

care providers are only counseling on diet 13.1 % of the time, exercise 9.2 % of the time,

and weight reduction 4.0 % of the time (CDC, 2010).

Although clinicians recognize their responsibility, they identify reasons such as

fear of jeopardizing rapport with the patient, lack of time, or simply avoidance in

explaining why they often do not discuss overweight and obesity with their patients

(Epstein & Ogden, 2004). However, Krist et al. (2008) reports patients are more likely to

make lifestyle changes aimed at weight loss, such as diet and exercise, when they are

counseled by healthcare providers.

The use of BMI is an objective measure that can facilitate obesity discussion between clinicians and patients. It is an avenue for providers to present the patient with facts about their health status and associated risks in a non-judgmental fashion. Healthcare is moving toward a time where it will likely be a standard of care for clinics to measure and calculate height, weight, and BMI to achieve meaningful use standards (Blumenthal & Tavenner, 2010). The presence of a documented BMI in the patient chart is a valuable measurement to alert providers to overweight and obesity in patients. A 2007 study conducted by Bardia, Holtan, Slezak, & Thompson looked at obesity diagnosis among primary care providers, and found that out of 2,543 patients with a documented BMI of 30 or greater, only 505 (19.9 %) had a diagnosis of obesity in their chart. Results from the study also concluded patients with a documented obesity diagnosis were more likely to have an obesity management plan outlined in their chart compared to those obese patients who continued to go unrecognized. The severity of this problem is further confirmed by Baer, Karson, Soukup, Williams, & Bates (2013) in their observation of obesity diagnosis in patient charts. They found among a sample of 219,356 primary care patients with a documented BMI of 30 or greater that only 30.1 % had a corresponding obesity diagnosis. The available data suggests the lack of documentation on overweight and obesity reveals little attention is being given to the patient's weight status in the primary care setting. Measures must be taken to specifically alert providers to overweight and obese patients in order to reign in this major health issue.

Purpose

The purpose of this paper is to outline a quality improvement study that was conducted to determine current practice of primary care providers in their discussion and documentation of overweight and obesity. Further, an intervention was implemented as part of the study to improve provider practice related to this issue. The objectives of the study were as follows:

- To determine the proportion of overweight and obese patients seen in the primary care clinic who have a documented diagnosis and treatment plan in the chart.

- To determine if the proportion of overweight and obese patients seen in the primary care clinic who have a documented diagnosis and treatment plan in the chart increase after the intervention that alerts providers to BMI $\geq$ 25.

- To determine provider perception of the usefulness of the intervention.

Theoretical Framework

The diffusion of innovations theory is a seminal model used to create change by turning ideas into reality. Model application ranges in diversity from farming to healthcare. The concept of the model is to extensively research a new idea, and then formulate a plan to bring the idea to life. The next step is to obtain supporters, put the plan into action, and either maintain use or reject the idea (Rogers, 1995). Although the diffusion of innovations theory is a complex model, it is feasible to use different components of the model to create change, such as the innovation-decision process.

In this highly diverse and replicable process, the individual or group receives information about the new idea and makes the decision to adopt or reject it. The five

stages of the innovation-decision process include: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 1995). In beginning this process, it is imperative to recruit an early adopter to get on board and help diffuse the change to their peers. The early adopter is crucial in gaining support of others during the innovation-decision process and making the intervention a success (Rogers, 1995). Implementation of the diffusion of innovations theory, specifically the innovation-decision process has proven successful in multiple healthcare studies related to practice changes and guideline implementation (De Civita & Dasgupta, 2007; Harting, Rutten, Rutten, & Kremers, 2009; Ma, Poon, & Toubbeh, 2008; Pagoto, Kantor, Bodenlos, Gitkind, & Ma, 2008; Pearcey & Draper, 1996; Sharma & Kanekar, 2008). Principles from this theory were utilized to gain supporters and effectively implement the intervention in this study.

Design

A descriptive comparative analysis was used to determine if a change in practice occurred after implementing an intervention alerting providers to overweight and obese patients. A retrospective electronic patient record review was conducted prior to the intervention period to establish current trends in provider practice related to overweight and obesity assessment and management. Following the retrospective record review, a 3-day intervention period took place to alert providers of overweight and obese patients. A second record review was conducted after the intervention to determine presence of documented overweight and obesity diagnosis and intervention in the assessment and plan section of the chart in order to evaluate for change in provider practice. Both record reviews were random. Further, an anonymous pen and paper survey was distributed to

each provider participating in the study following the intervention period to evaluate their perceptions of usefulness of the intervention.

Study Population

The study was conducted at a family medicine clinic in Kentucky. Three clinic providers consisting of two physicians and one nurse practitioner were the main subjects of interest for the study. Electronic patient health records of 146 randomly selected overweight/obese patients were reviewed prior to the intervention period, and 54 randomly selected charts of overweight/obese patients were reviewed following the intervention period. There were less charts post intervention since charts were only selected from patients seen during the 3-day intervention period. Further, charts were selected randomly and only if they met inclusion/exclusion criteria. It is also important to note all three providers were always there in the morning, but only one to two providers were present in the afternoon on each of the three days. Informed consent was not obtained from patients since no direct contact with patients was made and no patient identifying information was extracted from the record reviews. Written informed consent was obtained from the three participating providers prior to the start of the study.

Inclusion criteria was as follows: (1) male or female patients (2) all races (3) acute and chronic visits. Exclusion criteria for the chart review was as follows: (1) pediatric patients, less than 18 years of age (2) elderly patients, greater than 65 years of age (3) pregnant patients. These criteria remained the same for both record reviews with the exception that the second review only sampled from patients seen during the intervention period.

Method

Prior to the study, a lunch meeting was held with providers to obtain their consent for participation in the study, and to discuss the current obesity epidemic and guideline recommendations. Two handouts were given to providers related to the discussion. Further, providers were oriented to the details of the study and encouraged to ask questions.

The same criteria were used for data extraction in pre and post intervention chart reviews. The study was only comprised of overweight/obese patients. The principal investigator (PI) gathered basic demographic data including age, gender, and race. The chief complaint, height, weight, and BMI were also recorded. Further, the assessment and plan portion of the record was reviewed to determine if an overweight/obesity diagnosis existed and if an intervention related to overweight/obesity, along with specific type of intervention were all listed on the data log (Table 1).

Sampling methodology from the World Health Organization (WHO, 2008) was used to determine the number of charts to review, along with the process for randomly selecting charts. WHO (2008) provided a table to determine the number of charts to review based on the sample population. The clinic under study fell in the 60 patient per day category with each of the three providers seeing approximately 20 patients per day. So it was recommended at least 86 charts be reviewed for the three days of the intervention. Similarly, a six day baseline review of 360 charts would require a review of at least 110 charts. Further, WHO (2008) recommended determining randomness of chart selection by dividing the total number of patients that may be seen within a designated time frame by the number needed to review. On that basis, every second chart

that met criteria for the intervention was reviewed. This process was used for both chart reviews though it produced more charts for baseline review than required.

The initial chart review included patients seen in six days the month prior to the start of the study. This provided baseline data for current practice related to overweight/obesity diagnosis and intervention. The second chart review immediately followed the three day intervention period, reviewing only the charts of patients seen during the intervention period.

The intervention consisted of a three day pilot period. The PI was on sight for the three day intervention period to answer questions as needed. The procedure for the intervention involved clinic nurses of participating providers placing a brightly colored sticky note with the BMI on the exam room door of patients having a BMI of $\geq$ 25 using the same inclusion and exclusion criteria as used for the chart review. The sticky note contained only a number, and was placed on the door with the number side down. It did not say "BMI", and had no identifying patient information on it. In this clinic, the electronic health record automatically calculated the BMI after height and weight were entered into the record by the nurse.

Following the intervention period, providers were given an anonymous pen and paper survey to complete in order to gain insight into their opinions related to usefulness of the intervention. The providers placed completed surveys in an envelope and returned to the PI. A lunch meeting was held with providers one month after the intervention period to present findings from the study and obtain oral feedback from the providers.

Data Analysis

Descriptive statistics including means and standard deviations or frequency

distributions, as appropriate, were used to summarize demographic and clinical variables

for the combined sample and for the pre- and post-intervention samples separately. The

Chi-Square test of association was used to determine if there were differences in the

proportion of documented diagnoses or interventions pre- and post-intervention. All

analysis was conducted using SPSS v. 20, with an alpha level of .05 throughout.

Results

Chart Review

A total of 146 charts were reviewed prior to the intervention. The mean age of

patients in this review was 46.8 years with majority being female, 69.2%, and of

Caucasian descent, 93.2%. Acute visits, meaning the patient was there for a new or sick

type visit, was the majority noted in the review at 72.6%. The mean height and weight

were 66.7 inches and 214.1 pounds, respectively. Obesity was predominant with 67.1%

patients having a BMI $\geq$ 30. One-third were overweight with a BMI of 25-29.9. Post-

intervention demographic data is closely related to the pre-intervention data and analysis

of the overall sample, which is provided in Table 2.

The main objective of the chart reviews was to examine provider documentation

of overweight and obesity in the chart, as well as a documented intervention for weight

loss. Pre-intervention data revealed that out of the 146 charts reviewed, providers were

only documenting a diagnosis of overweight/obesity 4.8% of the time. Outcomes

improved after the intervention with providers documenting an overweight/obesity

diagnosis in 13% of patients. A chi-square analysis of the pre and post intervention data

revealed a significant improvement (p = .04) in provider documentation of overweight/obesity diagnosis in the chart. Documentation of treatments related to overweight/obesity improved significantly pre and post intervention going from 4.8% to 35.2%, respectively, with a p-value less than .001. The type of weight loss treatment recommended was also evaluated. Diet and exercise counseling were the most frequently recommended options pre and post intervention. Pre and post intervention data are compared in Table 3.

A luncheon was held following the intervention and providers addressed why documentation related to overweight/obesity treatment occurred more than documentation of a diagnosis. Providers reported they see so many overweight/obese patients that it has become the norm to them so they often do not even consider it when coding a diagnosis. Further, the providers reported not documenting an overweight/obesity diagnosis visit because it does not pay. They report often only coding for an overweight/obesity diagnosis when it can be grouped with other chronic conditions such as hypertension and dyslipidemia, which are viewed as billable visits by insurance companies.

Post-Intervention Provider Survey

Immediately following the 3 day intervention period, participating providers were asked to complete an anonymous pen and paper survey to determine their perceptions related to usefulness of the study. Survey questions can be found in Table 4. Clinic providers were open and responsive to the study, with all completing the survey. All three providers answered similarly to the survey questions. They either strongly agreed or agreed that the sticky note prompted them to discuss overweight and obesity with their

patients, but did not feel that it prompted them to enter an overweight or obesity

diagnosis on the chart. Further, they agreed that the intervention was useful in practice,

but did not recommend maintaining it in daily practice. Each provider gave a written

suggestion related to the intervention, and these were similar as well. They all stated that

the intervention was useful, but that due to the high volume of patients and type of visits,

it often was not applicable. The providers noted that they often did not feel it was

appropriate to discuss weight at an acute visit.

Discussion

This study reflected an overall positive change in practice with statistically

significant findings of improved provider documentation of overweight/obesity diagnosis

and treatment. As a result of a simple alert prompting providers to patient BMI,

documentation of overweight and obesity increased from 4.8% to 13%. Further, provider

documentation targeting weight loss treatment also increased from 4.8% to 35.2%.

Results from the pre intervention chart review were consistent with those found in the

literature related to lack of overweight/obesity diagnosis and treatment documentation

among primary care providers. Following the intervention, documentation of treatment

recommendations occurred more than documentation of overweight/obesity diagnosis.

The post intervention provider survey should have contained a question targeting

documentation of obesity treatment, which may have further highlighted the reason for

such a difference in documentation. The PI also found in doing both chart reviews the

provider was more likely to document an overweight/obesity diagnosis and treatment

plan when the patient reported having weight concerns. This reveals that patient

suggestion alone can be an effective prompt for providers to discuss weight.

The diffusion of innovations theory was applicable and useful in implementing this study. The clinic director, who was also one of the participating providers in the study, was recruited as the early adopter. The director provided a letter of support and solicited support from the other providers and nurses. Prior to the study, a lunch meeting was held with participating providers to outline the problem and need for the intervention. The nurses were also given a short educational session on logistics of the study. They were instrumental in making the study successful, as they were the ones placing the sticky note prompts for providers. The success of carrying out this study demonstrated that a theory such as diffusion of innovations provides the tools for a smoother research process. Providers felt the sticky note alert was effective in prompting them to discuss overweight/obesity with patients, but they did not feel it prompted them to document the diagnosis on the chart. Further, they did not recommend maintaining this intervention in daily practice.

Through the process of conducting this study, several considerations were brought to light that may have affected results of the study or served as barriers. The providers made the point multiple times throughout the study that they frequently discussed weight and weight loss methods with patients, but did not document this practice. They stated that it would take extra time or they may not remember to document. In regards to not discussing weight with patients, providers expressed discomfort in telling patients they needed to lose weight. They felt that weight loss conversations were better served at chronic or well-person physical exam type visits. The pre-intervention chart review examined charts from the months of December and January, which were months of peak flu season, and the majority of charts reviewed were found to be acute visits. Providers

commented verbally throughout the study and in the post-intervention survey that they did not feel comfortable or give thought to discussing weight with patients that were being seen for a sick visit. The majority of charts reviewed post-intervention were also acute visits. During the intervention period, providers commented that the patient was too sick or too emotionally upset to discuss weight loss. The knowledge of these factors and feedback from providers alerts that this may have affected data in both reviews.

Limitations were also identified during the study that are pertinent for consideration. Although the PI was present to monitor and answer questions during the intervention period, it is not absolute that the process was executed with complete accuracy. The nurses reported that they did occasionally forget to place the sticky note because it was not part of their daily routine, which lead to some missed opportunities. Since this was only a three day pilot study, there was less time for staff and providers to get into a routine with the intervention. Another limitation lies in the post intervention data collection. According to calculations, the three providers would have seen a total of approximately 60 patients in a day, which in three days time would have yielded 180 charts for review. However, multiple reasons contributed to only having 54 post intervention charts. One provider was out every afternoon, which slightly decreased the number of patients seen. Also, many patients did not meet the inclusion criteria for the study and could not be used. The majority of exclusions were patients being > 65. Despite these limitations, the study was successful and revealed that a small, low cost intervention can lead to change.

Recommendations for a future study of this nature would include more time. A longer intervention period would have allowed for more extensive data collection. It

would also give providers and nurses time to incorporate the intervention into routine practice. Long-term use could encourage an overall increase in overweight/obesity discussion. Thus, providers may become more comfortable in approaching this topic in a variety of visit types outside of chronic and well person visits. Another recommendation would be to ask providers if they have ideas for process improvement or suggestions related to prompts or interventions that would be more effective than this one. Since the nurses played a role in implementing the intervention, their input related to process improvement would be helpful as well.

Conclusion

Overweight/obesity is a challenging issue in primary care. Although it leads to multiple co-morbidities and detrimental outcomes, it is a difficult and overwhelming topic to approach with patients. This study revealed documentation related to overweight/obesity diagnosis and treatment is still highly overlooked by providers. However, it improved significantly with a small prompting intervention. More research is needed to create more palatable prompts and tools that will aid in provider awareness and discussion of this sensitive issue. Further, providers must also take responsibility in addressing this issue and knowing that it is all for the greater good of the patient and their health outcomes.

Table 1

Chart Review Data Log

	Age	Gender	Race	CC	Ht.	Wt.	BMI	Overweight/obesity Dx in A&P	Intervention Yes/No	Type of Intervention*
Pt. 1										
Pt. 2										
Pt. 3										
Pt. 4										
Pt. 5										
…										

* 0 = Counseling; 1 = Medication; 2 = Exercise; 3 = Referral Dietician; 4 = Referral Bariatric Surgeon; 5 = non-specific weight loss counseling

Table 2

Differences in demographic characteristics pre- and post-intervention (N= 200).

	Overall sample	Pre (*n* = 146)	Post (*n* = 54)
	Mean (SD); *range* or *n* (%)	*Mean* (SD); *range* or *n* (%)	*Mean* (SD); *range* or *n* (%)
Age	46.4 (12.1); 18-64	46.8 (12.4); 18-64	45.5 (11.5); 18-64
Gender			
Male	69 (34.5)	45 (30.8)	24 (44.4)
Female	131 (65.5)	101 (69.2)	30 (55.6)
Race/ethnicity			
White	185 (92.5)	136 (93.2)	49 (90.7)
Hispanic	14 (7.0)	9 (20.1)	5 (9.3)
African American	1 (0.5)	1 (0.7)	0 (0)
Chief Complaint			
Acute visit	143 (71.5)	106 (72.6)	37 (68.5)
Chronic visit	40 (20.0)	27 (18.5)	13 (24.1)
Well person exam	12 (6.0)	8 (5.5)	4 (7.4)
Procedure visit	1 (0.5)	1 (0.7)	0 (0)
Hospital follow-up	4 (2.0)	4 (2.7)	0 (0)
Height (inches)	66.8 (4.1); 59-77	66.7 (4.1); 59-77	67.0 (4.1); 61-75
Weight (lbs)	215.8 (50.3); 135-491	214.1 (50.8); 135-491	220.5 (49.1); 147-351
BMI			
25-29.9	63 (31.5)	48 (32.9)	15 (27.8)
≥30	137 (68.5)	98 (67.1)	39 (72.2)

Table 3

Documentation related to overweight and obesity pre- and post-intervention (N= 200).

	Pre (*n* = 146)	Post (*n* = 54)	*p*
	n (%)	*n* (%)	
Overweight/obesity diagnosis in A&P			
Yes	7 (4.8)	7 (13.0)	.04
No	139 (95.2)	47 (87.0)	
Intervention related to Overweight/Obesity documented			
Yes	7 (4.8)	19 (35.2)	<.001
No	139 (95.2)	35 (64.8)	

Table 4

Post-intervention Provider Survey Questions

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. The sticky note alert prompted me to discuss overweight and obesity with patients?	1	2	3	4
2. The sticky note alert prompted me to enter a diagnosis of overweight or obesity on the chart?	1	2	3	4
3. This intervention was useful in practice?	1	2	3	4
4. I would recommend maintaining this intervention in daily practice?	1	2	3	4

5. Please provide any suggestions you have for improving the intervention

References

Baer, H. J., Karson, A. S., Soukup, J. R., Williams, D. H., & Bates, D. W. (2013). Documentation and diagnosis of overweight and obesity in electronic health records of adult primary care patients. *Journal of the American Medical Association Internal Medicine, 173*(17), 1648–1652. doi: 10.1001/jamainternmed.2013.7815

Bardia, A., Holtan, S. G., Slezak, J. M., & Thompson, W. G. (2007). Diagnosis of obesity by primary care physicians and impact on obesity management. *Mayo Clinic Proceedings, 82*(8), 927–932. Retrieved from http://search.ebscohost.com.ezproxy.uky.edu/login.aspx?direct=true&db=c8h&AN=2009643605&site=ehost-live&scope=site

Blumenthal, D., & Tavenner, M. (2010). The "meaningful use" regulation for electronic health records. *New England Journal of Medicine, 363*(6), 501–504. doi: 10.1056/NEJMp1006114

Centers for Disease Control. (2010). *National ambulatory medical care survey*. Retrieved from http://www.cdc.gov/nchs/data/ahcd/ namcs_summary/2010_namcs_web_tables.pdf

De Civita, M. & Dasgupta, K. (2007). Using diffusion of innovations theory to guide diabetes management program development: an illustrative example. *Journal of Public Health, 29*(3), 263-268. doi: 10.1093/pubmed/fdm033

Epstein, L., & Ogden, J. (2005). A qualitative study of GPs' views of treating obesity. *British Journal of General Practice, 55*, 750-754. Retrieved from http://www.ncbi.nlm.nih.gov /pmc/articles/PMC1562352/?tool=pubmed

Finkelstein, E. A., Trogdon, J. G., Cohen, J. W., & Dietz, W. (2009). Annual medical

    spending attributable to obesity: Payer-and service-specific estimates. *Health*

    Affairs, 28(5), p. w822–w831. doi: 10.1377/hlthaff.28.5.w822

Fryar, C. D., Carroll, M. D., & Ogden, C. L. (2012, September). Prevalence of

    overweight, obesity, and extreme obesity among adults: United States, trends

    1960–1962 through 2009–2010. National Center for Health Statistics Health E-

    Stat. Retrieved from http://www.cdc.gov/nchs/data/hestat/

    obesity_adult_09_10/obesity_adult_09_10.htm

Harting, J., Rutten, G., Rutten, S., & Kremers, S.P. (2009). A qualitative application of

    the diffusion of innovations theory to examine determinants of guideline

    adherence among physical therapists. *Physical Therapy, 89*(3), 221-232. doi:

    10.2522/ptj.20080185

Hoenig, M. (2012, July 26). Obesity in adults. *First Consult*. Retrieved from

    https://www-clinicalkey- ContentPlayerCtrl/doPlayContent/21-s2.0-

    1016556/{"scope":"all","query":"obesity"}

Jensen, M. D., Ryan, D. H., Apovian, C. M., Loria, C. M., Ard, J. D., Millen, B. E., . . .

    Yanovski, S. Z. (2013). 2013 AHA/ACC/TOS Guideline for the management of

    overweight and obesity in adults. *Journal of the American College of Cardiology*.

    doi: 10.1016/j.jacc.2013.11.004

Krist, A. H., Woolf, S. H., Frazier, C. O., Johnson, R. E., Rothemich, S. F., Wilson, D.

    B., …Kerns, J. W. (2008). An electronic linkage system for health behavior

    counseling: Effect on delivery of the 5A's. *American Journal of Preventive*

    Medicine, 35, S350– S358. doi: 10.1016/j.amepre.2008.08.010

Lemay, C. A., Cashman, S., Savageau, J., Fletcher, K., Kinney, R., & Long-Middleton,

    E. (2003). Underdiagnosis of obesity at a community health center. *Journal of*

    the American Board of Family Medicine, 16, 14-21. Retrieved from

    http://www.jabfm.org /cgi/content/full/16/1/14

Ma, G. X., Poon, A. N., & Toubbeh, J. I. (2008). Diffusion of Philadelphia's no-smoking

    policy to Chinese businesses. *American Journal of Health Studies, 23*(4), 162-

    172. Retrieved from

    http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2802338/?tool=pubmed

Melamed, O. C., Nakar, S., & Vinker, S. (2009). Suboptimal identification of obesity by

    family physicians. *American Journal of Managed Care, 15*, 619-624. Retrieved

    fromhttp://search.ebscohost.com.ezproxy.uky.edu/login.aspx?direct=true&db=ap

    h&AN=44785046&site=ehost-live&scope=site

Mitchell, N. S., Catenacci, V. A., Wyatt, H. R., & Hill, J. O. (2011). Obesity:

    Overview of an epidemic. *Psychiatric Clinics of North American, 34*(4), 717–

    732. doi: 10.1016/j.psc.2011.08.005

Pagoto, S. L., Kantor, L., Bodenlos, J. S., Gitkind, M., & Ma, Y. (2008). Translating the

    diabetes prevention program into a hospital-based weight loss program. *Health*

    Psychology, 27(1), S91-S98. doi: 10.1037/0278-6133.27.1.S91

Pearcey, P. & Draper, P. (1996). Using the diffusion of innovation model to influence

    practice: a case study. *Journal of Advanced Nursing, 23*(4), 714-721. Retrieved

    from http://www.ncbi.nlm.nih.gov/pubmed/8675888

Rogers, E.M. (1995). *Diffusion of Innovations* (5th ed.). New York, NY: Free Press.

Sharma, M. & Kanekar, A. (2008). Diffusion of innovations theory for alcohol, tobacco,

and drugs. *Journal of Alcohol & Drug Education, 52*(1), 3-7. Retrieved from

http://www.thefreelibrary.com/Diffusion+of+innovations+theory+for+alcohol%2

c+tobacco%2c+and+drugs.-a0179277678

Stein, C. J., & Colditz, G. A. (2004). The epidemic of obesity. *The Journal of Clinical*

Endocrinology & Metabolism, 89(6), 2522-2525. doi: 10.1210/jc/2004-0288

World Health Organization (2008). *Operations manual for delivery of HIV prevention,*

care and treatment at primary health centres in high-prevalence, resource-

constrained settings. Retrieved from http://www.who.int/hiv/pub/imai/om.pdf

Project Inquiry Conclusion

A thorough review of the literature, along with a quality improvement study reveals multiple problems surrounding the overweight/obesity epidemic among adults. Americans are growing heavier with each passing year and accumulating co-morbidities. Proper identification of overweight/obesity with the recommendation of treatment methods does not occur with the recommended frequency according to guidelines to account for all of the overweight/obese patients that need to be reached. Healthy People 2020 includes objectives to increase primary care provider assessment of BMI and weight counseling (Department of Health and Human Services, 2015). The central tenet of primary care is prevention; thus, primary care providers are the ideal providers to identify overweight/obesity and initiate treatment.

Primary care is a busy environment trying to meet multiple needs during patient visits. Providers have identified lack of time as well as level of discomfort with the conversation as common reasons for not addressing overweight/obesity with patients. BMI is objective and an accurate means to facilitate conversation. Further, the Centers for Medicare and Medicaid Services recommend providers use the five A's: ask, assess, advise, assist, and arrange to counsel patients and determine readiness for weight loss. This commonly used tactic for smoking cessation counseling can be generalized to other healthcare issues. The Centers for Medicare and Medicaid Services also recommends educating providers on the ways obesity assessment and treatment can benefit their practice. There are incentives related to meeting meaningful use standards that come from measurement of BMI and obesity counseling. Further, providers may bill for follow-up visits that solely relate to obesity counseling (Elliott, 2012). Even though

providers may be too busy at times or do not feel a specific visit is appropriate to consume with overweight/obesity counseling, they can plant the seed for discussion and ask patients to come back for a follow-up to address weight.

This quality improvement project was aimed at enhancing how primary care providers managed overweight/obesity problems with patients. It further served to highlight the usefulness of BMI as an objective tool to facilitate provider-patient conversation related to overweight/obesity. This capstone project made small improvement in practice and further validated the problem and need for expanded research in this area of healthcare.

Appendices

Appendix A

Provider Informed Consent

Consent to Participate in a Research Study

Examining the Effectiveness of an Intervention to Increase Provider Assessment of

Obesity in the Primary Care Setting

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study for quality improvement related to adult obesity guideline implementation in your clinical practice setting. You are being invited to take part in this research study because you are a provider at UK Healthcare Georgetown. If you volunteer to take part in this study, you will be one of up to three people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Krista Lea, RN, BSN, (Principal Investigator, PI) of University of Kentucky, College of Nursing. The PI is a Doctor of Nursing Practice student in the Family Nurse Practitioner track. She is being guided in this research by faculty advisor Kathy Wheeler, PhD, RN, APRN, FAANP. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to increase provider recognition and discussion of overweight and obesity with patients in the primary care setting as recommended by the 2013 American Heart Association/American College of Cardiology/The Obesity Society obesity guideline. By doing this study, we hope to learn about practices that facilitate overweight and obesity discussion with patients in order to promote better patient outcomes.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The research procedures will be conducted at UK Healthcare Georgetown from January 2015 to April 2015. If you choose to participate, you will be asked to attend two – one hour lunch meetings over the course of the study. The purpose of the meetings is to discuss data from the chart reviews, details of the intervention, and a post-study survey.

The meetings will be held in the clinic with lunch provided. Your participation in the three day sticky note prompt intervention pilot period portion of the study will require no time outside of your routine practice.

WHAT WILL YOU BE ASKED TO DO?

You will be asked to attend two, 1 hour lunch-provided educational meetings, and complete an anonymous and voluntary survey at the end of the study to provide feedback on the intervention.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

There is no risk involved in the participation of this study.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

There is no guarantee that you will get any benefit from taking part in this study. However, you may find the chart reminder a useful tool to help facilitate communication with overweight and obese patients. Your willingness to participate may provide quality improvement on this matter for future practice.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

You are welcome to attend the two educational meetings, even if you choose not to participate in the study. However, you will not be asked to complete the survey following the study without consent to participate.

WHAT WILL IT COST YOU TO PARTICIPATE?

There will be no cost to you or your practice for the participation of this study. The PI will cover all expenses for the study, including food for luncheons.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep confidential all research records that identify you to the extent allowed by law.

The post-study written survey is confidential. That means that no one, not even members of the research team, will know that the information you give came from you.

Data collected from the chart reviews will be combined with information from other providers taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. No identifying information will be used when collecting data. Data will be collected electronically and stored on the PI's personal password protected computer. The computer will be locked in the PI's personal residence when not in her possession. In addition, data will be backed up on the PI's personal encrypted jump drive, which will be kept in a locked filing cabinet at the PI's personal residence.

Officials from the University of Kentucky may look at or copy pertinent portions of records that may identify you.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study.

ARE YOU PARTICIPATING OR CAN YOU PARTICIPATE IN ANOTHER RESEARCH STUDY AT THE SAME TIME AS PARTICIPATING IN THIS ONE?

You may take part in this study if you are currently involved in another research study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will not receive any rewards or payment for taking part in the study.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Krista Lea at 859-552-3446 or krista.lea@uky.edu. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity between the business hours of 8am and 5pm EST, Mon-Fri at the University of Kentucky at 859-

257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you.

WHAT IF NEW INFORMATION IS LEARNED DURING THE STUDY THAT MIGHT AFFECT YOUR DECISION TO PARTICIPATE?

If the researcher learns of new information in regards to this study, and it might change your willingness to stay in this study, the information will be provided to you. You may be asked to sign a new informed consent form if the information is provided to you after you have joined the study.

_____   _____
Signature of person agreeing to take part in the study   Date

_____
Printed name of person agreeing to take part in the study

_____   _____
Name of [authorized] person obtaining informed consent   Date

_____
Signature of Principal Investigator or Sub/Co-Investigator

Appendix B

Handouts Distributed to Providers at Pre-Intervention Luncheon

Overweight and Obesity Overview

<u>Problem</u>
- ❖ Majority of the United States adult population is overweight or obese with prevalence rates of 63.7 % for women and 73.9 % for men (Fryar, Carroll, & Ogden, 2012)
- ❖ Results in 300,000 deaths per year, and accounts for $147 billion in annual healthcare costs (Stein & Colditz, 2004; Finkelstein, Trogdon, Cohen, & Dietz, 2009).
- ❖ Primary care providers are only counseling on diet 13.1 % of the time, exercise 9.2 % of the time, and weight reduction 4.0 % of the time (CDC, 2010).
- ❖ A 2007 study conducted by Bardia, Holtan, Slezak, & Thompson looked at obesity diagnosis among primary care providers, and found that out of 2,543 patients with a documented BMI of 30 or greater, only 505 (19.9 %) had a diagnosis of obesity in their chart
- ❖ Clinicians identify the following reasons as to why they do no discuss weight with their patients:
    - o Fear of jeopardizing rapport with the patient
    - o Lack of time
    - o Avoidance
    (Epstein & Ogden, 2004)

<u>Solution</u>
- ❖ Patients are more likely to make lifestyle changes aimed at weight loss, such as diet and exercise, when they are counseled by healthcare providers (Krist et al., 2008)
- ❖ The use of BMI is an objective measure that can facilitate obesity discussion between clinicians and patients. It is an avenue for providers to present the patient with facts about their health status and associated risks in a non-judgmental fashion
- ❖ Use guidelines as a tool in practice
    - o *The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults* (National Institutes of Health; National Heart, Lung, and Blood Institute; & North American Association for the Study of Obesity, 1998)
        - ▪ Useful methods to identify overweight/obesity in the primary care setting
        - ▪ Most helpful in relation to patient counseling – provides talking points r/t patient readiness, diet goals, and physical activity goals
    - o *2013 American Heart Association/American College of Cardiology/The Obesity Society Guideline for the Management of Overweight and Obesity in Adults (Jensen et al., 2013)*

- Evidence-based update to the 1998 guideline to provide the most current treatment strategies
- Recommends measuring height/weight to calculate BMI at least annually
- Focuses heavily on co-morbidities and need to match treatment with risk
- Helpful tables to outline specific treatment options
- Helpful algorithm to guide treatment
  - *Pharmacological Management of Obesity: An Endocrine Society Clinical Practice Guideline (Apovian et al., 2015)*
    - Supplement to the 2013 guideline
    - Focuses on treating weight first to eliminate the co-morbidities
    - Focuses on varying pharmacological methods

Steps for Evaluation & Treatment of Overweight/Obesity
Adapted from the *2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults* (Jensen et al., 2013, p. 18-22)

1. Patient encounter to determine weight status
2. Calculate BMI – ensure proper height and weight measurement
3. Determine class of obesity via BMI cutpoints
   - BMI 25 < 30 = overweight
   - BMI 30 < 35 = class I obese
   - BMI 35 < 40 = class II obese
   - BMI $\geq$ 40 = class III obese
4. Determine risk for CVD and other obesity-related co-morbidities and treat accordingly
   - History
   - Physical exam
   - BP
   - Fasting blood glucose
   - Fasting lipids
5. Assess for contributing factors to weight gain – history and lifestyle
6. Determine need to lose weight based on BMI and risk factors
7. If normal weight or overweight, educate r/t avoidance of weight gain; If obese, assess readiness to lose weight and treat co-morbidities
8. Determine readiness to make a lifestyle change/barriers; patient-provider teamwork
9. Develop weight loss and health goals with patient
10. Evaluate weight loss options
11. Discuss comprehensive lifestyle intervention (>14 sessions in 6 months) interventionist or dietician via face-to-face, phone, or internet
12. Pharmacotherapy as adjunct to lifestyle change
13. Referral to bariatric surgeon
14. Frequently monitor weight loss to determine if changes in treatment regimen are needed

15. Calculate BMI at least annually or more as needed
16. Closely monitor CVD risk factors/co-morbidities
17. Continue to frequently provide weight loss options for those patients that are resistant

Appendix C

2013 AHA/ACC/TOS Guideline Summary: Steps for Evaluation & Treatment of
Overweight/Obesity
Adapted from the *2013 AHA/ACC/TOS Guideline for the Management of Overweight*
and Obesity in Adults (Jensen et al., 2013, p. 18-22)

1. Patient encounter to determine weight status
2. Calculate BMI – ensure proper height and weight measurement
3. Determine class of obesity via BMI cutpoints
   - BMI 25 < 30 = overweight
   - BMI 30 < 35 = class I obese
   - BMI 35 < 40 = class II obese
   - BMI ≥ 40 = class III obese
4. Determine risk for CVD and other obesity-related co-morbidities and treat accordingly
   - History
   - Physical exam
   - BP
   - Fasting blood glucose
   - Fasting lipids
5. Assess for contributing factors to weight gain – history and lifestyle
6. Determine need to lose weight based on BMI and risk factors
7. If normal weight or overweight, educate r/t avoidance of weight gain; If obese, assess readiness to lose weight and treat co-morbidities
8. Determine readiness to make a lifestyle change/barriers; patient-provider teamwork
9. Develop weight loss and health goals with patient
10. Evaluate weight loss options
11. Discuss comprehensive lifestyle intervention (>14 sessions in 6 months) interventionist or dietician via face-to-face, phone, or internet
12. Pharmacotherapy as adjunct to lifestyle change
13. Referral to bariatric surgeon
14. Frequently monitor weight loss to determine if changes in treatment regimen are needed
15. Calculate BMI at least annually or more as needed
16. Closely monitor CVD risk factors/co-morbidities
17. Continue to frequently provide weight loss options for those patients that are resistant

Project Inquiry Master Reference List

Apovian, C. M., Aronne, L. J., Bessesen, D. H., McDonnell, M. E., Murad, M. H.,

    Pagotto, U., . . . Still, C. D. (2015). Pharmacological management of obesity: An

    Endocrine Society clinical practice guideline. *The Journal of Clinical*

    Endocrinology & Metabolism, 100(2), 342-362. Doi:

    http://dx.doi.org/10.1210/jc.2014-3415

Baer, H. J., Karson, A. S., Soukup, J. R., Williams, D. H., & Bates, D. W. (2013).

    Documentation and diagnosis of overweight and obesity in electronic health

    records of adult primary care patients. *Journal of the American Medical*

    Association Internal Medicine, 173(17), 1648–1652. doi:

    10.1001/jamainternmed.2013.7815

Bardia, A., Holtan, S. G., Slezak, J. M., & Thompson, W. G. (2007). Diagnosis of

    obesity by primary care physicians and impact on obesity management. *Mayo*

    Clinic Proceedings, 82(8), 927–932. Retrieved from

    http://search.ebscohost.com.ezproxy.uky.edu/login.aspx?direct=true&db=c8h&A

    N=2009643605&site=ehost-live&scope=site

Blumenthal, D., & Tavenner, M. (2010). The "meaningful use" regulation for electronic

    health records. *New England Journal of Medicine, 363*(6), 501–504. doi:

    10.1056/NEJMp1006114

Burns, N., & Grove, S. K. (2009). *The Practice of Nursing Research: Appraisal,*

    Synthesis, and Generation of Evidence (6th ed.). Philadelphia: Saunders Elsevier.

Centers for Disease Control and Prevention. (2011, September 13). About BMI for

adults. Retrieved from http://www.cdc.gov/healthyweight

/assessing/bmi/adult_bmi/index.html

Centers for Disease Control. (2010). *National ambulatory medical care survey*.

Retrieved from http://www.cdc.gov/nchs/data/ahcd/

namcs_summary/2010_namcs_web_tables.pdf

De Civita, M. & Dasgupta, K. (2007). Using diffusion of innovations theory to guide

diabetes management program development: an illustrative example. *Journal of

Public Health, 29*(3), 263-268. doi: 10.1093/pubmed/fdm033

Department of Health and Human Services. (2015). Healthy People 2020 Topics &

Objectives: Health Care and Worksite Settings. Retrieved from

https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-

weight-status/objectives

Elliott, V. S. (2012, Sept. 3). How to bill for screening and treating obesity in adults.

American Medical News. Retrieved from

http://www.amednews.com/article/20120903/business/309039972/5/

Epstein, L., & Ogden, J. (2005). A qualitative study of GPs' views of treating obesity.

British Journal of General Practice, 55, 750-754. Retrieved from

http://www.ncbi.nlm.nih.gov /pmc/articles/PMC1562352/?tool=pubmed

Finkelstein, E. A., Trogdon, J. G., Cohen, J. W., & Dietz, W. (2009). Annual medical

spending attributable to obesity: Payer-and service-specific estimates. *Health

Affairs, 28*(5), p. w822–w831. doi: 10.1377/hlthaff.28.5.w822

Fleisher, L. A. (2012). Obesity and nutrition disorders. In I. Y. MEng & A. C. Sinha

(Eds.), *Anesthesia and Uncommon Diseases* (6th ed.) (p. 215–224). Philadelphia,

PA: Elsevier.

Fryar, C. D., Carroll, M. D., & Ogden, C. L. (2012, September). Prevalence of

overweight, obesity, and extreme obesity among adults: United States, trends

1960–1962 through 2009–2010. National Center for Health Statistics Health E-

Stat. Retrieved from http://www.cdc.gov/nchs/data/hestat

/obesity_adult_09_10/obesity_adult_09_10.htm

Gesensway, D. (2008, January). Assessing BMI, waist size, vital to prevent worsening

obesity. *ACP Internist*. Retrieved from http://www.acpinternist.org

/archives/2008/01/measuring.htm

Harting, J., Rutten, G., Rutten, S., & Kremers, S. P. (2009). A qualitative application of

the diffusion of innovations theory to examine determinants of guideline

adherence among physical therapists. *Physical Therapy, 89*(3), 221-232. doi:

10.2522/ptj.20080185

Hoenig, M. (2012, July 26). Obesity in adults. *First Consult*. Retrieved from

https://www-clinicalkey- ContentPlayerCtrl/doPlayContent/21-s2.0-

1016556/{"scope":"all","query":"obesity"}

Jensen, M. D., Ryan, D. H., Apovian, C. M., Loria, C. M., Ard, J. D., Millen, B. E., . . .

Yanovski, S. Z. (2013). 2013 AHA/ACC/TOS Guideline for the management of

overweight and obesity in adults. *Journal of the American College of Cardiology*.

doi: 10.1016/j.jacc.2013.11.004

Krist, A. H., Woolf, S. H., Frazier, C. O., Johnson, R. E., Rothemich, S. F., Wilson, D.
B., ... Kerns, J. W. (2008). An electronic linkage system for health behavior
counseling: Effect on delivery of the 5A's. *American Journal of Preventive
Medicine, 35*, S350– S358. doi: 10.1016/j.amepre.2008.08.010

Lemay, C. A., Cashman, S., Savageau, J., Fletcher, K., Kinney, R., & Long-Middleton,
E. (2003). Underdiagnosis of obesity at a community health center. *Journal of
the American Board of Family Medicine, 16*, 14-21. Retrieved from
http://www.jabfm.org /cgi/content/full/16/1/14

Levi, J., Segal, L. M., Thomas, K., St. Laurent, R., Lang, A., & Rayburn, J. (2013). F as
in fat: How obesity threatens America's future. Retrieved from
http://fasinfat.org/states/ky/

Ma, G. X., Poon, A. N., & Toubbeh, J. I. (2008). Diffusion of Philadelphia's no-smoking
policy to Chinese businesses. *American Journal of Health Studies, 23*(4), 162-
172. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/
PMC2802338/?tool=pubmed

Melamed, O. C., Nakar, S., & Vinker, S. (2009). Suboptimal identification of obesity by
family physicians. *American Journal of Managed Care, 15*, 619-624. Retrieved
from http://search.ebscohost.com.ezproxy.uky.edu
/login.aspx?direct=true&db=aph&AN=44785046&site=ehost-live&scope=site

Mitchell, N. S., Catenacci, V. A., Wyatt, H. R., & Hill, J. O. (2011). Obesity: Overview
of an epidemic. *Psychiatric Clinics of North American, 34*(4), 717–732. doi:
10.1016/j.psc.2011.08.005

Moyer, V. A. (2012). Screening for and management of obesity in adults: U. S.

>Preventive Services Task Force recommendation statement. *Annals of Internal*

>*Medicine, 157*(5), 373–378. Retrieved from

>http://search.ebscohost.com.ezproxy.uky.edu/

>login.aspx?direct=true&db=aph&AN=79682949&site=ehost-live&scope=site

National Institutes of Health, National Heart, Lung, and Blood Institute, North American

>Association for the Study of Obesity. (2000). *The practical guide: Identification,*

>*evaluation, and treatment of overweight and obesity in adults* (NIH Publication No.

>00-4084). Retrieved from http://www.nhlbi.nih.gov/guidelines/

>obesity/prctgd_c.pdf

Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K.

>M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004.

>*JAMA, 295*, 1549-1555. Retrieved from http://jama.ama-

>assn.org.ezproxy.uky.edu/cgi/content/full/295/13/1549

Pagoto, S. L., Kantor, L., Bodenlos, J. S., Gitkind, M., & Ma, Y. (2008). Translating the

>diabetes prevention program into a hospital-based weight loss program. *Health*

>*Psychology, 27*(1), S91-S98. doi: 10.1037/0278-6133.27.1.S91

Pearcey, P. & Draper, P. (1996). Using the diffusion of innovation model to influence

>practice: a case study. *Journal of Advanced Nursing, 23*(4), 714-721. Retrieved

>from http://www.ncbi.nlm.nih.gov/pubmed/8675888

Rogers, E. M. (1995). *Diffusion of Innovations* (5th ed.). New York, NY: Free Press.

Schriefer, S. P., Landis, S. E., Turbow, D. J., & Patch, S. C. (2009). Effect of a

>computerized body mass index prompt on diagnosis and treatment of adult obesity,

Family Medicine, 41, 502-507. Retrieved from

http://www.stfm.org/fmhub/fm2009/July/Susan502.pdf

Sharma, M. & Kanekar, A. (2008). Diffusion of innovations theory for alcohol, tobacco,

and drugs. *Journal of Alcohol & Drug Education, 52*(1), 3-7. Retrieved from

http://www.thefreelibrary.com/Diffusion+of+innovations+theory+for+alcohol%2

c+tobacco%2c+and+drugs.-a0179277678

Smith, P. D., O'Halloran, P., Hahn, D. L., Grasmick, M., & Radant, L. (2010).

Screening for obesity: Clinical tools in evolution, a WREN study, *Wisconsin*

Medical Journal, 109, 274-278. Retrieved from http://www.ncbi.nlm.nih.gov

/pmc/articles /PMC3026048/?tool=pubmed

Stein, C. J., & Colditz, G. A. (2004). The epidemic of obesity. *The Journal of Clinical*

Endocrinology & Metabolism, 89(6), 2522-2525. doi: 10.1210/jc/2004-0288

United States Preventive Services Task Force. (2003). Screening for obesity in adults:

Recommendations and rationale. *Annals of Internal Medicine, 139*(11), 930-932.

Retrieved from http://search.ebscohost.com.ezproxy.uky.edu/

login.aspx?direct=true&db=aph&AN=11543075&site=ehost-live&scope=site

World Health Organization (2008). *Operations manual for delivery of HIV prevention,*

care and treatment at primary health centres in high-prevalence, resource-

constrained settings. Retrieved from http://www.who.int/hiv/pub/imai/om.pdf