Evaluation of Evidence-Based Practice Guideline for Pediatric Obesity

EVALUATION OF EVIDENCE-BASED PRACTICE GUIDELINE FOR PEDIATRIC OBESITY

by

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ABSTRACT

Introduction: Pediatric obesity prevention and management is a high priority for pediatric providers. Pediatric providers use evidence-based clinical guidelines to integrate the best current recommendations into practice. The contention of this inquiry is that while practice guidelines and obesity programs address the "who, what, when, where, and why" of pediatric obesity interventions, the guidelines fail to address the "how" of the process that bolsters adherence and attacks the high attrition rates of obesity management.

Objective: The objective of this practice inquiry is to evaluate *Prevention and Treatment for Pediatric Obesity: An Endocrine Society Clinical Practice Guideline Based on Expert Opinion* using the Appraisal for Guidelines and Research and Evaluation (AGREE II) instrument and to investigate techniques to improve adherence to the lifestyle changes recommended in the guideline, by synthesizing the current research for using motivational interviewing with obese pediatric patients, and propose a plan for translating the intervention to measurable outcomes.

Methods: *Prevention and Treatment of Pediatric Obesity: An Endocrine Society Clinical Practice Guideline Based on Expert Opinion* was evaluated using the AGREE II instrument. The current recommendations are detailed based on the findings of a review of the literature. Using the RE-AIM framework, recommendations are made to determine the translation potential for the use of motivational interviewing to improve adherence to lifestyle recommendations, thus improving the current clinical practice guideline.

Results: Review of the Endocrine Society's CPG using the AGREE II instrument yielded an overall guideline quality rating of 6/7. The guideline is recommended for use with modifications to improve applicability. Integration of MI to the practice guideline and the use of the RE-AIM

framework to improve uptake of the intervention is proposed to address the weaknesses in applicability revealed in the guideline evaluation.

Conclusion: The CPG reviewed in this PI provides quality recommendations for the treatment and prevention of pediatric obesity. By integrating MI techniques and using the RE-AIM framework, pediatric providers may be able to bolster adherence to the guideline recommendations and ultimately improve clinical outcomes and impede the rising pediatric obesity rates. Future research should include evaluation of MI interventions in the pediatric clinical setting.

CHAPTER ONE: INTRODUCTION AND SIGNIFICANCE OF THE PROBLEM

Pediatric obesity is considered an epidemic. Pediatric obesity is determined by the percentile of body mass index (BMI) expressed as weight, in kilograms, divided by height, in meters, squared (kg/m²); the percentile distribution is relative to the child's age and gender using the Centers for Disease Control and Prevention (CDC) 2000 growth charts for reference. The Institute of Medicine (IOM) defines a child as obese when the BMI is >30 kg/m² or ≥95th percentile for gender and age, whichever is smaller; for example, a 10 year old boy with a BMI of 23 kg/m² is in the obese category because when plotted on The CDC growth chart his BMI is >95th percentile. A child with a BMI ≥85th percentile but <95th percentile is classified as overweight (Krebs et al., 2007).

Prevalence and Scope of the Problem

It is alarming that in the United States, over the past 30 years, pediatric obesity rates have tripled; one-third of children are overweight or obese as defined by a BMI at or above the 85th percentile (Sacheck, 2008). In 2003–2004 about 35% of those 6–19 years old were either characterized "at risk" or overweight; nearly 17% met the classification for overweight. For children ages 2–5 years of age, 26.2% were at risk for overweight or overweight and 13.9% were overweight. Since the 1960s, not only has the prevalence of overweight increased in all age groups, but also the trend has accelerated when compared to National Health and Nutrition Evaluation Survey (NHANES) II (1976-1980). Between 1976–1980 and 2003–2004, the prevalence of overweight among children 2–5 years of age increased from 7.2% to10.3%. During the same period of time, among children 6–11 years of age the prevalence of overweight nearly tripled, it was 6.5% in 1976-1980 and increased to 15.8% in 2003-2004. Among those 12–

19 years old, the increase more than tripled, from 5.0% to 16.1%. The NHANES1999–2004 data indicated that the combined prevalence increased from 31.0% to 33.6% and the prevalence of overweight from 16% to 17.1%. Since the 1970s, the pervasiveness of obesity and overweight among US children has more than doubled (Wang & Beydoun, 2007).

Recently, some progress has been made in the fight against the pediatric obesity epidemic, as evidence by no significant increase in pediatric obesity rates through 2009-2010. However, the fact that nearly one in five children greater than 5 years of age is obese highlights that the incidence of pediatric obesity remains strikingly high (NCHS, 2013). The prevalence of pediatric obesity in 2009-2010 was 16.9% (Ogden, Carroll, Kit, & Flegal, 2012). The document Healthy People 2020 states the objective for Nutrition and Weight Status 10.4 "Reduce the proportion of children and adolescents aged 2 to 19 who are considered obese" (HHS, 2013). The baseline data for 2005-2008 was 16.1%; the 2020 target is a decrease to 14.5% (HHS, 2013).

Etiology of Obesity

The cause of obesity in young children and adolescents is multivariable and multidimensional. The physiology and pathophysiology of pediatric obesity is extremely complex, often influenced by a combination of genetic, behavioral, and environmental factors (Kosti & Panagiotakos, 2006). Risk factors include race, socioeconomic status, lack of health insurance, presence of parental obesity, poor early childhood nutrition, decreased level of physical activity, and engagement in sedentary activities (McCance & Huether, 2010). Ultimately, obesity is a result of an energy imbalance, when energy intake exceeds energy expended over an extended period of time (Kosti & Panagiotakos, 2006).

Overweight children commonly have risk factors that contribute to the development of cardiovascular disease and diabetes such as low high-density lipoprotein (HDL; ≤40mg/dl), elevated triglycerides (≥110 mg/dl), high blood pressure (≥90^{th} percentile), and impaired glucose tolerance. Additionally, risk for cardiovascular disease and diabetes can be assessed using inflammatory biomarkers such as C-reactive protein (CRP) and proinflammatory cytokine interleukin-6 (IL-6). Adipose tissue is linked with increased leptin and decreased adiponectin levels, a result of the chronic positive energy balance of the obese state (Sacheck, 2008).

Poor diet is identified as a contributing factor for childhood obesity. Rather than eating balanced meals, many children consume energy-dense empty calorie foods resulting in a deficiency in antioxidants, phytochemicals, and ω-3 fatty acids which may combat the inflammation associated with obesity. Similarly, physical activity and physical fitness play strong roles in determining health outcomes and mortality risks. Physical fitness is inversely associated with inflammatory markers. Therefore, inflammation and metabolic stress associated with childhood obesity can be reduced by healthy lifestyle changes, including diet and exercise (Sacheck, 2008).

Consequences of Obesity in Childhood and Adolescence

Overweight and obesity is associated with a vast array of physiological consequences. Overweight and obesity in pediatric populations is associated with a variety psychosocial and health complications that are both immediate and long term and have severe economic consequences. From the psycho-social standpoint, weight status is associated with social relationships, school experiences, psychological well-being, and future aspirations (Kosti & Panagiotakos, 2006). Psychological and social consequences of obesity include a significant

impact on emotional development as obese children often suffer from discrimination, stigmatism, and bullying. Individuals who were obese in childhood often have poor body image, low self-esteem, and low confidence compared to those who develop obesity in adult hood because of the critical developmental period of body image and self-esteem during mid-childhood (Lee, 2009).

Physiological consequences include potential metabolic and mechanical implications. Mechanical complications include obstructive sleep apnea and orthopedic problems: genu varus and valgus (deformity of the knees), Blount's disease (disorder of the tibia), and slipped capital femoral epiphysis (Lee, 2009). Children are at risk for developing insulin resistance, type 2 diabetes, dyslipidemia, hypertension, endothelial dysfunction, non-alcoholic fatty liver disease, metabolic syndrome, and asthma. People who are obese in childhood are at risk for the development of obesity, coronary heart disease, and diabetes in adulthood (Lee, 2009; Sacheck, 2008). Furthermore, cohort studies indicate that obese adolescents are at a substantially higher risk of developing severe obesity in adulthood than normal-weight or overweight adolescents (The, Suchindran, North, Popkin, & Gordon-Larsen, 2010).

Problem Statement

Given the magnitude of the pediatric obesity epidemic and the implications of comorbidities and complications of childhood obesity into adulthood, recommendations to guide healthcare providers in the screening, prevention, assessment, and management of obesity based on best evidence are integral tools. The Endocrine Society published a clinical practice guideline in 2008 to address the prevention and treatment of pediatric obesity. The Institute of Medicine (IOM) highlights the importance of an effective, multifaceted implementation strategy to

promote adherence to clinical practice guidelines (IOM, 2011). The contention of this inquiry is that while the Endocrine Society's Clinical Guidelines and obesity programs address the "who, what, when, where, and why" of pediatric obesity interventions, the guidelines fail to address the "how" of the process that bolsters adherence and attacks the high attrition rates of obesity management.

The Clinical Question and Purpose Statement

Do obese pediatric patients whose providers use motivational interviewing techniques have better adherence to lifestyle changes than those whose providers use a directing approach to lifestyle changes?

Guided by this question, the purpose of this practice inquiry is to evaluate the Clinical Practice Guideline, *Prevention and Treatment for Pediatric Obesity: An Endocrine Society Clinical Practice Guideline Based on Expert Opinion* using the Appraisal for Guidelines and Research and Evaluation (AGREE II) instrument and to investigate techniques to improve adherence to the lifestyle changes recommended in the guideline, by synthesizing the current research for using motivational interviewing with obese pediatric patients, and propose a plan for translating the intervention into practice with measurable outcomes using the reach, efficacy/effectiveness, adoption, implementation, and maintenance (RE-AIM) framework components.

Significance to Advanced Pediatric Nursing Practice

Research and prevention must be the cornerstone of practice for the doctorally prepared pediatric nurse practitioner (PNP – DNP). As competent leaders, collaborators, and policy advocates, advanced practice nurses are responsible for addressing community and public health

needs. Given the prevalence of pediatric obesity and the chronic diseases associated with it, it is of the utmost importance to maintain proficiency in the use of informatics and technology to keep current with evidence-based practice recommendations and translating best practices to improve patient outcomes (Rubenstein, 2005). Educating patients and families to incorporate healthy diet and exercise during childhood is vital to health promotion and disease prevention that lasts through adulthood. Primary care teaching to improve diet and exercise plays an important role in improving health outcomes. It is imperative to develop population-wide strategies to use lifestyle modification to decrease adiposity in children (Kelishadi, Hashemi, Mohammadifard, Asgary, & Khavarian, 2008). The use of motivational interviewing as a communication strategy can be effective to guide families in goal setting and behavior change to reduce pediatric obesity by improving adherence to evidence based practice recommendations (Rubenstein, 2005).

Definitions

Body Mass Index

Body Mass Index (BMI) is an anthropometric measure of body mass. It is calculated by taking the weight in kilograms divided by the height in meters squared. In pediatric patients, ages 2-19 years, the BMI and corresponding BMI-for-age percentile is plotted on a CDC BMI-for-age and gender growth chart. BMI is a method for determining caloric nutritional status (CDC, nd; Dirckx, 1997).

Measurement of Pediatric Overweight and Obesity

In 2005, the Institute of Medicine redefined the classifications for overweight and obesity in children 2 to 18 years of age. The current classifications are:

- *Overweight*: a BMI ≥85th percentile but <95th percentile or 30 kg/m², whichever is smaller
- *Obese*: a BMI >30 kg/m² or ≥95th percentile for gender and age, whichever is smaller (Krebs, et al., 2007)

Motivational Interviewing

Miller and Rollnick(2013) define *motivational interviewing* in the lay, clinical, and technical forms:

- Lay definition: "A collaborative conversation style for strengthening a person's own motivation and commitment to change" (Miller & Rollnick, 2013, p. 410).
- Clinical definition: "A person-centered counseling style for addressing the common problem of ambivalence about change" (Miller & Rollnick, 2013, p. 410).
- Technical definition: "A collaborative, goal-oriented style of communication with particular attention to the language of change, designed to strengthen personal motivation for the commitment to a specific goal by eliciting and exploring the person's own reasons for change within an atmosphere of acceptance and compassion" (Miller & Rollnick, 2013, p. 410).

Transtheoretical Model Constructs

Stages of Change.

- *Precontemplation*: having no intention to take action within the next 6 months (Prochaska, Redding, & Evers, 2008)
- *Contemplation*: intending to take action with the next 6 months (Prochaska, et al., 2008)

- *Preparation*: intending to take action within the next 30 days and having taken some behavioral steps in this direction (Prochaska, et al., 2008)
- *Action*: changing overt behavior for less than 6 months (Prochaska, et al., 2008)
- *Maintenance*: changing overt behavior for more than 6 months (Prochaska, et al., 2008)
- *Termination*: having no temptation to relapse and 100% confidence (Prochaska, et al., 2008)

Processes of Change.

- *Consciousness raising*: finding and learning new facts, ideas, and tips that support a healthy behavior change (Prochaska, et al., 2008)
- *Dramatic relief*: experiencing the negative emotions (fear, anxiety, worry) that accompany unhealthy behavioral risks (Prochaska, et al., 2008)
- *Self-reevaluation*: realizing that a behavior change in an important part of one's personal identity (Prochaska, et al., 2008)
- *Environmental reevaluation*: realizing the negative impact of an unhealthy behavior or the positive impact of a healthy behavior on one's proximal social and/or physical environment (Prochaska, et al., 2008)
- *Self-liberation*: making a firm commitment to change (Prochaska, et al., 2008)
- *Helping relationships*: seeking and using social support for a healthy behavior change (Prochaska, et al., 2008)
- *Counterconditioning*: substitution of healthier alternative behaviors and cognitions for an unhealthy behavior (Prochaska, et al., 2008)

- *Reinforcement management*: increasing the rewards for a positive behavior change and decreasing the rewards of an unhealthy behavior (Prochaska, et al., 2008)
- *Stimulus control*: removing reminders or cues to engage in an unhealthy behavior and adding cues or reminders to engage in a healthy behavior (Prochaska, et al., 2008)
- *Social liberation*: realizing that the social norms are changing in the direction of supporting a healthy behavior change (Prochaska, et al., 2008)

Decisional Balance.

- *Pros*: benefits of changing (Prochaska, et al., 2008)
- *Cons*: costs of changing (Prochaska, et al., 2008)

Self-Efficacy.

- *Confidence*: confidence that one can engage in a healthy behavior across different challenging situations (Prochaska, et al., 2008)
- *Temptation*: temptation to engage in an unhealthy behavior across different challenging situations (Prochaska, et al., 2008)

RE-AIM Dimensions

- *Reach* (R): the proportion and representativeness of individuals willing to participate in a given intervention (Akers, Estabrooks, & Davy, 2010).
- *Efficacy/effectiveness* (E): the influence of an intervention on important outcomes, including potential negative effects, quality of life, and economic outcomes (Akers, et al., 2010).
- *Adoption* (A): the proportion and representativeness of locations and intervention staff willing to initiate and adopt an intervention (Akers, et al., 2010).

- *Implementation* (I): how consistently various elements of an intervention are delivered as intended by intervention staff, and the time and cost of the intervention (Akers, et al., 2010).
- *Maintenance* (M): the extent to which participants make and maintain a behavior change and the sustainability of the program of policy in the setting in which it was intervened (Akers, et al., 2010).

Conclusion

This chapter reviewed the scope of the problem of pediatric obesity. While the etiology of obesity is multifactorial, lifestyle interventions play an important role in the management of this epidemic. Clearly, the consequences, complications, and comorbidities of pediatric obesity traverse the lifespan. The purpose of this practice inquiry is to evaluate the clinical practice guideline to address pediatric obesity and integrate techniques to improve adherence to the lifestyle interventions recommended in the guideline.

CHAPTER TWO: THE CONCEPTUAL AND THEORETICAL FRAMEWORK

This chapter presents the conceptual and theoretical frameworks for the practice inquiry. The common thread of a holistic approach that bolsters the concepts of empowerment and self-efficacy with patient interactions flows into the framework using the transtheoretical model of change. The transtheoretical model and motivational interviewing both take into account the patient's openness to change and tailoring interventions to the patient's needs and stage of change (Miller & Rollnick, 2013). With the knowledge of the immense ramifications of the pediatric obesity epidemic, it is paramount that the pediatric primary care provider integrate best practices for screening, prevention, assessment, and management of pediatric obesity. In this case, "best practices" are presented in The Endocrine Society's Clinical Guidelines for Prevention and Treatment of Pediatric Obesity and will be evaluated using the AGREE II instrument to be confident in the guideline recommendations. Given the importance of an effective, multifaceted implementation strategy to promote adherence to the clinical practice guideline, the RE-AIM framework will be used to execute the guideline recommendations using motivational interviewing techniques.

Conceptual Framework

The incidence of obese pediatric patients observed in clinical practice has prompted exploration of this phenomenon. The conceptual framework for this research is based on the nursing philosophy and metaparadigm: a *person* is a human being including physical and spiritual identity; *health* includes physical, mental, social and spiritual aspects and a holistic approach; the *environment* is the outside conditions that influence health and wellness; and *nursing* is an instrument and interpersonal process to guide a person toward the goal of wellness.

The main concepts are patient- and family-centered, looking at general health knowledge, diet, and activity. Patients and families have the ability and responsibility to set goals for health. There is a relationship between the patient action of setting or perceiving specific goals and the achievement of positive health outcomes. Concepts of self-efficacy and empowerment must be attained through problem-solving skills and self-competence related to health management. To address health promotion in obese pediatric patients, advanced practice nurses, and more specifically DNPs, must be innovative in assessing current knowledge to develop interventions meeting the needs of the patient and together setting healthy goals. Health is directly affected by knowledge of healthy behaviors. The consequence of increasing health knowledge and embracing empowerment in goal setting is an increase in healthy behaviors and resulting ultimately in a decrease in the prevalence of pediatric obesity.

Theoretical framework

The transtheoretical model integrates stages of change with processes and principles of change. The construct of stages embody the temporal dimension of change. Change occurs as a process over time, progressing through six stages, although not necessarily in a linear manner. These stages include: pre-contemplation, contemplation, preparation, action, maintenance, and termination. Processes of change are the activities people use to move through the stages. The processes include: consciousness raising, dramatic relief, self-reevaluation, environmental reevaluation, self-liberation, social liberation, counterconditioning, stimulus control, contingency management, and helping relationships. Decisional balance involves the pros and cons of changing. Self-efficacy encompasses the individual's confidence that in a specific situation, he/she can cope with the situation without relapsing to his/her former behaviors. Temptation is

the intensity of urges to engage in specific behaviors in difficult situations, usually involving emotional distress, positive social situations, and craving (Prochaska, et al., 2008).

The transtheoretical model has been widely used with adult health promotion and recently it has been integrated into use with programs addressing obesity prevention for children, teens, and families (Rubenstein, 2005). Since the transtheoretical model's stages of change emphasize the need for providers to be cognizant of the patient's and family's level of readiness, motivational interviewing is a clinical tool to work with patients who are in earlier stages of pre-contemplation, contemplation, and preparation and may be less ready for change (Figure 1.) (Miller & Rollnick, 2013). Posing non-directive questions helps to uncover the patient's and family's beliefs and values, driving the movement from pre-contemplation to contemplation stage. The provider can use questions to raise consciousness. Possible phrasing of the question may include, "We have checked your child's BMI today; it is above the 95th percentile (show the height, weight, and BMI as plotted on the CDC growth chart). What concerns, if any, do you have about your child's weight?" Based on the parent's response, the provider can use reflective listening to summarize the parent's comments; these reflections help to build rapport and augment the resolution of ambivalence. Next, the provider can facilitate the comparison of values and current health practices; if the family values strong academics and being healthy, the provider can explore how activities other than television may improve the patient's health and academic performance, this ties into the change process of self, or family as in this situation, reevaluation. Finally, importance/confidence rulers can be used; using a scale from zero to ten, ten being the highest. A provider can ask the parent or patient, "on a scale from zero to ten, with ten being the highest, how confident are you that you could decrease your/your child's television

viewing to two hours per day?" The number given leads into the next scaling question, "Why didn't you choose a lower number?" And then, "What would it take to make it a higher number?" This series of rulers helps the provider to help the parent and patient to think about solutions to the problem identified together, moving into the "action" stage of the TTM (Barlow, 2007; Prochaska, et al., 2008).

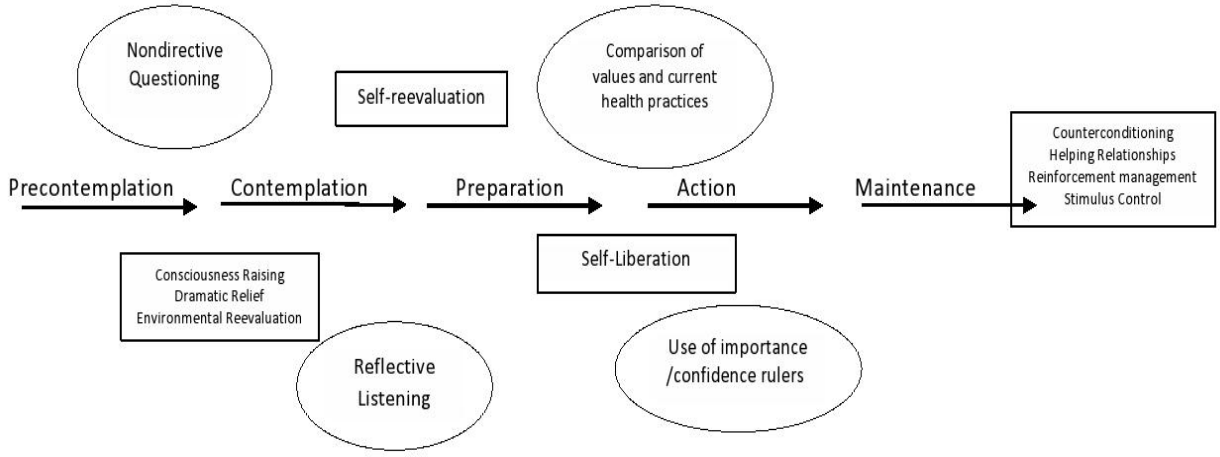

Figure 1. Transtheoretical Model with Stages and Processes of Change with the Integration of Motivational Interviewing Interventions. Adapted from "Processes of Change That Mediate Progression Between the Stages of Change" (Prochaska, et al., 2008).

Review of the Literature

Pediatric primary care providers should initiate obesity screening and prevention in the early years of life at every well child visit by using age and gender-adjusted BMI charting and survey tools to identify unhealthy weight trajectories. It is important to use sensitive communication when discussing BMI results with parents. Providers should ask questions about

dietary and physical activity and assess readiness to change. By using motivation interviewing and other patient centered techniques, counseling may be conducted in a sensitive manner. Each health assessment visit needs to be focused on helping pediatric patients achieve healthy dietary and physical activity patterns (Perrin, Finkle, & Benjamin, 2007).

McGovern et al. (2008) conducted a systematic review of randomized trials to appraise the efficacy of nonsurgical interventions for the treatment of pediatric obesity. Inclusion criteria for the studies selected included randomized trials with overweight pediatric patients that assessed the effect of lifestyle and pharmacological interventions on obesity outcomes. Studies were excluded if patients had a clinical syndrome in which obesity is a part but has a different natural or clinical history (McGovern, et al., 2008). The authors found 76 eligible studies for treatment interventions. Six reviewers worked in duplicate on each article to extract data on: the journal and year of publication, study type, level of randomization, participant age and gender, measure of obesity, experimental and control interventions, and results. The authors found 61 of the 76 eligible studies had complete data and were included in the author's analysis. Based on the review and analysis, the authors found evidence of short-term efficacy of pharmacological interventions on BMI using sibutramin and orlistat in adolescents. Physical activity yielded moderate treatment effect on adiposity but not on BMI. Physical activity and dietary, combined, modification interventions generated small to moderate treatment effect. The reviewers concluded that limited evidence supports the short-term efficacy of pharmacological monotherapy, increased physical activity, and combined lifestyle interventions. Additionally, the reviewers could not make any conclusions about the long-term impact of obesity treatment on the health of pediatric populations (McGovern, et al., 2008).

Pediatric obesity tertiary care programs have been developed to provide multidisciplinary, intensive interventions, however, high patient attrition rates contribute to the challenge of administering the necessary and appropriate treatment. A focus group survey found that in group-based programs, patients completed less than 50% of program follow up visits. For hospital-based weight management clinics, initial non-attendance rates averaged 28%. These attrition rates highlight the necessity to improve engagement and retention in clinics and programs (Hampl, Paves, Laubscher, & Eneli, 2011).

Motivational Interviewing

High failure rates for pediatric obesity programs highlight the need for novel approaches/techniques to improve patient compliance as well as patient and family engagement and adherence to obesity prevention and management interventions. Motivational interviewing is one such approach. Motivational interviewing (MI) is "a collaborative, person- centered form of guiding to elicit and strengthen motivation for change" (Miller & Rollnick, 2009). MI is a gentle, respectful method for communicating with others about their problems with change and the possibilities to participate in different, healthier behaviors that are in line with their own goals and values. MI is a learnable and effective method for enhancing communication and motivation for healthy behavior change, however, the process for acquiring proficiency in these skills requires effort and practice (Miller & Rollnick, 2009).

A review of the use of motivational interviewing for use in promoting health behaviors found that the research suggests MI is effective in areas of diet and exercise, diabetes, and oral health. The authors reviewed 37 articles that were focused on health-related behaviors that necessitate lifelong adherence to achieve the maximum health benefits. The authors found that

patients who received MI displayed significant behavior changes including improved diet and exercise. The review indicated that behavior changes were found to be maintained for one or two years, however there remains a need for research to determine the long-term (beyond one or two years) effects of MI (Martins & McNeil, 2009). The authors highlight methodological concerns associated with MI. First, training and practice is necessary to deliver MI appropriately. Studies rarely or insufficiently describe the training procedures for MI. The length of training and training methods for MI can vary which may impact skill acquisition. Additionally, for the absorption and integration of MI skills, training alone may not be sufficient. However, training workshops do result in increased MI proficiency. Secondly, often studies fail to assess the treatment integrity over the course if the MI intervention; information on treatment integrity and feedback related to the provider's implementation of MI is necessary to verify the effectiveness and clinical utility of MI interventions. Finally, MI dose, the length and number of sessions, may play an important role in treatment outcome, however many studies fail to report MI dose and session content is rarely detailed. To address these methodological concerns, the reviewers suggest future research should include improving methodology, assuring adequate statistical power, preventing or measuring attrition, improving training to interventionists, and ensuring treatment integrity (Martins & McNeil, 2009).

Lundahl et al. (2013) conducted a systematic review and meta-analysis to investigate the efficacy of MI in health care settings. The authors searched databases to identify randomized clinical trials that isolated MI effect with comparison with patients who did not receive MI interventions. Forty-eight studies were identified and included in the review and analysis. Overall, analysis revealed a statistically significant effect for MI. MI interventions yielded

statistically significant beneficial effects in 63% of the main outcome comparisons. The authors noted a 55% increase in the chance of MI interventions producing a positive outcome relative to the control groups. MI was robust across moderators of delivery location and Patient characteristics. The authors also noted that MI was efficacious when delivered in brief consultations. The authors concluded that MI provides a moderate advantage over control interventions in health care settings and shows promise for addressing a wide range of behavioral issues in health care (Lundahl, et al., 2013).

The authors of a quality improvement study conducted a retrospective chart review of a 6-month pilot program using the National Association of Pediatric Nurse Practitioners' (NAPNAP) evidence-based guidelines, Healthy Eating and Activity Together (HEAT) in a rural pediatric office. The review showed that while patients were motivated to make healthy lifestyle changes, after 1-2 months maintenance of motivation and compliance waned. In the intervention group, motivational interviewing techniques were used. The results of the intervention group indicated that with consistent use of motivational interviewing techniques in addition to diet and exercise counseling, there was a trend toward lowered BMI measurements; while the sample size was very small (n = 47 with 6 patients completing the first four visits), average BMI dropped from 26.6 initially to 26.1 by the fourth visit. One child who was >97th percentile for BMI measurement (obese) at the first visit dropped to the 85-95th percentile (overweight) by the sixth visit (Tripp, Perry, Romney, & Blood-Siegfried, 2011).

Transtheoretical Model of Change

The transtheoretical model of change (TTM) provides a framework to integrate MI into primary care practice to elicit behavior change and positive health outcomes (Van Nes &

Sawatzky, 2010). The authors contend that nurse practitioners (NP) are well adept to address unhealthy lifestyle practices and promote health behavior changes through ongoing patient encounters because PNP-DNPs have advanced education on health promotion and disease prevention as well as excellent interpersonal and counseling skills that establish trusting relationships with their patients. This article provides an overview of MI and its implementation to motivate patients to adopt healthier cardiovascular lifestyles. The TTM enables an NP to classify the patient's stage of change prior to implementing MI. The TTM elucidates change as a cyclical process in which the patient moves back and forth between stages through the change process. In primary care, patients are often in the pre-contemplative and contemplative states of change. The NP must first recognize and target patients in these stages so that movement can be facilitated to the preparation, action, and maintenance stages using MI (Van Nes & Sawatzky, 2010). MI is useful in helping patients identify the pros and cons of behavior change, resolving ambivalence, and moving toward making a change. By matching an intervention with a patient's current stage of change, the process of change can be more effective. Integrating MI and TTM can help an NP facilitate behavior change. Allowing the patient to set the agenda is a strategy to build rapport and avoid resistance, arguing and frustration. With the issue for discussion identified by the patient, the NP can assess the patient's knowledge level, readiness for making change, how important the change is, and how confident the patient is about making a change. If there is low readiness for change, the NP can articulate concern regarding the behavior and express willingness for further discussion at the next visit. By encouraging patients to reflect on past successes in making change, the NP can bolster the patient's confidence to make behavior change. By stimulating patients to think about their underlying values, motivation, and

perceived ability, the patient is encouraged to generate his/her own ideas for change. As the patient moves toward initiating the behavior change, it is essential to identify support systems, potential obstacles and how to deal with the obstacles. The NP should also reinforce the change, discuss coping mechanisms, and dealing with potential relapses (Van Nes & Sawatzky, 2010). The authors conclude that the TTM can be used to identify the readiness for change, and then MI can help patients identify their problems and overcome ambivalence and resistance to change. MI places the responsibility of change on the patient. The combination of MI with TTM can enhance the NP's capacity to motivate patients to initiate and maintain healthier lifestyles and therefore improve health outcomes (Van Nes & Sawatzky, 2010).

Johnson et al. (2008) conducted a randomized effectiveness trial with a one-year follow-up to examine the population of overweight and obese adults and the impact of tailored, home-based, TTM-based multiple behavior interventions, targeting healthy weight management behaviors. The researchers recruited a nationwide sample of 1277 through proactive calls and reactively by emails or ads. Participants were randomized to treatment or control groups. Participants completed baseline assessment over the phone. Mail assessments were sent at 3, 6, 9, 12, and 24 months which were followed-up by telephone for non-responders. The treatment group (*n*=628) received a series of four individualized reports tailored on TTM constructs based on assessments at baseline, 3, 6, and 9 months. The tailored reports were computer-generated for up to three behaviors at each time period: healthy eating; moderate exercise; and managing emotional stress without eating (Johnson, et al., 2008). The no-treatment control group (*n*=649) completed measures at baseline, 6, 12, and 24 months. The authors collected data measures including: height and weight; stage of change for exercise; stage of change for healthy eating;

stage of change for managing emotional distress; and stage of change for fruit and vegetable intake. Baseline demographic information included: gender, ethnicity, income, children, employment, ever enrolled in formal weight management program, healthy eating stage of change, exercise stage of change, emotional distress stage of change , use of internet to manage weight, BMI, and age (Johnson, et al., 2008). The authors found significant treatment effects for healthy eating, exercise, managing emotional distress, and fruit and vegetable intake that progressed to Action/Maintenance stage at 24 months. The authors concluded that TTM-based tailored feedback can improve healthy eating, exercise, managing emotional distress and weight on a population basis (Johnson, et al., 2008).

AGREE II Instrument

It is vital to address the variability in the quality of practice guidelines including the methodological rigor and transparency of the guideline development and the methods used to formulate recommendations (Brouwers et al., 2010). The AGREE II instrument was used to evaluate the Prevention and Treatment of Pediatric Obesity guideline to ensure the foundational strong evidence to move forward as the guideline is integrated and translated into practice with the addition of motivational interviewing techniques.

The AGREE II Instrument was used to evaluate clinical practice guidelines published on the American Academy of Pediatrics (AAP) Web site (Isaac, Saginur, Hartling, & Robinson, 2013). The authors conducted this study to assess the quality of development and reporting of AAP guidelines, to determine the level of underlying evidence, and to determine if there has been improvement over time corresponding to changes in guideline development policy. Two reviewers used the AGREE II instrument to evaluate guidelines independently using scores from

1 to 7 on each of the 23 AGREE II items. The authors included 28 clinical practice guidelines in the review. The results of the review yielded a wide range in guideline quality scores that did not demonstrate a statistically significant in improved scores over time despite the integration of measures to standardize the method for developing and classifying guideline recommendations (Isaac, et al., 2013). The authors concluded that the need for improvement in the development and reporting of pediatric guidelines remains. Areas of editorial independence and applicability need special attention. The integration of broad standards may lead to higher quality guidelines and ultimately improve pediatric care. Additionally, primary research aimed at improving important evidence gaps is needed because guidelines often rely upon expert opinion (Isaac, et al., 2013).

Latimer-Cheung et al. (2013) applied the principles of the AGREE II instrument to guide the development of evidence-based recommendations for constructing behavior change messages to facilitate the translation of health behavior change research into practice and address the research-to-practice gap. In developing a supplement to the Canadian Physical Activity Guidelines (CPAG), the authors worked to address the conundrum that guidelines do not provide specific information aimed at persuading patients to become more active. The authors contend that in order to motivate people to become more active, the guidelines must be supplemented with messages that convey *how* to achieve the recommended activity level and *why* it is relevant to them (Latimer-Cheung, et al., 2013). In order to optimize the uptake of guidelines, practitioners not only need to be informed about new guidelines but also given strategies for constructing motivational messages. The authors conducted a systematic review to inform the development of messages supplementing the CPAG; reviews included physical activity and

messaging literature, and specific messaging and behavior change techniques. Based on the literature, the authors concluded that messages should be informative, thought-provoking, clear, and persuasive while targeting constructs from behavior change theories. Tailored, gain-framed, and self-efficacy messages are promising strategies for constructing physical activity messages (Latimer-Cheung, et al., 2013). The lead authors consulted an AGREE II instrument developer to better understand how the AGREE II principles are applied to the objective of developing evidence-based messaging recommendations. The tool was modified to suit the objectives of developing messages that clarify key components of the CPAG and motivate Canadians to meet the CPAG by shifting the focus from patient populations of the guidelines' target audiences. The result of the systematic process guided by the AGREE II instrument was the development of evidence-based specific recommendations for constructing and disseminating messages supplementing the CPAG (Latimer-Cheung, et al., 2013). The authors assert that the AGREE II instrument has the potential to become the standard for developing evidence-based health behavior change recommendations and knowledge tools that facilitate the application of existing clinical practice guidelines. The authors conclude that the application of the AGREE II standards to other health behavior change initiatives has the potential to facilitate the process of translating research into practice (Latimer-Cheung, et al., 2013).

Conclusion

This chapter reviewed the conceptual and theoretical underpinnings to address behavior change in obese pediatric patients. The literature review supports the need for evidence-based interventions for the management of pediatric obesity that also improve adherence to sustain long-term positive outcomes. The interaction between provider and patient to encourage goal

setting and a collaborative approach to obesity management is needed to produce positive outcomes. The transtheoretical model of change provides the framework needed to assess the patient's readiness for change and the processes of change to effectively integrate motivational interviewing and appropriate lifestyle interventions.

CHAPTER THREE: METHODOLOGY

This practice inquiry was conducted in a multiple step methodology. First, the guideline *Prevention and Treatment of Pediatric Obesity: An Endocrine Society Clinical Practice Guideline Based on Expert Opinion* was evaluated using the AGREE II instrument found at www.agreetrust.org. Prior to applying the AGREE II instrument, the appraiser has carefully read the guideline document in full (Brouwers, et al., 2010). The AGREE II tool is composed of six domains for guideline quality: scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence (Brouwers, et al., 2010). Each of the six domains and the two global rating items will be rated on a scale from 1 (strongly disagree) to 7 (strongly agree). According to the AGREE II guidelines, a score of 1 should be given when there is no information that is relevant to the AGREE II item or if the concept is poorly reported; a score of 7 should be given if the quality of reporting is exceptional and where the full criteria and considerations that are articulated in the AGREE II User's Manual have been met (Brouwers, et al., 2010). Scores from 2 to 6 are assigned when the reporting of the AGREE II item does not meet the full criteria or considerations based on the completeness and quality of reporting, the score increases as more criteria are met and considerations are addressed (Brouwers, et al., 2010). Each domain score is calculated by summing the scores of the individual items and by scaling the total as a percentage of the maximum possible score for that domain. After completing the 23 items of the AGREE II instrument, the overall assessment requires the user to make a judgment as to the quality of the guideline by taking into account the criteria considered in the assessment process, then whether the user would recommend the use of the guideline (Brouwers, et al., 2010).

Next, based on the evaluation of the clinical practice guideline (CPG), the current recommendations are detailed and the effectiveness is described based on the findings of a review of the relevant literature. An electronic search strategy has been conducted using databases CINAHL (EBSCO), Medline: PubMed, PsycINFO, and Cochrane library. The search has focused on the use of motivational interviewing in the management of pediatric obesity, the usefulness of motivational interviewing when used in the context of the transtheoretical model for change, and the integration of motivational interviewing into the current practice guideline practices using the RE-AIM framework.

Finally, using the RE-AIM framework, recommendations have been made to determine the translation potential for the use of motivational interviewing to improve adherence to lifestyle recommendations, thus improving the current CPG.

To address the need for practical, affordable, and clinically useful weight loss maintenance intervention strategies, Akers, Estabrooks, & Davy (2010) determined the translation potential of weight loss maintenance intervention studies by ascertaining the extent that the studies reported information across the RE-AIM framework. The authors identified relevant research articles by conducting a literature search of Medline, PubMed, PSYCinfo, and Ebscohost databases. Of the 488 relevant articles identified in the initial search, 19 weight loss maintenance intervention studies met the inclusion criteria: published in English, randomized control trial of a long-term weight loss maintenance intervention with intervention period of greater than one year, adult study population, research conducted after February 1988, and incorporated efficacy/effectiveness research (Akers, et al., 2010). The translation potential for weight loss management studies was evaluated using the RE-AIM Coding Sheet for Publications

found at www.ada.journal.org. Two authors coded each study, compiled the results into a spreadsheet, and reported the results graphically. Cohen's κ was used to measure reviewer agreement. The reviewers found that about half of the articles addressed three RE-AIM dimensions, however only a quarter addressed adoption and maintenance. Additionally, gaps were identified in reporting factors of external validity, including costs, adoption, and representativeness. The authors concluded that, based on their findings, the extent of the effectiveness of weight loss maintenance interventions is not known in real-world situations; there is a need for future research that addresses adoption and maintenance (Akers, et al., 2010).

Gaglio, Shoup, & Glasgow (2013) conducted a systematic review of the RE-AIM framework. The purpose of the review was four-fold: to describe criteria for reporting dimensions of the RE-AIM framework; to review the published literature to describe the application, consistency of use, and reporting of RE-AIM dimensions; to identify lessons learned from RE-AIM application; and to recommend future applications (Gaglio, et al., 2013). The authors conducted a literature search using MEDLINE, PubMed, PYCHinfo, EBSCOhost, Web of Science, and Scopus databases. To be included, articles must be published in English, use any of the RE-AIM dimensions, and be published between 1999 and December 2010. One hundred seventy-eight articles were initially identified, 107 articles did not meet inclusion criteria; 71 articles were reviewed. The authors found that of the 71 articles reviewed, there were 14 different combinations for reporting the RE-AIM dimensions; none of the articles reviewed addressed all 34 criteria across the 5 RE-AIM dimensions. The authors contend that increased reporting using the RE-AIM framework will allow for results to be interpreted concerning their potential for generalization, in addition to their immediate impact (Gaglio, et al., 2013). In the

beginning stages, RE-AIM was used to evaluate health behavior research; today, it is being used in the planning stages, to assess progress, report results, and review the literature in diverse health areas (Gaglio, et al., 2013). The authors assert that the RE-AIM framework is a planning and evaluation model that can be used to help address today's complex and challenging healthcare issues by providing a structured manner to assist in answering questions to improve health outcomes (Gaglio, et al., 2013).

The literature suggests that screening, prevention, assessment, and treatment evidence-based recommendations are necessary for best practice management of pediatric obesity. After evaluating the Endocrine Society's Clinical Practice Guideline, I have addressed the need for providers to use communication techniques that will improve adherence to practice recommendations. This can be accomplished by in integrating the techniques of MI into the current practice guideline and improving translation of these techniques using the RE-AIM framework. By addressing "how" to make lifestyle modification recommendations, using motivational interviewing, pediatric providers may be able to make greater strides in combatting the pediatric obesity epidemic.

Conclusion

This chapter has reviewed the methods used to evaluate the Endocrine Society's CPG for the Prevention and Treatment of Pediatric Obesity using the AGREE II instrument. After evaluation of the CPG, a search of relevant literature was completed focused on the use of MI in the management of pediatric obesity, the usefulness of MI when used in the context of the transtheoretical model for change, and the integration of MI into the current practice guideline.

The RE-AIM framework illuminates the translation potential of the CPG and MI to improve adherence to lifestyle recommendations.

CHAPTER FOUR: RESULTS

AGREE II Evaluation

The Prevention and Treatment of Pediatric Obesity Clinical Practice Guideline was evaluated by this author (Appendix A). In accordance with the AGREE II user's manual, a quality score was calculated for each of the 6 domains. The domain scores are independent and the instrument developers do not recommend that the scores be aggregated into a single quality score (Brouwers, et al., 2010). The highest scores were recorded in clarity of presentation (100%), editorial independence (100%), and rigor of development (92%). The lowest scores were recorded in applicability (17%) and stakeholder involvement (44%). Scope and purpose received a score of 83%.

The applicability domain was the lowest quality section of the guideline assessment. This domain includes the evaluation of four items that pertain to likely barriers and facilitators to implementation, strategies to improve uptake, and resource implications of applying the guideline. The four evaluation items are: description of facilitators and barriers to its application, advice and/or tools on how the recommendations can be put into practice, consideration for the potential resource implications of the recommendation application, and presentation of monitoring/auditing criteria (Brouwers, et al., 2010). Based on the evaluator's assessment, the facilitators and barriers to the guideline application were poorly described. A summary of recommendations and a clinical algorithm was included in the guideline, however, an implementation strategy was not provided. Cost analysis was not performed. Monitoring and/or auditing criteria were not presented in the guideline.

The overall assessment of the guideline requires the reviewer to make a judgment as to the quality of the guideline by taking into account all of the appraisal items considered in the assessment process (Brouwers, et al., 2010). The overall assessment for quality of the Prevention and Treatment of Pediatric Obesity Guideline was 83%. After the overall assessment, a judgment is made by the evaluator whether to recommend the guideline for use, recommend the guideline for use with modifications, or not to recommend the guideline for use (Brouwers, et al., 2010). Based on the results of the assessment, this evaluator makes the recommendation to use the guideline with modifications. The quality of the rigor of development is strong; however, modifications need to be made to the guideline to improve applicability; the integration of motivational interviewing is proposed as the modification to address the gaps in applicability.

Integration of Motivational Interviewing into the CPG

Following the format of the Endocrine Society's CPG, this section renders the *recommendation* for integrating MI into practice. The recommendation is followed by a presentation of the *evidence* supporting the use of MI techniques for management of pediatric obesity. The *values and preferences* associated and considered in making this recommendation are explored. Finally, *conclusions* include some technical comments about the use of MI in pediatric primary care.

Recommendation

Based on the constructs of TTM, several processes and stages of change precede actual behavioral change. Initially, the patient and family may be unaware of a problem. Using motivational interviewing techniques, the provider is able to assess the patient's and family's

readiness to change (Table 1.). The provider can use nonjudgmental question and reflective listening skills to elucidate patient and family concerns. With a bolstered rapport, the provider is able to evoke motivation rather than imposing it. Finally, the provider can help the patient and family formulate a plan that is compatible with the values of the patient and family (Barlow, 2007).

TABLE 1. *Steps in MI Counseling* (Schwartz, 2010)

Step	Intervention
1.	Establish rapport and reinforce positive behavior.
2.	Raise concern about unhealthy behavior.
3.	Shared agenda setting.
4.	Pros and cons of change.
5.	Use elicit-provide-elicit when providing information.
6.	Assess importance and confidence in changing behavior using 0-10 scale.
7.	Summarize the discussion.
8.	Closure and the next step.

Evidence

Motivational interviewing is a patient-centered, empathetic, interaction that enables providers to explore and reduce inherent ambivalence and resistance to change and encourages self-motivation. MI, when embedded with the TTM, increases the probability of successful healthy behavior change (Simons, Flynn, & Flocke, 2007). To answer the conundrum, why people do not do what is good for them, Zuckoff (2012) posits two reasons: a patient's motivation to do what is good for his/her health cannot be assumed and *how* providers talk to patients about integrating healthy behaviors influences adherence to recommendations.

When MI techniques are used consistently in combination with diet and exercise counseling, pediatric patients have lowered BMI and waist measurements (Tripp, et al., 2011).

The implementation of MI techniques with family centered education related to health lifestyle choices impact the motivated patients' ability to make sustainable change. Patients and families who express a willingness to change and are given an option to develop their own treatment plan are more successful at maintaining the planned change (Tripp, et al., 2011).

To assess the effects of MI on obesity management of children in Hong Kong, Wong and Cheng (2013) conducted a pre-post quasi-experimental study in four primary schools over an eleven month period. Obese fifth and sixth graders (*n = 185*) were divided into three groups. The control group (*n = 49*) did not receive any intervention. The intervention lasted 14 weeks and consisted of six 30-minute sessions. The first session was to evaluate diet and exercise habits and facilitators and barriers to the child's weight loss. The MI intervention group (*n = 70*) attended five MI sessions; three sessions every two weeks, then two sessions every four weeks. The MI+ intervention group (*n = 66*) received the same intervention as the MI intervention group, additionally, the parents of the children received telephone consultations on weight loss a week prior to each MI intervention session. Anthropometric measures were taken pre- and post-intervention. Comparison of the control group and the intervention groups yielded significant differences in the improvements in body weight, BMI, waist circumference, and hip circumference. However, there were no significantly different findings in anthropometric measures between the intervention groups. The authors contend that this study demonstrated the utility of the MI approach in improving obese children's weight loss (Wong & Cheng, 2013).

Values and Preferences

Pediatric primary care offices provide an access point to obese pediatric patients and their families for providers to initiate prevention and treatment interventions. Schwartz et al. (2007)

conducted a feasibility study to determine whether pediatricians and dietitians can implement an office-based obesity prevention program with a motivational interviewing intervention. Pediatricians and registered dieticians in the intervention group attended a 2-day MI training session. The authors concluded that providers can be taught to use the tools and techniques of MI. Additionally, the MI approach was well received by parents. However, the providers in the intervention group indicated that they needed more role playing experience to practice skills of MI, such as using open-ended questions, reflective listening, building motivation, and eliciting change talk (Schwartz, et al., 2007).

Counseling by pediatric primary care providers is an important component of ameliorating childhood obesity. The efficacy and reach of clinical interventions have been limited due to formidable barriers associated with counseling overweight pediatric patients. Providers often feel very frustrated when treating pediatric obesity; low practitioner confidence and perceived treatment futility often stems from frustration with low patient motivation and poor behavioral adherence (Resnicow, Davis, & Rollnick, 2006). There are unique challenges to consider when integrating motivational interviewing techniques with pediatric obesity counseling. The intervention can occur directly with the parent, directly with the patient, or both, depending on the age of the child or adolescent. When using motivational interviewing with children, it may be necessary to utilize more questions rather than reflections to elicit responses. Next, since obesity is not a behavior, it is important for the provider to work with parents and patients to identify specific behaviors that contribute to the patient's weight status and use agenda setting strategies to ascertain the behaviors that are most amenable to intervention (Resnicow, et al., 2006).

Conclusions

As the Endocrine Society Task Force detailed in their practice guideline, successful preventive measures and lifestyle interventions aimed at pediatric obesity are labor intensive (August et al., 2008). Lifestyle intervention counseling requires direct contact with patients and their families that should occur at least once a month for the first 3 months. Unfortunately, this time spent with patients is poorly reimbursed and, thus some providers may feel a disincentive in providing these services (August, et al., 2008). It is equally important to consider the costs of obesity as it relates to medical and economic sequelae (Resnicow, et al., 2006).

There are obvious costs and challenges associated with MI. Beyond the time and money expended for providers to attend MI training sessions, the process is not complete; MI techniques take practice for the refinement of skills and evaluation and modification to ensure the communication techniques the provider is using are well received by patients and their families and individualized to the patient and family needs. To improve MI techniques, Schwartz (2010) recommends providers practice using open-ended questions and reflective listening at home and when interacting with patients in addition to attending MI workshops. Once these techniques are refined, MI is useful in the management of health behaviors well beyond obesity concerns. Zuckoff (2012) contends that non-adherence is normal for patients with chronic conditions. Therefore, MI techniques may be useful to providers in improving adherence to recommendations for managing other health conditions.

Translating Evidence into Practice

Many interventions that are proven to be effective in prevention and disease management are not widely adopted into practice or translated into meaningful outcomes. The RE-AIM

framework was developed to address the need for improved reporting of issues related to implementation of health promotion and health care research literature (Gaglio, et al., 2013).

McKee et al. (2010) used the RE-AIM framework to evaluate the feasibility of a primary care lifestyle change intervention aimed at reducing pediatric obesity. Six practices in the Bronx, New York, participated in the study. Three practices were assigned to the intervention group and three practices were assigned to the control group. The Family Lifestyle Assessment of Initial Risk (FLAIR) intervention was provided to the parents of children between the ages of two and five years at physical examinations. To evaluate the *reach* of the intervention, the researchers compared the families that participated to the families that did not participate at each stage of the intervention; demographic information was collected. The proportion of providers who participated in training and goal setting was also determined. *Effectiveness* was assessed using telephone survey 6-9 month post intervention. *Implementation and Adoption* was determined by reviews of the medical records to determine the proportion of participation and barriers to implementation were evaluated using semi-structured interviews. The researchers found that it is feasible to integrate family-centered goal setting to address obesity-related risk behaviors into primary care visits (McKee, et al., 2010).

The RE-AIM framework provides valuable information that may facilitate the translation of obesity prevention and treatment research presented in CPG to practice (Dzewaltowski, Estabrooks, & Glasgow, 2004). The questions to be asked when using the RE-AIM framework to translate the CPG into practice are detailed in Table 2. By answering these questions and following the RE-AIM checklist (Appendix B) to address key issues in planning an intervention and improving the uptake, impact, and sustainability of the intervention.

TABLE 2. *RE-AIM Guidelines for Translating the CPG into Practice*

RE-AIM Element	Definition	Questions to Ask
Reach (R)	Percent and representativeness of participants	Can the CPG with MI reach those most in need? Can the intervention reach the target patient population?
Efficacy/Effectiveness (E)	Impact of the intervention on key outcomes, quality of life, unanticipated outcomes and subgroups	Can the CPG with MI produce robust effects? Does the CPG with MI produce minimal negative side effects and increase quality of life or broader outcomes? Does the intervention result in behavior change?
Adoption (A)	Percent/representativeness of intervention staff willing to initiate and adopt an intervention	Is the CPG with MI feasible for the majority of real-world settings (costs, expertise, time, resources, etc.)? To what extent do providers participate in the intervention?
Implementation (I)	Consistency and cost of delivering the intervention	Can the CPG with MI be consistently implemented? Are the costs – personnel, up-front, marginal, scale-up, and equipment costs – reasonable to match effectiveness? To what extent is the intervention delivered as planned?
Maintenance (M)	Long-term effects at individual and setting levels	Does the CPG with MI include principles to enhance long-term improvements (follow-up contact, ongoing feedback)? Can the setting sustain the CPG with MI over time without added resources and leadership?

Conclusion

The evaluation of the Endocrine Society's CPG illuminates many strengths including quality of the rigor of development. The weakness in the section of applicability has been addressed in this chapter by the integration of MI techniques to the current CPG recommendations. Additionally, the use of the RE-AIM framework shows promise to enhance the translation potential of the CPG to improve patient outcomes.

CHAPTER 5: DISCUSSION

The Endocrine Society's CPG for Prevention and Treatment of Pediatric Obesity presents the research and recommendations for best practice to care for obese children and adolescents. However, the AGREE II evaluation revealed gaps in applicability. The CPG does not address ways to work through ambivalence to improve compliance with recommendations, nor does it provide an implementation strategy. When considering the magnitude of the pediatric obesity epidemic, the necessity of incorporating interventions to assess, prevent, and treat pediatric obesity in primary care practice is evident. It is apparent that current practices to address this problem lack the efficacy necessary to successfully combat pediatric obesity and associated sequelae. MI can help to improve health outcomes in obese pediatric patients by improving adherence to lifestyle changes by providing a more patient-centered approach where the practitioner-patient relationship is a partnership (Britt, Hudson, & Blampied, 2004). By integrating MI techniques, providers can empower patients and families and bolster behavior change success.

The provider needs to be cognizant of the necessity of ongoing evaluation and modification of provider-patient interactions to ensure that the communication techniques the provider is using are well received by patients and their families and individualized to the patient and family needs. The Motivational Interviewing Skill Code (MISC), found at http://casaa.unm.edu/download/misc.pdf, is a system to address the need to assess treatment integrity in the delivery of MI and as a learning tool for MI training (Martins & McNeil, 2009). The MISC is used to assess the quality of MI utilized by identifying active components of MI and improve reliability, efficiency, and relevance for training and clinical practice. The coding

includes clinical global rating on the dimensions of acceptance, empathy, and MI spirit and a client global rating based on self-exploration on a 7-point Likert scale. Clinician behavior is coded using 15 major behavior categories, such as advice, affirm, confront, and direct. Client behavior is coded using 8 content codes, such as reasons, taking steps, and commitment. To validate treatment integrity, the MISC may be the most appropriate tool to verify the effectiveness and clinical utility of MI (Martins & McNeil, 2009).

In practice settings, effective dissemination of evidence-based interventions mandate time-efficient approaches, ongoing training, and highly valued evidence-based practice. Additionally, the intervention should address patient needs, be realistic and economically-feasible, and have the capacity to be translated (Brownson & Jones, 2009). RE-AIM can be used to improve uptake of the evidence presented in the CPG by detailing specific dimensions to evaluate the implementation and translation of recommendations into practice.

Significance of Results to Nursing Practice

The Doctor of Nursing Practice (DNP) degree prepares advanced practice nurses to integrate the roles of leadership, research, clinical practice, policy and advocacy, and education as well as partnering with nurses with research-based doctorates to develop and implement evidence-based practices that are substantiated in practice (Chism, 2009). The DNP-PNP must employ skills that facilitate the translation research into practice for the diagnosis, treatment, and prevention of pediatric obesity. Although pediatric obesity interventions and programs abound, few are successful, as evidenced by the continued increase in pediatric obesity rates.

Educating patients and families to habituate healthy diet and exercise during childhood is vital to health promotion and disease prevention that lasts through adulthood (Kelishadi, et al.,

2008). DNP-PNPs are well equipped to address the obstacles associated with the pediatric obesity epidemic, to elicit change, and improve health outcomes in youth that can be sustained through the lifespan. The integration of the use of MI into practice within the framework of the TTM is one such way to reduce ambivalence associated with lifestyle changes to successfully combat pediatric obesity. The RE-AIM framework is a tool that DNP-PNPs can use to improve the translation potential of the obesity CPG with MI interventions into primary care practice.

Strengths and Limitations

Strengths of this practice inquiry include the thorough review of relevant literature. Current evidence has been presented about the state of pediatric obesity and the utility of motivational interviewing in changing behaviors in health care settings. The RE-AIM framework provides a method to improve the translation potential of clinical practice guidelines.

Limitations of this practice inquiry are the CPG was reviewed using the AGREE II instrument by only one appraiser; the AGREE II developers recommend that a guideline be assessed by at least two, preferably four, appraisers to increase the reliability of the assessment (Brouwers, et al., 2010). Additionally, the recommendations, while based on current literature, are made by the solitary author and have not been sent for external review nor are the recommendations based on the consensus of an expert panel. Finally, MI does require time and specialized training as well as practice to develop the skill needed to be therapeutic however, it is shown to reduce ambivalence (Zuckoff, 2012).

Opportunities for Future Change and Improvement

To refine MI techniques, evaluation and modification is needed to ensure the communication techniques the provider is using are well received by patients and their families

and individualized to the patient and family needs. Future research should address the use of MISC to evaluate MI skills associated with the lifestyle recommendations made using the CPG. Future research can also focus on the development of MI interventions that are practical in brief health visits, are teachable, and have concrete, measurable outcomes.

Conclusion

The review of the Endocrine Society's CPG for Prevention and Treatment of Pediatric Obesity using the AGREE II instrument yielded an overall assessment that the guideline is recommended for use with modifications. The modifications addressed in this PI include the integration of MI and the use of the RE-AIM framework to improve applicability and translation into practice. Future research should include the evaluation of MI intervention skills in primary care practice.

APPENDIX A: AGREE II APPRIASAL

AGREE II

A critical appraisal of: Prevention and Treatment of Pediatric Obesity: An Endocrine Society Clinical Practice Guideline Based on Expert Opinion using the AGREE II Instrument

Created with the AGREE II Online Guideline Appraisal Tool.

No endorsement of the content of this document by the AGREE Research Trust should be implied.

Appraiser: Kathleen Kochanowicz

Date: 3 March 2014

Email: kkochanowicz82@gmail.com

URL of this appraisal: http://www.agreetrust.org/appraisal/7449

Guideline URL:
http://www.guideline.gov/content.aspx?id=13572&search=pediatric+obesity

Overall Assessment

Title: Prevention and Treatment of Pediatric Obesity: An Endocrine Society Clinical Practice Guideline Based on Expert Opinion

Overall quality of this guideline: 6/7

Guideline recommended for use? Yes with modifications.

Notes:

An Implementation strategy is not provided. The guideline states, "Although physicians generally strive to cure the great majority of their patients and may view a long-term success rate of 25% with despair, we should not retreat into a state of therapeutic nihilism. We are at a stage where we must treat overweight and obese patients, accept that perhaps only 25% may respond, but refine out techniques so that lifestyle modification will be effective in an increasing percentage of patients."

Domain	Total
1. Scope and Purpose	18
2. Stakeholder Involvement	11
3. Rigour of Development	52
4. Clarity of Presentation	21
5. Applicability	8
6. Editorial Independence	14

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1. Scope and Purpose

1. The overall objective(s) of the guideline is (are) specifically described.

Rating: 7

"The purpose of these guidelines is to summarize information concerning: the seriousness of pediatric obesity and overweight; the diagnostic criteria; the available treatment and when to apply them; the available measures to prevent overweight and obesity." CRITERIA: health intent(s) (i.e., prevention, screening, diagnosis, treatment, etc.) Included: diagnosis, treatment, and prevention expected benefit or outcome Included: "The objective of interventions in overweight and obese patients is the prevention or amelioration of obesity-related comorbidities, e.g. glucose intolerance and twype 2 diabetes mellitus, metabolic syndrome, dyslipidemia, and hypertension." target(s) (e.g., patient population, society) Included: Pediatric population CONSIDERATIONS: Is the item well written? yes Are the descriptions clear and concise? yes Is the item content easy to find in the guideline? yes

2. The health question(s) covered by the guideline is (are) specifically described.

Rating: 5

CRITERIA: target population: overweight/obese children and adolescents intervention(s) or exposure(s): treatment recommendations: dietary, physical activity, physchosocial, pharmacotherapy, bariatric surgery; prevention recommendations: breast-feeding, education/anticipatory guidance for children/familiy, educate the community comparisons (if appropriate): not stated outcome(s): not stated health care setting or context: not stated CONSIDERATIONS: Is the item well written? yes Are the descriptions clear and concise? yes Is the item content easy to find in the guideline? yes Is there enough information provided in the question(s) for anyone to initiate the development of a guideline on this topic or to understand the patients/populations and contexts profiled in the guideline? yes

3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.

Rating: 6

CRITERIA: target population, gender and age: overweight and obese children and adolescents clinical condition (if relevant): overweight/obesity severity/stage of disease (if relevant): prevention, overweight, obese, severe obesity, significant comorbidities comorbidities (if relevant): not expressly stated excluded populations (if relevant): not stated CONSIDERATIONS: Is the item well written? Are the descriptions clear and concise? no Is the item content easy to find in the guideline? no, guideline.gov Is the population information specific enough so that the correct and eligible individuals would receive the action recommended in the guideline? yes

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2. Stakeholder Involvement

4. The guideline development group includes individuals from all relevant professional groups.

Rating: 3

CRITERIA: For each member of the guideline development group, the following information is included: name: yes discipline/content expertise (e.g., neurosurgeon, methodologist): yes - MD, MPH, etc. institution (e.g., St. Peter’s hospital): yes geographical location (e.g., Seattle, WA): yes a description of the member’s role in the guideline development group: no CONSIDERATIONS: Is the item well written? Are the descriptions clear and concise? no Is the item content easy to find in the guideline? yes Are the members an appropriate match for the topic and scope? Potential candidates include relevant clinicians, content experts, researchers, policy makers, clinical administrators, and funders. not stated Is there at least one methodology expert included in the development group (e.g., systematic review expert, epidemiologist, statistician, library scientist, etc.)? not stated

5. The views and preferences of the target population (patients, public, etc.) have been sought.

Rating: 1

CRITERIA: statement of type of strategy used to capture patients'/public's' views and preferences (e.g., participation in the guideline development group, literature review of values and preferences): not stated; guideline was developed by the Task Force (Panel of Experts) methods by which preferences and views were sought (e.g., evidence from literature, surveys, focus groups): not stated outcomes/information gathered on patient/public information: not stated description of how the information gathered was used to inform the guideline development process and/or formation of the recommendations: recommendations are made with details taken to describe the supporting evidence, values and preferences, and additional remarks from the task force CONSIDERATIONS: Is the item well written? Are the descriptions clear and concise? n/a Is the item content easy to find in the guideline? n/a

6. The target users of the guideline are clearly defined.

Rating: 7

CRITERIA: clear description of intended guideline audience (e.g. specialists, family physicians, patients, clinical or institutional leaders/administrators): stated clearly at guideline.gov. guideline repeatedly uses terminology, "clinicians" and "clinicians caring for children" the Disclaimer states that the guideline was developed to assist endocrinologists. description of how the guideline may be used by its target audience (e.g., to inform clinical decisions, to inform policy, to inform standards of care): specific recommendations are well outlined. CONSIDERATIONS: Is the item well written? Are the descriptions clear and concise? no, stated on guideline.gov Is the item content easy to find in the guideline? no Are the target users appropriate for the scope of the guideline?

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3. Rigour of Development

7. Systematic methods were used to search for evidence.

Rating: 7

CRITERIA: named electronic database(s) or evidence source(s) where the search was performed (e.g., MEDLINE, EMBASE, PsychINFO, CINAHL): guideline.gov: hand searches, and electoronic databases: medline, eric, embase, cinhal, psychinfo, dissertation abstracts, science citation index, cochrane time periods searched (e.g., January 1, 2004 to March 31, 2008): from database inception until february 2006 search terms used (e.g., text words, indexing terms, subheadings): not stated full search strategy included (e.g., possibly located in appendix): yes Guideline states "The Task Force used systematic review of available evidence to inform its key recommendations." CONSIDERATIONS: Is the item well written? Are the descriptions clear and concise? Is the item content easy to find in the guideline? Is the search relevant and appropriate to answer the health question? (e.g., all relevant databases and, appropriate search terms used) Is there enough information provided for anyone to replicate the search? yes

8. The criteria for selecting the evidence are clearly described.

Rating: 6

CRITERIA: description of the inclusion criteria, including target population (patient, public, etc.) characteristics study design comparisons (if relevant) outcomes language (if relevant) context (if relevant) "The task force used systematic review of available evidence to inform its key recommendations, and consistent language and graphical descriptions of both the strength of recommendations and the quality of evidence." description of the exclusion criteria (if relevant; e.g., French only listed in the inclusion criteria statement could logically preclude non-French listed in the exclusion criteria statement) CONSIDERATIONS: Is the item well written? Are the descriptions clear and concise? Is the item content easy to find in the guideline? Is there a rationale given for the chosen inclusion/exclusion criteria? Do inclusion/exclusion criteria align with the health question(s)? Are there reasons to believe that relevant literature may not have been considered?

9. The strengths and limitations of the body of evidence are clearly described.

Rating: 7

Grading of Recommendations Assessment, Development, and Evaluation (GRADE) method. Strength or recommendations: strong vs weak Recommendations are followed by descriptions of the evidence, values, and remarks For issues in which the evidence is low or very low quality, the strength of the recommendation is dependent on the trade-off between the benefits and risks and burdens and the quality of the evidence regarding treatment effect.

10. The methods for formulating the recommendations are clearly described.

Rating: 6

Found at guideline.gov: Methods used to formulate recommendations: expert consensus Participants: task force chair, eight experts, one methodologist, and a medical writer Process: consensus was guided by systematic reviews of evidence and discussions during a group meeting, several conference calls, and email communications

11. The health benefits, side effects, and risks have been considered in formulating the recommendations.

Rating: 7

CRITERIA: supporting data and report of benefits: appropriate prevention and treatment of pediatric obesity supporting data and report of harms/side effects/risks: side effects of medications proposed for treatment; morbidity and mortality associated with bariatric procedures reporting of the balance/trade-off between benefits and harms/side effects/risks: yes recommendations reflect considerations of both benefits and harms/side effects/risks: yes

12. There is an explicit link between the recommendations and the supporting evidence.

Rating: 7

CRITERIA: the guideline describes how the guideline development group linked and used the evidence to inform recommendations: yes each recommendation is linked to a key evidence description/paragraph and/or reference list recommendations linked to evidence summaries, evidence tables in the results section of the guideline: yes Strength of recommendation and Quality of the evidence are both described with supporting evidence for each recommendation.

13. The guideline has been externally reviewed by experts prior to its publication.

Rating: 7

External peer review. Internal peer review. Method for validation: The drafts prepared by the task force with the help of a medical writer were reviewed successively by the Endocrine Society's Clinical Guidelines Subcommittee, Clinical Affairs Core Committee, the Lawson Wilkins Pediatric Endocrine Society's Obesity task force, and executive committee. The approved version was then placed on the Endocrine Society's Web site for comments by members. At each stage of review the task force received written comments and incorporated needed changes.

14. A procedure for updating the guideline is provided.

Rating: 5

CRITERIA: a statement that the guideline will be updated: yes explicit time interval or explicit criteria to guide decisions about when an update will occur: valid for 3 years methodology for the updating procedure is reported: not stated

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4. Clarity of Presentation

15. The recommendations are specific and unambiguous.

Rating: 7

CRITERIA: statement of the recommended action identification of the intent or purpose of the recommended action (e.g., to improve quality of life, to decrease side effects) identification of the relevant population (e.g., patients, public) caveats or qualifying statements, if relevant (e.g., patients or conditions for whom the recommendations would not apply)

16. The different options for management of the condition or health issue are clearly presented.

Rating: 7

CRITERIA: description of options description of population or clinical situation most appropriate to each option

17. Key recommendations are easily identifiable.

Rating: 7

CRITERIA: description of recommendations in a summarized box, typed in bold, underlined, or presented as flow charts or algorithms: summary section and flowchart specific recommendations are grouped together in one section: yes

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5. Applicability

18. The guideline describes facilitators and barriers to its application.

Rating: 4

Barriers: low (25%) success rate labor intensive requires direction contact with patients that is poorly reimbursed

19. The guideline provides advice and/or tools on how the recommendations can be put into practice.

Rating: 2

Summary of recommendations. Clinical algorithm. An implementation strategy was not provided

20. The potential resource implications of applying the recommendations have been considered.

Rating: 1

Cost analysis was not performed.

21. The guideline presents monitoring and/or auditing criteria.

Rating: 1

Not stated.

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6. Editorial Independence

22. The views of the funding body have not influenced the content of the guideline.

Rating: 7

Source of funding: The Endocrine Society Financial Disclosure of task force: none declared

23. Competing interests of guideline development group members have been recorded and addressed.

Rating: 7

Financial Disclosures/Conflicts of Interest: none declared

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APPENDIX B: RE-AIM PLANNING TOOL

RE-AIM PLANNING TOOL

The RE-AIM Planning Tool is intended as a series of "thought questions," which serve as a checklist, for key issues that should be considered when planning an intervention. The best way to use this section would be to think about the issues raised, their pertinence to your intervention(s) and to help you make any relevant changes before launching the intervention. The questions listed are generalized and meant as self-checks, so don't worry about not answering the ones that are not relevant to your unique program and situation.

PLANNING CHECKLIST

Questions to Improve REACH
1. Do you hope to reach all members of your target population? If yes, provide a number or estimate for your target population. If no (due to large size of the target population or budget constraints), provide the proportion of the target population that you want to reach ideally given constraints. _____
2. What is the breakdown of the demographics of your target population in terms of race/ethnicity, gender, age, and socioeconomic status?
3. How confident are you that your program will successfully attract all members of your target population regardless of age, race/ethnicity, gender, socioeconomic status and other important characteristics, such as health literacy? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)
4. What are the barriers you foresee that will limit your ability to successfully reach your intended target population?
5. How do you hope to overcome these barriers?
6. Rate how confident you are that you can overcome these barriers? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)

Questions to Improve EFFECTIVENESS
1. Would you categorize your intervention as evidence-based or a new innovation?
2. Why did you choose this intervention and its components?
3. What are the strengths of your intervention?
4. Have you come to agreement with key stakeholders about how you will define and measure "success"?
5. List the measurable objectives that you wish to achieve in order to accomplish your goal.
6. What are the potential unintended consequences that may result from this program?
7. Are you confident that your intervention will achieve effectiveness across different subgroups, including those most at risk and having the fewest resources? If no, what can be done to increase the changes of success for these groups?
8. Rate your confidence that this intervention will lead to your planned outcome? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)

Questions to Improve ADOPTION
1. What percent of other organizations such as yours will be willing and able to offer this program after you are done testing?
2. How confident are you that your program will be adopted by those settings and staff who provide services for people in your target population who have the greatest need? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)
3. What do you think will be the greatest barriers to other sites or organizations adopting this program? Do you have a system in place for overcoming these barriers?
4. What percent of your organization (e.g., departments, relevant staff, etc.) will be involved in supporting or delivering this program?
Questions to Improve IMPLEMENTATION
1. How confident are you that the program can be consistently delivered as intended? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)
2. How confident are you that the program can be delivered by staff representing a variety of positions, levels and expertise/experience of the organization? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)
3. Is your program flexible (while maintaining fidelity to the original design) to changes or corrections that may be required midcourse?

4. Do you have a system in place to document and track the progress of the program and effect of changes made during the course of the program?
5. What is the greatest threat to consistent implementation and how will you deal with it?
Questions to Improve MAINTENANCE (individual)
1. What evidence is available to suggest the intervention effects will be maintained six or more months after it is completed?
2. How confident are you that the program will produce lasting benefits for the participants? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)
3. What do you plan to do to support initial success and prevent or deal with relapse of participants?
4. What resources are available to provide long-term support to program participants?
Questions to Improve MAINTENANCE (community)
1. How confident are you that your program will be sustained in your setting a year after the grant is over and or a year after it has been implemented? 1 2 3 4 5 6 7 8 9 10 (where 1 = not at all confident, 5 = somewhat confident, and 10 = completely confident)

2. What do you see as the greatest challenges to the organizations continuing their support of the program?
3. What are your plans for intervention sustainability? Will additional funding be needed?
4. Do you have key stakeholder commitment to continue the program if it is successful?
5. How will the intervention be integrated into the regular practice of the delivery organization?

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