Healthiest Weight:
A Life Course Approach

FLORIDA DEPARTMENT OF HEALTH

FMA
FLORIDA MEDICAL ASSOCIATION

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Colleagues,

As health care professionals, we understand the value of promoting healthy habits and active lifestyles for our patients and communities. The importance of influencing behaviors by reshaping environments for healthy choices has never been greater, as exemplified by our state's top public health threat, weight.

Currently, 36 percent of Floridians are at a healthy weight, one quarter are obese and the rest are overweight. On this trend, 60 percent of adult Floridians will be obese by 2030, and six out of every ten children will be overweight or obese by the time they graduate from high school. Weight challenge shortens lives, risks the livelihoods of Florida's families, and threatens our state's economic vitality. Just four chronic diseases related to excess weight will cost an estimated $34 billion in Florida over the next 16 years—that's half a state budget.

Florida's health care professionals must engage their patients and communities to help reverse this unsustainable trend. Your Florida Department of Health has launched Healthiest Weight Florida, a public-private collaboration bringing together state agencies, local governments, businesses, schools, not-for-profit organizations, faith-based groups, and communities to help Florida's children, adults, and families make more informed choices about healthy eating and active living. Our twin goals, by 2017, are to bend the weight curve in Florida by 5 percent and to become the Healthiest Weight State in the nation. As part of this initiative, we have collaborated with the Florida Medical Association to share this monograph with you.

You are a leader for health in your practice and community. I urge you to review this resource and put into practice the evidence that works to help people achieve their healthiest weights. Small steps for health add up to more birthdays, more anniversaries, and more graduation celebrations for your patients.

John H. Armstrong, MD, FACS
Surgeon General and Secretary of Health
State of Florida

Fellow Physicians,

As Chair of the Florida Medical Association's Council on Healthy Floridians, I am proud to join with Dr. Armstrong and the Florida Department of Health to present this CME monograph on achieving healthiest weight.

Two years ago, when the FMA transitioned its Council on Public Health to the Council on Healthy Floridians, it signaled our renewed dedication to supporting public health proactively with a consistent emphasis on preventive care. We continue to work hard to develop and disseminate tools and resources that you can use to promote healthy lifestyles to your patients.

Healthy weight is predicated on a healthy lifestyle. This includes dietary and activity choices. Water instead of juice or soda, fruit instead of chips, vegetables instead of cookies, taking the stairs instead of the elevator, and parking a little further from the entrance – these are recommendations we share with our patients to support their ongoing effort to modify their habits of daily living and start living healthy.

We look forward to leading by example and fostering a bright and healthy future for all of Florida's citizens.

Joshua Lenchus, DO, RPh, FACP, SFHM

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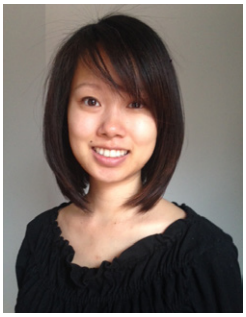

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The Physician's Role in Weight Management Counseling from Infancy to Adulthood: Challenges and Tools

Madeline Matar Joseph, MD, Terrie W. Andrews, PhD

Obesity, with its accompanying comorbidities, is one of the challenging diseases threatening the life expectancy of our population this century. Currently, more than one-third of children and adolescents are overweight or obese and more than one-third of adults are obese. A recent article released by The Lancet indicated that nearly one-third of the global population is overweight or obese.[1] In fact, obesity has more than doubled in children and quadrupled in adolescents in the past 30 years.[2, 3] Despite the serious immediate and long-term cardiovascular, metabolic, and other health consequences of severe obesity, current treatments are limited in effectiveness and lack widespread availability.[4] Therefore, the physician's role in weight management counseling is critical and needs to start as early as the postnatal stage, continuing through infancy into childhood, adolescence, and lastly, adulthood. However, the specific approach used to discuss obesity can potentially dissuade a patient from seeking further treatment, and cause the patient to internalize and externalize the underlying causes of this disease. The physician is probably the best point of initial contact with overweight and obese patients and families, but the conversation that takes place can help or hinder the process.

Introducing the terms "overweight" and "obese" with patients can have serious connotations and undertones if not done in an empathic and problem-solving manner. Utilizing varying techniques depending on age and cognitive ability can have long-lasting effects, either positive or negative, on the patient to produce change. In the past, practitioners have employed various techniques to introduce the subject of obesity and excess weight, which have produced marginal success, dismal confidence in their own ability to produce change, and high frustration levels.[5-8] The most common

techniques used include advice and informative speaking (i.e., providing facts about obesity outcomes, complications, and secondary symptoms), which discourage success rates.[9] These approaches do not place the patient at the center of change nor do they encourage the patient to make plans and set goals based on their own motivations and specific circumstances. Yet, in working with infants and children, connecting with, employing, and empowering parents in this process is most effective in reducing weight in infants and children.[10] However, doing such might produce denial, anger, and confusion about their current parenting techniques and possibly dissuade parents from participating in change.

Are Physicians and Patients on the Same Page When it Comes to Counseling on Overweight and Obesity Issues?

In an analysis from the 1996 Behavioral Risk Factor Surveillance System, it was found that when patients were advised to lose weight by a physician, 78% of overweight patients reported attempting to lose weight. However, if their physician did not discuss weight loss with them, only 33% of patients within the same body mass index (BMI) category attempted to do so.[11] Despite this compelling data, only 9.8% of all patients reported receiving any advice from a physician to lose weight.[12] Some studies found that physicians hold negative views regarding their ability to manage weight in primary care as well as stereotypical views toward obese patients in general.[13, 14] In a study by Ruelaz et al[15], the responses of overweight and obese patients were compared to the responses of the primary care physicians related to barriers to weight management. Significant differences in the extent to which physicians and patients endorse questions about barriers to weight management were found. In addition, patients and physicians shared some important, but incorrect, beliefs about weight management including more than 40% of patients and physicians believing that some people cannot lose weight no matter how little they eat. This is contrary to the research demonstrating that patients sometimes underestimate how much they eat.[16, 17] In fact, patients typically underestimate their calorie intake by 40 to 50% when consuming a diet of conventional foods.[18]

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Of note, nearly half of the obese and overweight patients believed they could lose weight "when I need to," which may highlight the need for physicians to motivate these patients. On the other hand, physicians were more likely to perceive that factors outside of their control, such as lack of patient self-control, the availability of fattening food in our society, and the lack of time for exercise, were responsible for the weight problems of their patients. They expressed interest in helping patients manage weight, but identified lack of time during routine primary care appointments as a barrier to weight management counseling.

Previous studies also demonstrate that there is an inadequate amount of weight management occurring within the primary care clinic.[12, 19] Perhaps a possible reason for this is physicians perceive futility based on how they view their patients' ability to lose weight as well as environmental factors beyond their control.[15] It is also crucial for physicians to be aware that their patients are less likely to turn to their physicians for help and; therefore, discussions of weight must be initiated by the physician. To address the issue of physician perception of inadequate time, brief weight management interventions have been devised to fit within the 10 to 15-minute time frame allotted for most primary care appointments.[20]

Common Patient Barriers to Weight Management

Common barriers to weight management can be examined using a systematic, multi-factorial approach. Barriers often seen in patient weight management stem from internal and external locus of control. For example, physicians cite low parental involvement, lack of patient motivation, and lack of support services as the common barriers.[6] However, in a qualitative study,[20] adolescents report that it is difficult to sacrifice over a long period of time, see delayed parent recognition, believe that practitioners do not listen, and are presented with unrealistic dietary guidelines.[21] Interestingly, this study highlighted the psychosocial component and these adolescents reported humiliation of social torment and exclusion from their peers as the main reasons to attempt weight loss. Yet, in another study, adolescents cited exercise barriers such as time constraints, unsuitable weather, school or schoolwork, and lack of desire to exercise.[22]

Psychological Barriers

Physicians primarily focus on the physical aspects of weight loss, but integrating the psychological and emotional factors are just as important, if not more, when managing overweight and obese patients. Many factors and variables shift, evolve, and change on a daily to weekly basis with patients. Increasing motivational communication and having frequent

visits with patients and parents will most likely produce both short and long-term positive results. Emotional barriers include, but are not limited to, depressive and anxious symptoms.[23] Hopelessness, sadness, and feelings that things will not improve are common reasons that overweight and obese patients and their parents cite.[24] Anxiety in this population can take many forms including generalized anxiety (e.g., excessive worry), social anxiety, and agoraphobia. There is a one in four chance that overweight and obese individuals will develop a mood disorder. A referral to a talk therapist is advantageous and the physician is encouraged to maintain an open dialogue with the talk therapist about the patient's and parents' emotional factors that are impacting their motivation for weight loss.

Socio-Environmental Barriers

Common socio-environmental barriers that patients and parents face include social, cultural, and environmental factors. They are inundated with external influences that consistently and frequently influence their day-to-day decision-making. Of importance is their social support network, which can have long-lasting effects in their weight loss journey. Family members significantly influence the patient's and parents' ability to make change and can help or hinder their success. Overweight and obese patients and parents often compare themselves to their family members and can minimize their own weight in comparison to their family members' weights. It is believed that this population may not see anything concerning about the weight until they seem themselves in a photograph. The cultural influences from food advertising, portion control, and family traditions are reasons provided by patients and parents that reduce the chance for weight loss over time.[25-27] Environmental influences include available food choices, limited to physical activity, and an increase in digital media, including social media.[28-30]

Patients and parents regularly forgo going outside of the house and will easily engage in social networking via an electronic device. The increase in social media with this population provides a self-protective mechanism and an increase in self-confidence as patients and parents attempt to portray themselves in the most positive image.[31] Thus, asking patients and parents to decrease the amount of time spent watching TV, surfing online, and social networking can be difficult as the act of decreasing this barrier is less researched among this population. Harnessing change talk and motivational interviewing in this area will likely produce a decrease in social media, but only when the patient and parents produce change talk.

New Innovative Tools to Patient Counseling on Weight Management

Understanding the patient and parents' psychosocial strengths and weaknesses can help produce long-term success in weight management and reduce barriers that can impede compliance with treatment. Training physicians in motivational interviewing (MI) and change talk will likely produce success in reducing the patient's weight and this training can be introduced as early as medical school.

The technique of MI, which also takes into account patients' and parents' readiness to change, uses nonjudgmental questions and reflective listening to uncover the beliefs and values of a patient and parent.

Because behavior change requires sustained commitment by the patient and family members, their motivation is the most important, but most challenging aspect of obesity care. The technique of MI, which also takes into account patients' and parents' readiness to change, uses nonjudgmental questions and reflective listening to uncover the beliefs and values of a patient and parent. By eliciting the concerns of patients and parents, the physician can help the patient and family members determine their priorities, consider how current behaviors support or undermine those priorities, and assess the resources and barriers in their family and environment that may influence their capacity to improve behaviors.[21] MI offers a technique that merges assessment and intervention and provides a "framework" for communicating physical and laboratory findings. This approach avoids the defensiveness created by a more direct style.

MI is effective in identifying motivational factors associated with change in patients and parents and has been used in numerous studies addressing other diseases.[32-36] One of the main principles of MI suggests that the patient and

parents are more likely to accept and act upon opinions and a plan of change that they voice themselves, rather than from advice they receive from others. In determining when to use MI, the physician assesses the patient and parents' statements they use during the consultation and the role of the physician is to identify any statements made about changing their current regimen whether emotional, physical, and/or social. MI is most effective for individuals in the planning stage (e.g., preparation/determination stage) of change.[38-40] Examples of patient and parent statements made during the planning state of change include: "I'm tired of people always looking at me and I want to lose weight;" "I need help with how I feed my baby, there are times that I feel I overfeed her;" "My wife said that I'm at risk for diabetes and I've got to do something about this;" and "I'm tired of living like this-this is serious, something has got to change."

Practitioners need to approach the weight management topic with care, compassion, and understanding. When applying MI in the health care setting, it is important not to "push" motivation onto the patient and parents as they can employ various adaptive and coping skills, such as denial, integrating disability with identity, withdrawal, and self-conscious awareness. Reflective listening, positive affirmations, and shared decision-making provide a nonjudgmental, non-confrontational, and supportive environment in which the patient and parents can explore their current behavior including ambivalence. The practitioner makes no effort in dismantling their denial, attempting to persuade them, or directing them to change. If the patient and parents are weighing the pros and cons, vacillating on change, then the physician should recognize that the patient and parents can be in this ambivalent phase for weeks, years, or a lifetime. Validating their ambivalence (e.g., "Sounds like making change is difficult for you at this time."), encouraging them to continue weighing pros and cons, and clarifying to the patient and parents that the decision is ultimately up to them are key. The patient and parents complete the majority of the work in MI and the physician provides a guiding style and empathic, encouraging support. **See Table 1**.

Table 1: **A practitioner introducing motivational interviewing (MI) to an overweight adolescent.**

Practitioner Assessing for Motivation	Adolescent Response
What would you like to work on during your time with this program? (R) It sounds like having more friends is important to you.	I would like to work on losing weight and having more friends.
What has worked for you in the past?	When my mom also watched what she ate. She didn't buy food that tempted me.
What hasn't worked for you in the past? (R) Exercise means a lot to you.	Being at the gym and I see people from my school who are skinny working out.
What do you wish would be different in your life?	I wish I could go to school functions and not be embarrassed.
What do you think is holding you back?	My self-confidence and my self-esteem.
What do you think could help you achieve your goal?	If my family also participated in this program and I was able to exercise in public.

Note: (R) = Practitioner responding to the adolescent's statement.

One of the most difficult things for practitioners to do is avoid giving information and advice, which is a major premise of their profession. The foundation of MI assumes that the patient and parents' behavior change is due to intrinsic motivation, versus external advice and information. In fact, confronting the patient and parents about their weight issues can lead to defensiveness, poor rapport, denial, and shifting from an internal to external locus of control.[40] Thus, empowering them through independent change talk is an important technique in MI, which appeases their autonomy decision-making and emotional independence. Change talk uses confidence/importance rulers, such as, "On a scale from one to ten, with ten being the highest, how confident are you that you could change your eating habits?"[6, 40] The patient and parents state at what number they are currently (i.e., how confident they are with change). Then, follow-up questions query the patient and parents about the number

"On a scale from one to ten, with ten being the highest, how confident are you that you could change your eating habits?"

choice and use positive change talk and problem-solving ideas. See Table 2. When the physician questions the patient and parents, they identify barriers or reasons why they have not been able to lose weight or comply with medical treatment.

Table 2: **An example of a practitioner using motivational interviewing (MI) to an treat overweight adolescent.**

Practitioner Using MI		Adolescent Response	
On a scale from 1-10, where 10 is the most ready or committed and 1 is the least, how willing are you to:	Scale 1-10	Probe Lower: I wonder why [insert scale number] is xx instead of yy (1-2 points lower)	Probe Higher: What do you think it would take to increase xx to yy (1-2 points higher)
Significantly modify your diet	6	I don't think I eat bad stuff all the time.	I guess I should stop eating so much fat and sugar.
Take several nutritional supplements each day	8	My mom already gives me my medication, so this wouldn't be hard.	If it's good for me, then why not.
Keep a record of everything you eat each day	5	This is a tough one because I don't really use any type of organizer.	Getting some type of phone app or journal.
Turn off electronics and social media	5	I really enjoy playing video games and watching my TV shows.	I should really be talking to my family more. I find myself isolated when I zone out into my games.
Practice a relaxation technique	3	I'm not sure if I know how to do this.	I guess if someone shows me how, then I'll try; is this like yoga?
Engage in regular exercise	5	So many people tell me that I have to exercise daily and this is hard to do.	Maybe if my mom or sister walks with me, then I'd be okay with going on a walk.
Have periodic lab tests to assess your progress	7	I already get tested for diabetes and kidney function.	I'm used to this, so going any higher would be okay if I knew that this program is working.
Improve school grades	8	My grades are okay.	I'm in honor classes, so maybe attending after school tutoring.
Improve school attendance	7	I know I need to attend school, so I don't fall behind.	Getting my health under control, so I don't feel sick and miss school.
Attend a school function	3	I'm still pretty embarrassed about my weight.	If I lost a pant size, so about 15 pounds.

Is It Important for Physicians to Be Role Model for Effective Counseling of Their Patients in Choosing a Healthier Life Style?

Similar to other preventive measures such as smoking cessation, alcohol consumption, diet improvement, regular health screening, or vaccinations, studies demonstrate that physicians' personal habits are a key, independent correlate, and may predict the manner in which they counsel and influence their patients' behaviors on related health habits.[41-43] For example, physicians who do not smoke are more likely to encourage patients to quit smoking.[44]

Additionally, physicians who are trying to improve their health habits counsel significantly more frequently and with more confidence on that specific habit than healthcare professionals (HCPs) not attempting to improve their behaviors.

Despite the existence of prevailing barriers to physical activity, counseling by HCPs and the fact that there are other factors associated with the frequency and quality of HCPs' physical activity counseling to patients,[46] HCPs' personal physical activity habits were found to be a consistent correlate to counseling.[47-57]

The extent to which physician initiated physical activity counseling can be translated into behavioral change among patients is modest and opens opportunities to further research. However, physicians and other HCPs are in a privileged position to provide physical activity (PA) advice as they are one of the first and most trusted sources of health information for patients, and some studies have described patients' willingness to change a health behavior if their physician has a healthier, active lifestyle.[58] Perhaps, physician wellness should be routinely measured in health systems as a quality indicator.

Barriers Hindering Physicians' Physical Activity Counseling Efforts

A recent systematic literature review on the perceptions of HCPs show physicians and nurses rank PA counseling as very important and agree that they should be involved in counseling activities; however, lack of needed skills, training, time, and reimbursement are still noted as important barriers to provide counseling.[46]

A persistent finding among all HCPs is the low level of knowledge on basic PA guidelines for health and the lack of training on simple exercise prescriptions, despite global efforts to elevate the status of PA as key for the prevention and management of non-communicable diseases.[59, 60]

These findings highlight the importance of critically assessing and improving the lifestyle in medicine and health promotion curriculums of medical and health sciences schools globally. One approach that needs to be thoroughly evaluated could be to implement continuing medical education programs for physicians on the basics of PA counseling. To this end, initiatives such as Exercise is Medicine, aim to make PA assessment (PA "vital sign"), prescription, and referral an integral part of medical practice in the United States and globally This has the potential to effect change if implemented on a large scale and in addition to other environmental and community approaches.[61]

Can the "Best Interest" of Patients Motivate Physicians to Adopt Healthier Lifestyle?

This is important since active physicians can be role models for patients and be more credible and motivating to help them adopt or maintain an active lifestyle. However, in part because of physicians' health habits have room for improvement, PA counseling rates by HCPs still remain unacceptably low. For example, it is estimated that less than 40% of U.S. primary care physicians provide regular counseling on physical activity, even though PA counseling is a national health objective and many physician professional and scientific organizations recommend counseling on PA.[62]

Despite the challenges, obesity demands attention, clinical judgment and active adoption of healthier lifestyles by clinicians because, if left unchecked, it will not only have a profound effect on those it afflicts, but it will place a significant economic and clinical services burden on the future healthcare system.

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Obesity—Before, During & Beyond Pregnancy

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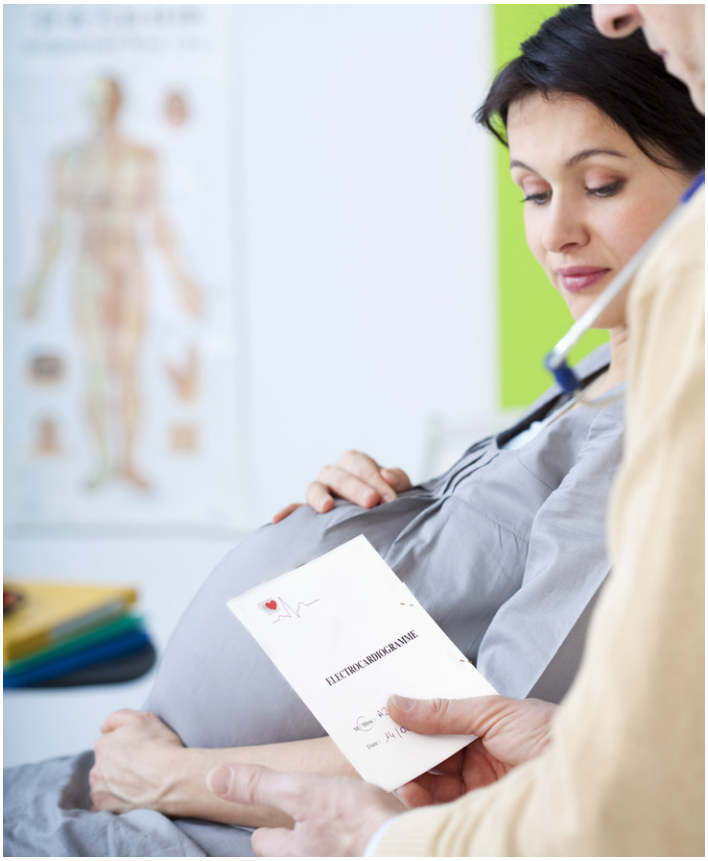
Being at a healthy normal weight (defined as body mass index [BMI] 18.5-24.9 kg/m^2) is critical when women become pregnant because obesity during pregnancy can increase the risk of adverse reproductive outcomes and affect the long-term health of both the mother and child. In 2009-2012, 38.5% of women of reproductive age (20-44 years) were at a normal weight.[1] Being overweight (BMI 25-29.9 kg/m^2) and obese (BMI ≥ 30 kg/m^2) is common in reproductive aged women with 1 in 4 overweight and 1 in 3 obese; non-Hispanic black and Hispanic women are disproportionately affected. Similarly, 1 in 3 adolescent girls (12-19 years) are also overweight or obese.[2] As half of pregnancies in the U.S. are unintended[3], obesity needs to be addressed as a key component of healthcare for all adolescent girls and women, regardless of pregnancy intention. Here we summarize the surveillance, research and recommendations related to obesity before, during, and beyond pregnancy.

Maternal Obesity Before Pregnancy

It has been well documented that obesity is associated with many adverse health conditions, including glucose intolerance, hypertension, and infertility[4]. Women who begin pregnancy obese are at much higher risk for obstetric complications and their newborns at a higher risk for neonatal complications. For the woman, obesity increases the risk of gestational diabetes mellitus (GDM), hypertension, preeclampsia, thromboembolism, induction, cesarean delivery, longer hospital stays, and lactation difficulties.[4-7] For example, retrospective cohort studies have consistently shown a clear dose-response relationship between prepregnancy BMI and GDM, where the probability of developing GDM increases with increasing prepregnancy BMI.[8-10] A meta-analysis examining a total of 33 cohort studies found that the risk of cesarean section for obese and severely obese women was two to three times higher compared to that of normal weight women.[11]

For the infant, prepregnancy obesity increases the risk of fetal death, congenital anomalies, preterm birth,



large-for-gestational age (LGA; weight >90th percentile), macrosomia, shoulder dystocia, respiratory distress, and neonatal intensive care unit admission.[5, 12] A recent meta-analysis showed that a 5-unit higher prepregnancy BMI is associated with a 10-20% increased risk of fetal or neonatal death.[13] In the long-term, prepregnancy obesity is associated with an increased risk of childhood obesity, early onset of chronic disease,[5] and learning or behavioral disabilities in the child.[14]

Eliminating the impact of prepregnancy obesity has the potential to prevent a number of adverse outcomes. For example, as many as 60% of GDM cases among non-Hispanic black women and 17% of GDM cases in Asian/Pacific Islander women could be prevented if overweight and obese women entered pregnancy at a normal weight.[8, 9, 15] In addition, 10-22% of LGA cases could be prevented if overweight or obese women were normal weight when entering pregnancy.[16] Furthermore, with even a 10% reduction in prepregnancy obesity or risk associated with obesity, nearly 300 heart defects, 40 cases of spina bifida, and 700 fetal deaths could be prevented annually.[17]

The Pregnancy Risk Assessment Monitoring Systems (PRAMS), which collects data on women with a recent live birth, shows that the proportion of women who enter pregnancy obese has increased from 17.6% in 2003 to 20.5% in 2009.[18] Similar trends have been observed among low-income women receiving Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) where prepregnancy obesity increased from 24.8% in 1999 to 28.3% in 2009.[19] The prevalence of severe obesity (BMI >35) among women becoming pregnant has also increased by about 25% (from 4.3% to 5.2% among class II obesity and 2.8% to 3.6% among class III obesity).[18] Because prepregnancy obesity continues to remain high, BMI should be addressed as a key component of primary and preconception care for all women regardless of pregnancy intention.

It is recommended that clinicians screen for obesity by calculating patient BMI.[20, 21] Adults with a BMI ≥30 kg/m^2 should be offered or referred to intensive, multicomponent behavior interventions.[21, 22] In addition, it is recommended that obese women planning a pregnancy receive a preconception assessment and women who are pregnant receive counseling that includes education about the possible complications of obesity during pregnancy.[23] The recommendation for nonpregnant women who are obese is to undertake a weight-reduction program before attempting pregnancy.[23] Women who have had bariatric surgery and are planning a pregnancy should be evaluated for nutritional deficiencies and the need for additional vitamin supplementation.

Preventing the onset of obesity among adolescents is key to ensuring they have a healthy weight when they become pregnant for the first time.

Preventing the onset of obesity among adolescents is key to ensuring they have a healthy weight when they become pregnant for the first time. Toolkits are available for teen care, which include guidelines for assessing and managing proper weight and nutrition.[24] Similar to adults, adolescents should have their weight screened annually. Overweight and obesity in adolescents are determined by measuring weight and stature and estimating a BMI for age percentile. Adolescents with a BMI between the 85th and 94th percentile for age are considered overweight and those with a BMI greater than or equal to the 95th percentile for age are considered obese and should be offered or referred to multicomponent behavior interventions.[25] It is also recommended that teens be assessed for eating disorders by asking about body image and eating patterns.[26]

Table 1: **2009 Institute of Medicine Guidelines on Gestational Weight Gain[28]**

	Singleton		Multiples
Prepregnancy (BMI)	Total Weight Gain in pounds	Mean Rate of Weight Gain 2nd and 3rd Trimester in pounds (range)*	Total Weight Gain in pounds
Underweight (<18.5)	28-40	1 (1-1.3)	n/a**
Normal Weight (18.5-24.9)	25-35	1 (0.8-1)	37-54
Overweight (25.0-29.9)	15-25	0.6 (0.5-0.7)	31-50
Obese (≥30)	11-20	0.5 (0.4-0.6)	25-42

**Calculations assume a 1.1-4.4 lbs weight gain in the 1st trimester.*
***Insufficient information available with which to develop provisional guidelines for underweight women with multiple fetuses*

Maternal Obesity During Pregnancy

Once a woman enters pregnancy, using prepregnancy BMI to advise about appropriate weight gain goals is recommended.[27] In 2009, the Institute of Medicine (IOM) revised gestational weight gain guidelines to reflect current clinical definitions for weight status based on BMI.[28] They additionally provided weight gain guidelines for women with twin gestations and for women with obesity (Table 1). The IOM did not provide recommendations by specific obesity class. Although recent research suggests that gestational weight gain below the recommended 11-20 pounds may be more favorable for women with severe obesity, more evidence of the risk and benefits of lower gains is needed.[29, 30] The 2009 IOM revision no longer includes different recommendations for special populations related to short stature, adolescents, and minority race/ethnicity.

According to PRAMS 2010 data, 59% of women with obesity gained above gestational weight gain recommendations and 19% gained below recommendations.[31] This pattern was similar in 2011 among low-income women receiving WIC where 56% of women who were obese gained above recommendations and 21% gained below.[32] Excess gestational weight gain overall can affect the immediate and long-term health of the mother and infant by increasing risk of LGA, postpartum weight retention, and future cardiovascular disease. A recent study found that 23-48% of LGA cases could be prevented if women with obesity gained within gestational weight gain guidelines.[16] In addition, excess gestational weight gain is associated with an increased risk of childhood overweight and obesity.[33] Appropriate weight gain goals, diet and exercise should be discussed both at the initial prenatal visit and periodically throughout pregnancy.[23, 27]

To help women achieve appropriate gestational weight gain, the IOM has developed an evidence-based toolkit to help clinicians and pregnant women track and meet weight gain

goals (www.iom.edu/whattogaintoolkit). This toolkit includes webinars, brochures, podcasts, posters, a weight gain tracker, and an interactive online question and answer module. The most successful weight control interventions for pregnant women mirror weight loss interventions implemented in the general population and include frequent weight measurements, daily diet self-monitoring, and ongoing contact with a healthcare professional.[34, 35]

Because obesity is a strong risk factor for diabetes mellitus, women who are obese, have family history of diabetes or who have had a newborn with macrosomia in a previous pregnancy may need to be screened for diabetes in the first trimester.[22] Unless diabetes has been diagnosed, all women should be screened for GDM after 24 weeks gestation.[22]

It is recommended that healthy women get at least 150 minutes per week of moderate-intensity aerobic activity during and after pregnancy; preferably activity should be spread throughout the week.[36] Healthy women who already engage in vigorous-intensity activity, such as running, can continue doing so during and after pregnancy provided they stay healthy and discuss with their health care professionals how and when activity should be adjusted over time. Pregnant women with diabetes, morbid obesity, a history of extreme sedentary lifestyle or chronic hypertension should have an individualized exercise prescription.[37] The American College of Obstetricians and Gynecologists provides warning signs that clinicians can use to counsel women about terminating exercise while pregnant (*vaginal bleeding, dyspnea before*

exertion, dizziness, headache, chest pain, muscle weakness, calf pain or swelling, preterm labor, decreased fetal movement, and amniotic fluid leakage) as well as contraindications to aerobic exercise during pregnancy (*haemodynamically significant heart disease, restrictive lung disease, incompetent cervix, multiple gestation at risk for premature labor, persistent second or third trimester bleeding, placenta previa after 26 weeks gestation, premature labor during the current pregnancy, ruptured membranes, and pregnancy induced hypertension*).[37] However, the health benefits of physical activity are well recognized and recommended for most pregnant women.

Pregnancy does not equate to eating for two. The first trimester does not require any extra calories. In general for all women, to meet the metabolic needs of pregnancy, women need an additional 340 calories per day during the second trimester and 450 calories per day during the third trimester.[38] Women should be encouraged to eat a balanced diet with an increase in fruits and vegetables and to limit intake of added sugars and solid fats in foods like soft drinks, desserts, fried foods, cheese, whole milk, and fatty meats. Resources such as "Choose My Plate" (www.choosemyplate.gov) and "SuperTracker" (www.supertracker.usda.gov) provide online tools for understanding weight management, healthy eating, meal planning, and caloric intake.

Pregnancy does not equate to eating for two. The first trimester does not require any extra calories.

Maternal Obesity Beyond Pregnancy

To prevent postpartum weight retention or entering the next pregnancy obese, a critical strategy for women is returning to their prepregnancy weight, or, if obese prepregnancy, losing additional weight postpartum. Studies show that failure to return to prepregnancy weight by six to twelve months postpartum is an important predictor of long-term obesity.[39] Physical activity can be resumed as soon as it is deemed physically and medically safe.[37] Therefore, continuing to recommend a healthy lifestyle that includes regular physical activity and a balanced diet is important for the health of the mother.

Breastfeeding has many benefits for the mother and child, including reducing postpartum weight retention and childhood obesity.[40, 41] It is recommend that mothers exclusively breastfeed for about the first six months of a baby's life, followed by breastfeeding in combination with the introduction of complimentary foods until at least 12 months of age, with continuation of breastfeeding for as long as mutually desired by mother and baby.[42] Clinicians are also encouraged to provide pregnant and postpartum patients with complete, current information on the benefits and methods of breastfeeding to ensure that the feeding decision is fully informed. Studies have shown that mothers with obesity are less likely to breastfeed and breastfeed for a shorter duration; thus they may need additional support to meet recommendations.[6]

It is recommend that mothers exclusively breastfeed for about the first six months of a baby's life…

Women who had GDM are at a 50% increased risk of developing type 2 diabetes (T2DM) in the future.[43] Three to 14% of women who had GDM will have overt T2DM when tested 6 weeks postpartum; an additional 17-25% will have impaired glucose tolerance.[44] It is recommended that women with a history of GDM get blood glucose screening 6-12 weeks postpartum.[45, 46] Women should be re-evaluated every three years if the results of this postpartum test is normal; however, if the test is abnormal with results showing impaired glucose tolerance or impaired fasting glucose, they should be screened annually. In addition, all women who had a GDM-affected pregnancy should be offered or referred for a lifestyle intervention that includes weight loss and physical activity counseling and nutrition therapy.

Conclusion

Maternal obesity in the United States continues to be high and remains a public health challenge. Sustained clinical and public health efforts are needed to prevent obesity and improve the nutritional status and lifestyle of reproductive-aged women. Clinicians play an important role in preventing overweight and obesity throughout the lifespan by helping women achieve a healthy weight before pregnancy, gain appropriately during pregnancy, and return to a healthy weight postpartum.

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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What Can Health Care Professionals Do to Prevent Obesity in Infants and Children?

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Scope of the Problem

After more than tripling over three decades, the prevalence of obesity among youth in the United States (U.S.) has remained relatively unchanged since 2003 with some 17.3% of two to 19 year old children affected based on measured values of weight and height from the 2003-4 and 2011-12 National Health and Nutrition Examination Survey (NHANES).[1] Another 17% of youth are overweight. Further, there is a promising trend among two to five year old children indicating a decline in obesity prevalence in this age group from 13.9% to 8.4%. Although the prevalence of overall obesity may be stabilizing, the risk for childhood obesity climbs as children age, particularly among the overweight; still one in six of all children are obese; children in ethnic minorities and in families with limited socio-economic resources are disproportionately affected; and there is a shift particularly among adolescents to become severely obese.[2, 3] As children age, the likelihood that their childhood obesity will reverse declines precipitously with the risk for adult obesity climbing from 25% if a preschool aged child is obese to 80% if an adolescent is obese.[4, 5] The rise in obesity in children has been associated with an increase in multiple health conditions previously considered "adult" diseases, such as type 2 diabetes, cardiovascular disease, and obstructive sleep apnea[6-8] (Table 1), and these conditions commonly persist into adulthood significantly impacting on health, quality of life, military readiness and workplace productivity. Childhood obesity poses a financial threat to our economy and health care system. Based on an analysis of six studies, the incremental lifetime direct medical cost from the perspective of a 10 year old child with obesity relative to an appropriate weight child can be estimated to be $19,000 in 2012 dollars and will cost society roughly $14 billion for this age alone.[9] For centuries, each generation has enjoyed longer life expectancies. However, despite advances in medical care for cardiovascular disease and diabetes, the life expectancies of obese

children has not improved and with increasing body mass index (BMI), mortality actually climbs.[10, 11]

Prevention Activities

An impressive body of evidence has implicated a complex web of interactions that contribute to the emergence of obesity including individual characteristics (genetics, temperament, dietary intake, physical activity, etc.), family characteristics (parent weight status, parent and sibling food & activity preferences, family nutrition knowledge, etc.) and community, demographic and societal characteristics (nutritious food availability, recreational facility accessibility, neighborhood safety, etc.). Health care professionals have frequent opportunities to encourage families to engage in healthy lifestyles and screen for disease risk factors, can incorporate these practices in their usual care, and can work individually and through their professional organizations, like the Florida Medical Association to impact policies and practices in their communities.

Primary Prevention

Health care professionals commonly provide anticipatory guidance around health behaviors, such as car seat and seatbelt use, and tobacco and risky sexual behavior avoidance. Evidence supports providing the following guidance to prevent obesity[8]:

1. Limit consumption of sugar-sweetened beverages.
2. Encourage a diet rich in fruits and vegetables, aiming for five to nine servings each day with serving sizes varying by age.
3. Limit television and other screen time (including computers, video game systems, and smart phone devices). The American Academy of Pediatrics recommends no television viewing before 2 years old and maximum of 2 hours per day thereafter.
4. Eat breakfast daily. Skipping breakfast decreases the nutritional quality of a child's diet and increases the risk of obesity.
5. Limit eating fast food and dining out at restaurants, particularly those that typically serve large portions of energy-dense, nutrient poor foods. Typically children eat twice as many calories at restaurants than when eating at home.

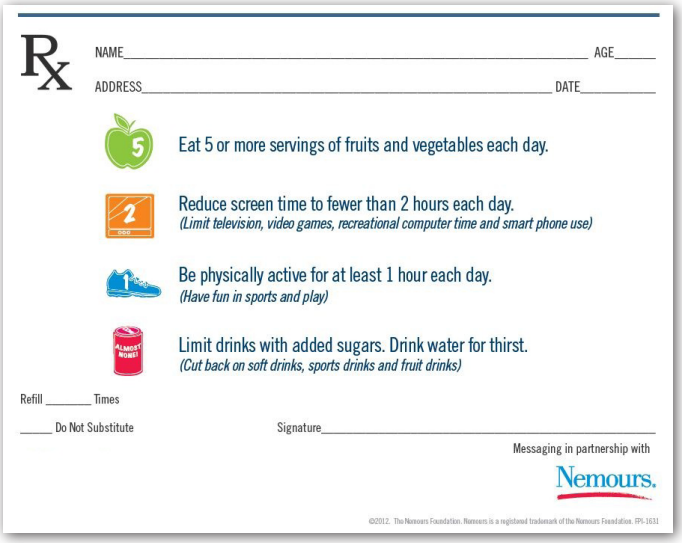
6. Encourage family meals in which parents and children eat together.
7. Limit portion size based on age and activity level (http://myplate.gov). Commonly, products are packaged with more than a single serving and encourage reading the nutritional labeling.

Other recommendations of an Expert Committee[8] convened by the American Medical Association include:

1. Eat a diet rich in calcium.
2. Eat a diet high in fiber.
3. Balance macronutrients (proportions of energy from fat, carbohydrates, and protein) based on U.S. Health and Human Services and U.S. Department of Agriculture Dietary Guidelines for Americans (http://www.cnpp.usda.gov/DietaryGuidelines.htm).
4. Encourage exclusive breastfeeding until six months of age and after introduction of solid food, continue breastfeeding to 12 months of age as per American Academy of Pediatrics recommendations.

5. Promote moderate to vigorous physical activity for at least 60 minutes each day.
6. Limit consumption of energy-dense foods. These empty calorie foods are commonly processed and have added sugar, fat, and salt. In contrast, nutrient-dense foods are those foods that provide substantial amounts of vitamins and minerals and relatively few calories, like fruits and vegetables.

Nemours Children's Health System has used the Prescription for a Healthy Lifestyle to encapsulate this


Rx

NAME_____ AGE_____

ADDRESS_____ DATE_____

5 Eat 5 or more servings of fruits and vegetables each day.

2 Reduce screen time to fewer than 2 hours each day.
(Limit television, video games, recreational computer time and smart phone use)

1 Be physically active for at least 1 hour each day.
(Have fun in sports and play)

ALMOST NONE Limit drinks with added sugars. Drink water for thirst.
(Cut back on soft drinks, sports drinks and fruit drinks)

Refill _____ Times

_____ Do Not Substitute

Signature_____

Messaging in partnership with

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Figure 1: **Nemours Prescription for a Healthy Lifestyle**

information into a simple message: 5-2-1-Almost None. (Figure 1). Each component opens a dialogue to address other opportunities. For example, sharing the goal of eating at least five servings of fruits and vegetables can include discussions around meal composition, portion size, and family meals.

Anticipatory guidance should be tailored to each child's stage of development and additional age-specific considerations include:

Prenatal and Infancy

Maternal obesity and gestational diabetes can have a direct impact on the risk for childhood obesity in their offspring.[12] *Health care professionals can encourage prospective mothers to achieve a healthy weight preconception and a healthy weight gain during pregnancy.* After birth, breastfeeding appears to be associated with reducing the risk of obesity and has been endorsed as a prevention strategy by the Institute of Medicine, Centers for Disease Control and Prevention (CDC), American Academy of Pediatrics, American College of Obstetricians and Gynecologists and Endocrine Society.[13] Factors that likely influence the impact of breastfeeding include the degree of exclusivity of the feeding over the infant's first six months and overall duration.

Although breast feeding promotes the optimal growth and development of a young infant, bottle feeding with breast milk or commercial infant formula may be desirable based on individual circumstances. Key guidance around bottle feeding includes using the bottle for breast milk or commercial infant formula only. Juice and sugar-sweetened and/or carbonated beverages, as well as cereal, should not be put in a bottle. Parents and other caregivers need to watch

Several studies have found an association between later weight gain and insufficient sleep during infancy and early childhood.

for infant feeding cues to initiate and stop feedings. Initial strategies to sooth a crying infant may include holding and swaddling and not feeding. Bottles should never be propped nor infants forced to finish a bottle due to interference with satiety cues and self-regulation.[14]

Over the past several decades, an epidemic in sleep deprivation has paralleled the obesity epidemic. Several studies have found an association between later weight gain and insufficient sleep during infancy and early childhood.[14] Health care professionals can encourage creating practices that promote child self-regulation of sleep, including putting infants to sleep drowsy but awake, promoting healthy sleep durations (Table 2), and promoting restful sleep with calming routines and low noise and light environments. Since having a television in the primary sleeping room is associated with excess weight gain, a simple prevention strategy would be to encourage parents to avoid placement of a television in a child's bedroom at any age. Even infants require daily physical activity and parents should provide infants opportunities to move freely to explore their environment under adult supervision.[14]

Preschool

Parents, child care educators and other caregivers control the type, quantity, and emotional context of the food preschoolers eat. Commonly deficits in a young child's diet, such as limited vegetable consumption, mirrors the parents' own diet. Overconsumption of sweets, fruit juice and other energy-dense foods is not uncommon. As articulated more than two decades ago by William H. Dietz, current Director of the Division of Nutrition and Physical Activity at the CDC,

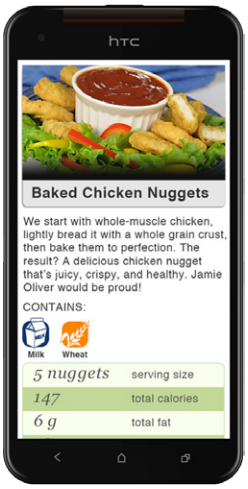
"provide a healthy array of foods in the correct portion size and allow children to decide what and how much to eat from what they are offered."

health care professionals can advise parents to **"provide a healthy array of foods in the correct portion size and allow children to decide what and how much to eat from what they are offered."**

Young children benefit from a combination of developmentally appropriate structured and unstructured physical activity experiences each day. In child care settings, standard recommendations advise light, moderate, and vigorous physical activity for at least 15 minutes per each hour a child is in their care integrated throughout the day. Parents and other caregivers should avoid punishing children for being physically active and avoid withdrawing physical activity as punishment.[14] Similarly, parents should be counseled to use praise, family activities, and trinkets as rewards for positive behavior and not food (especially sweets).

School Age

In support of the emotional development of school age children, parents are encouraged to promote the growth of social competence and transitioning of self-care skills. However, parents retain a continuing role in managing their child's energy balance. Guidance for parents should include modeling healthful eating habits and physical activity. With school age children commonly consuming school prepared meals and purchasing competitive foods from the cafeteria and vending machines, parents can help their children pre-plan healthy choices using their school menu (distributed by their school, online at the school's website or at www.schoolmenu.com, or via the smartphone app School Lunch by Nutrislice). Encouraging fruits and vegetables as a snack, instead of packaged processed foods or sweets, will help achieve a daily intake of five to nine servings each day. A simple method to visualize appropriate portion sizes for children is to encourage them to "eat their hand sizes": palm of hand equivalent to protein source; closed fist = one serving of fruit or vegetable; cupped hand = one serving of cereal or grain; and two fingers = one serving of cheese.



Parent's modeling an active lifestyle with regular exercise has been associated with increased fitness and participating in extracurricular sports in their children. Further, limiting television viewing has been associated with obesity prevention and reversal.[15] In encouraging at least an hour of physical activity daily, parents can be counseled to break it up with walking/biking to school, out of school programs, and study breaks. Physical activity is associated with better academic performance and activity breaks improve concentration.[16] With technology allowing 24/7 access to media, emergence of mobile devices, shift to on-demand viewing of television content, and social networking and media multitasking, daily screen time use has dramatically risen over the past few years. In contrast, less than a third of parents set limits on their media duration or content; the majority of children have television, video games, and/or other technology in their bedrooms; and meals are commonly eaten accompanied by the flickering of screens.[17] Further, busy schedules and excessive media use contribute to the delay of onset and duration of sleep. *Encourage parents to have a dialogue with their children about the pros (entertainment) and cons (e.g. obesity, poor school performance, and poor body image) of excessive media consumption and encourage them to develop clear house rules, for example:*

- No television in bedrooms; have computer and video games remain in a common room
- Media (television, smartphone, etc) is turned off at a set time at night
- No media until homework and chores are completed
- No screen time during meals including texting (at home and at a restaurant)

Parents can make screen time count by promoting an activity, like use of a treadmill or stationary bicycle while watching television; engaging in exergames, like Dance Dance Revolution (DDR ™); or earning screen time after a healthier habit has been accomplished. Multiple smart device apps are available (and often free) to track food intake, promote physical activity, assist in goal setting, and provide encouragement.

Identification of at Risk Infants and Children

A visual assessment of adiposity will miss children that are overweight and obese, children that are accelerating excessively in weight gain, and it fails to provide a comparison measure. Substantial scientific evidence links elevated BMI for age and gender to obesity-related risk factors and morbidity. Several expert and advisory groups have recommended routine determination of BMI for children and adolescents 2 – 19 years old (weight/length determination for those < 2 years old), which is plotted on the CDC growth charts as the preferred reference for weight status with > 95th percentile for age and gender indicating obesity (overweight set at 85th – 94th percentile).[6] Yet over the past decade, several studies have reported less than half of clinicians seeing children routinely determine BMI and, even when screened, fewer than one-third of parents of obese children and only two-thirds of parents of very obese children are informed.[18] Without deliberate communication that obesity is a health concern, parents are commonly left with the perception that their child has a healthy weight.[19] Further, the majority of obese children are not screened for co-morbid conditions by history nor have recommended laboratory tests requested.[7] The routine determination of BMI percentile for age and gender at each well-child visit should serve as a starting point for obesity classification and risk assessment (secondary prevention). Further universal screening of health risk behaviors (e.g. consumption of energy dense foods, sedentary lifestyle, etc.) and anticipatory guidance on healthy behaviors to minimize that risk is recommended.[6, 8, 15] Health care professionals function as counselors in obesity prevention and care. Counseling for behavior change requires a patient- and family-centered approach utilizing asking, informing, advising and listening. Health care professionals are encouraged to employ cognitive and behavioral strategies, such as motivational interviewing (www.motivationalinterviewing.org), to help their families achieve a healthier lifestyle. Further resources are available through the American Academy of Pediatrics Institute for Healthy Childhood Weight (http://ihcw.aap.org).

Role Beyond the Office

With their clinical expertise, health care professionals can be effective advocates in recognizing and supporting community efforts to promote a healthy weight. They can help inform policies that enhance the physical and built environment and community programs to increase physical activity. Similarly, sharing with lawmakers their firsthand knowledge of the impact of our current food and beverage environment on children's health can help inform adoption of nutritional standards and creation of better retail and distribution policies. Health care professionals can advocate for breastfeeding friendly environments and encourage active living and healthy eating in the workplace. By providing guidance on health to child care settings, schools and school boards, health care professionals can ensure they become a focal point for prevention.

Table 1: Obesity Related Co-morbid Conditions in Children

Cardiovascular	Hypertension Lipid abnormalities Coronary artery disease Left ventricular hypertrophy
Dermatological	Acanthosis nigricans Violaceous striae Acne (excessive) Hirsuitism Skin irritation, inflammation Intertrigo and skin infections particularly in skin folds
Endocrine	Impaired glucose metabolism, type 2 diabetes mellitus Polycystic ovary syndrome Premature puberty
Gastrointestinal	Abdominal pain and constipation Gastroesophageal reflux Gallbladder disease and Nonalcoholic fatty liver disease
Genitourinary	Nocturnal enuresis
Neurological	Pseudotumor cerebri
Orthopaedic	Joint pain and foot pain related to musculoskeletal stress Slipped capital femoral epiphysis Blount disease (tibia vara)
Psychosocial	Poor self-esteem, social stigma, social isolation Bullying, school avoidance Depression and anxiety Suicidal ideation
Respiratory	Obesity hypoventilation syndrome, obstructive sleep apnea and disordered sleep Poor exercise tolerance and physical conditioning Asthma (increased severity)

Table 2: Sleep Needs Vary by Age

Newborns (0 – 2 months)	12 – 18 hours in a 24 hour period
Infants (3 – 11 months)	14 – 15 hours in a 24 hour period (includes 30 minute to 2 hour naps 1 – 4 times daily)
Toddlers (1 – 3 years)	12 – 14 hours in a 24 hour period
Preschoolers (3 – 5 years)	11 – 13 hours in a 24 hour period
School Age (5 – 10 years)	10 – 11 hours in a 24 hour period
Teens (11 – 17 years)	8.5 – 9.5 hours in a 24 hour period

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The Adolescent Experience: A Call for Intervention

By John Lanza, MD, PhD, MPH,
Debra Vinci, DrPH, MS, RDN, LDN &
Marie Brady Mott, JD, MS, RDN, CSSD, LDN

"If a child is overweight or obese between 10-14 years old, then there is a 75% to 83% chance of being overweight or obese, respectively at 25 years old." [1]

—Whitaker, 1997

Epidemiologists describe the issue of overweight and obesity in our country as a pandemic, but in reality, much of the developed world is facing a crisis due to our collective overweight. The consequences of overweight and obesity impact all physicians, regardless of our practice specialty. Thus, every physician should be a leader in effecting the changes needed in our community's culture to achieve better health for everyone.

This article will discuss overweight and obesity issues in teens and adolescents and will address how the Florida Department of Health (DOH) is partnering with physicians in our communities to promote prevention by encouraging healthy nutrition and active living choices. Many of the interventions used to treat overweight and obesity, when introduced early enough, can also be used to prevent this disease.

The Importance of Healthiest Weight In Florida

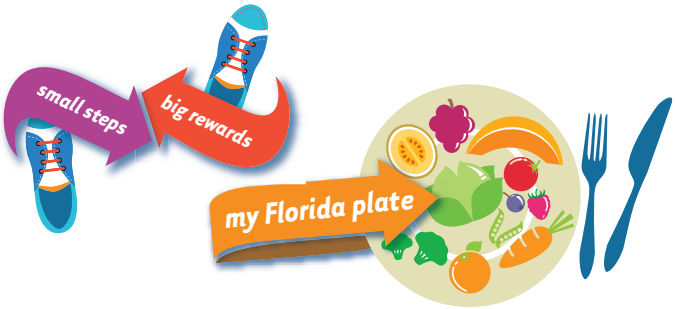
Weight is the #1 public health threat that challenges Floridians.[2] Currently, only 35% of adult Floridians are at a healthy weight. Of the remaining population, one quarter is obese and the rest are overweight. On our current trend, almost 60% of adults will be obese by 2030.[2] Florida middle and high school students are 15.5% and

11.5% overweight and obese, respectively.[3] An adolescent that is overweight or obese has a significant risk of being an overweight or obese adult.[1] In July 2013, Florida's State Surgeon General and Secretary of Health, Dr. John H. Armstrong, spoke to Florida Face to Face about the Healthiest Weight Florida initiative, a public-private collaboration bringing together state agencies, not-for-profit organizations, businesses, and entire communities to help Florida's children and adults make choices about healthy eating and active living."[2, 4]

Healthiest Weight Florida was launched in January, 2013 at the State Surgeon General's Symposium on Healthiest Weight. Through this initiative, the DOH is partnering with physicians and communities to implement programs that promote improved nutrition and physical activity in schools and afterschool programs, increase access to high-quality, affordable foods in our communities, increase physical activity by improving the built environment in our communities, and promote physician awareness and counseling regarding patient body mass index (BMI).[2]

"Reducing the BMI in the state by 5 percent (i.e. bending the curve) could lead to health care savings of more than $12 billion in 10 years and $34 billion in 20 years."[5]

—RWJF, 2014



Healthiest Weight in Teens and Adolescents

Teens and adolescents are spending less time exercising and more time in front of TV, computer, or video game screens. Families have less free time to prepare nutritious, home-cooked meals contributing to the increased consumption of energy-dense, nutrient deficient foods.

Preventing teens and adolescents from becoming overweight and obese necessitates changing the family's culture regarding eating and exercising. Every physician should encourage adolescents and their parents to practice healthy lifestyle habits at each contact opportunity.

The Health Effects and Causes of Overweight and Obesity

Adolescent obesity increases the risk for serious health conditions such as type 2 diabetes and high blood pressure, that will affect their present and future health and quality of life. Greater than normal BMI in children and adolescents is associated with abnormal lipid levels, a major risk factor for the development of cardiovascular disease.[6]

"…the pediatric community confronts a serious problem: the surge of metabolic complications in obese adolescents, including impaired glucose tolerance (IGT) and type 2 diabetes, hypertension, dyslipidemia, ovarian hyperandrogenism, hepatic steatosis, and sleep apnea."[7]

—Freemark, 2007

A number of factors contribute to becoming overweight including genetics and/or lifestyle habits. In some instances, endocrine problems, genetic syndromes, and medications can be associated with excessive weight gain. More frequently, adolescents are consuming highly processed, high-calorie foods in large portions, while living sedentary lifestyles. All these factors increase the propensity to gain weight.

The Parent-Child Feeding Relationship

Parents play a crucial role in modifying obesogenic factors of our modern lifestyle. Establishing a parent-child feeding relationship that provides the availability and accessibility to healthy foods, meal structure, food socialization practices, and opportunities for physical activity contribute to the prevention of obesity and eating disorders.

The feeding relationships between parent and child can be reflective of parenting styles. Permissive parents are less demanding, allow children freedom to make their own decisions, and provide minimal consequences when things go wrong. This parenting style is linked to lower self-regulatory skills in children.[8, 9] Golan[10] also reported that permissive parenting was associated with higher obesogenic risk factors in the home environment.

Authoritarian parents may be over-demanding, command obedience, exert authority over their children, and are less responsive to their child's emotions, leading to an increased risk of becoming obese.[11] Additionally, permissive and authoritarian parenting styles are associated with eating disorder related symptoms.[11]

On the other hand, authoritative parents provide direction to their children in a supportive manner along with responding to their children's emotional needs. This parenting style does not restrict food intake but provides a food environment that promotes healthy eating attitudes and positive body image while fostering a child's self-esteem.[9]

Identification of Adolescent Overweight and Obesity

Is Your Adolescent Patient Overweight?

During clinical encounters, the adolescent's height and weight measurements are input into a BMI calculator which is then plotted on a standardized percentile chart. The BMI percentile indicates how appropriate an adolescent's weight is for a certain height and age. Youth ages 2 to 19 fall into one of four BMI categories:

1. Underweight: BMI below the 5th percentile
2. Healthy weight: BMI at the 5th and less than the 85th percentiles
3. Overweight: BMI at the 85th and below 95th percentiles
4. Obese: BMI at or above 95th percentile

Any adolescent who falls at or above the 85th percentile may be considered overweight and is at risk for obesity.[13, 14]

The Physician's Role

Primary care physicians should assess a patient's obesity risk factors at each visit, regardless of presenting weight.[15] Assessment includes identifying medications that may affect weight gain and taking inventory of the patient's family history related to obesity in addition to determining BMI classification. If an adolescent has one or more risk factors related to overweight, the physician should assess eating and activity habits and suggest ways to make positive changes. The doctor also may decide to screen for some of the medical conditions that can be associated with obesity. American Academy of Pediatrics (AAP) guidelines advise screening overweight and obese youths' lipid levels as a measure towards implementing therapeutic lifestyle counseling.[16]

Teen and Adolescent Overweight and Obesity Interventions

It is easier and less expensive to prevent overweight and obesity, than it is to treat these problems. The key to keeping kids of all ages at a healthy weight is taking a whole-family approach. Physicians should encourage families to eat well, exercise regularly, and incorporate healthy habits into their daily lives. Because adolescents are less likely to visit their physician than younger children, it is especially important for the clinician to assess BMI at each encounter and provide appropriate prevention or treatment interventions.[17, 18, 15]

Behavior and Lifestyle Interventions

"…lifestyle intervention is effective only if applied intensively and continuously in highly motivated subjects."

Freemark, 2007

5-2-1-0 Let's Go

5-2-1-0 Let's Go is a program developed in Maine that is helping kids and families eat healthy and be active.[19] This collaborative health education campaign uses community partnerships to distribute and reinforce a simple message designed to elevate awareness and encourage action among children and their families in six settings: child care centers, schools, afterschool care programs, workplaces, communities, and healthcare centers. 5-2-1-0 promotes four basic, healthy behaviors for everyday use that are associated with achieving and maintaining a healthy weight:

- Eat 5 or more fruits and vegetables daily
- Have 2 hours or less of screen time daily
- Get at least 1 hour of physical activity daily
- Consume 0 (zero) sugary drinks.

The 5-2-1-0 program encourages physicians to use the four messages to reinforce these healthy habits during patient care. This strategy enables the physician to use a single approach to address obesity prevention and the initial clinical treatment of overweight patients. This program is perhaps the most easily remembered method for a physician to introduce healthy lifestyles to a patient and their family. Physician training is available that focuses on addressing the habits that can contribute to an unhealthy weight (and comorbidities), rather than on the patient's weight. A number of websites offer guides that the physician can provide to families to help them stay on target.

Strong4Life

The Strong4Life physician program was developed by Children's Healthcare of Atlanta to assist physicians in initiating conversations with their patients and families

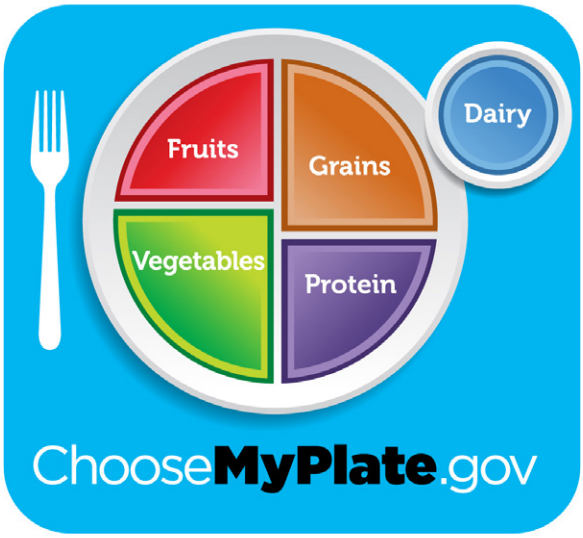
about healthy habits that can impact weight. This physician-centered program teaches motivational interviewing skills and partnering with families to set reachable goals that will lead toward lifelong behavior changes.[20, 21] Strong4Life also provides an American Board of Pediatrics Maintenance of Certification Program for pediatricians.

"Research shows that physicians are the leading voice parents turn to for advice about their child's wellness and obesity-related issues."[20]

—Strong4Life, 2014a

Healthy Nutrition

The availability of a balanced diet, limitation of energy-dense foods, moderation of portion sizes, and minimizing the consumption of foods prepared outside of the home, are all nutrition-focused strategies that can be used for prevention of overweight and obesity in adolescents. An easily-accessed tool for educating patients about nutritional balance and portion control is MyPlate. One basic concept asserted by MyPlate is that half of any meal or snack should consist of fruits and/or vegetables. Consuming more fruits and vegetables, particularly when prepared with minimal additives, such as sugar and fat, will not only help to moderate caloric intake but also to enhance nutrient balance. Printable MyPlate materials and web-based calculators are available. Additionally, families can be encouraged to purchase and serve less-processed foods and limit their frequency of dining out as methods of reducing consumption of energy-dense foods.[22]



Dietary guidelines encourage consumers to enjoy food, but also to eat less and avoid oversized portions. The amount that the adolescent eats or drinks plays an important role in their energy balance strategy. People eat and drink more when served larger portions. Portions have increased over time so choosing smaller portions will prevent weight gain and will help in promoting and maintaining weight loss.[23]

Local School District Programs

"Schools are uniquely positioned to be a national focal point for obesity prevention because children spend up to half of their waking hours in school and consume between one-third and one-half of their daily calories there."[18]

—IOM, 2012

Physicians can have a major role in transforming schools by attending and becoming members of their local school districts' School Health Advisory Committee. Physician advocacy for healthy lifestyles including proper nutrition and increased activity levels in schools would be a powerful influence in school decision-making and policies.[24]

THE walking classroom
walk. listen. learn.

As an example of innovative ideas that physicians could support, The Walking Classroom is an in-school fitness and obesity intervention that improves health literacy and builds core content knowledge while addressing different learning styles.[25] Although developed to address cognitive health in upper elementary school children, the net result fosters the development of healthy adolescents due to the promotion of beneficial lifestyle habits.

"School gardens offer opportunities for fun and physical activity while serving as an important educational tool to help students understand how healthy food is produced."[26]

—Let's Move, 2014a

Physician support is also helpful in community efforts to promote the consumption of fresh, local produce. Advocating for, participating in, and possibly sponsoring community or school gardens are all methods that connect physicians and patients to locally-grown foods and expose youth to the "seed to plate" concept. Students learn to include healthy eating into their family's culture to foster improved nutrition.[13]

Higher Education Partnerships—Exercise Interventions

Statewide, universities and state colleges provide resources to physicians to encourage physical activity and health-promoting lifestyles. Many of our state academic institutions are open to community members to take advantage of campus resources such as walking and biking trails, university pools for recreational swimming, and youth summer camps.

Additionally, several Florida institutions are involved in community-based obesity prevention interventions through research studies or community engagement activities. For example, the University of West Florida offers a Movement Academy program; the University of Florida will soon implement Get Fruved; and the University Of Miami is implementing an obesity-prevention component to Familias Unidas.

Let's Move!

Let's Move! is a comprehensive national initiative led by First Lady Michelle Obama intended to solve the overweight and obesity problem in our children within a generation.[27] Partnering with the AAP, this initiative places emphasis on the role of pediatricians in ensuring that the next generation has a healthy future. Pediatricians can become a Let's Move Practice by committing to conduct a brief assessment of current practices around Let's Move! goals and taking small steps where needed to improve performance.

Medical and Surgical Interventions

Several professional bodies have published physician-based youth obesity prevention and treatment guidelines. The American College of Preventive Medicine (ACPM) recommends that physicians, "…counsel children, adolescents, and their parents about healthy behaviors that may prevent overweight."[17] The AAP states that primary care physicians should annually assess their patients for obesity risk, provide obesity prevention messages, and, if overweight and obesity is diagnosed, to begin appropriate treatment.[15]

Florida Medical Association (FMA) Continuing Medical Education

The FMA currently offers CME activities on overweight and obesity-related topics for physicians including: Childhood: Setting the Stage for Cardiovascular Prevention and Nutrition in Cardiovascular Disease Prevention, A Southern Remedy.

AAP Weight Management Program

The AAP website Pediatric ePractice: Optimizing Your Obesity Care (PeP) is a cutting-edge online tool designed to help prepare physicians deliver effective prevention, assessment and treatment of childhood overweight and obesity.[28] Physicians can initiate interventions from any tier that is clinically appropriate.[15] Clinical resources available include: Suggested Pediatric Weight Management Protocols; Pediatric Weight Management Medical Summary; and, Pediatric Weight Management Ongoing Care Coordination and Information Sharing.

Pharmacologic Treatment Options

The majority of the evidence-based studies on obesity treatment maintain that lifestyle changes are the core to treatment of this disease.[7, 24, 30] Pharmacotherapy should be considered due to the failure of a motivated effort of lifestyle changes in order to achieve the medical objectives of the physician. Pharmacotherapy should be concurrent with continued efforts at lifestyle modifications. When to begin pharmacotherapy is controversial since beginning early may prevent the progression to severe obesity, but this must be balanced by consideration of medication side effects and the economic burden on individuals and society.[7]

Surgical Intervention

The significant morbidity of obesity in adolescents has promoted a more aggressive approach to treatment including early surgical interventions. When considering surgery in adolescents, one must evaluate the risks versus the benefits of the surgical approach and make certain that every other possible means to reduce weight has been tried or at least considered. The short-term outcomes of bariatric surgery on the adolescent are similar to those for adults, but the long-term effects on this population are not yet known.[31, 29]

Summary

Our current culture that embraces fast food, excessive screen time, and inadequate exercise has led us to our current problems. It will take a massive cultural shift to reverse this trend. Physicians should assist in leading the charge for improved nutrition, increased exercise, and access to treatment for our overweight and obese adolescents who otherwise are facing a lifetime of increased morbidity and eventual mortality from this disease.

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Achieving Healthiest Weight for Adults in Florida

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Definitions of Weight Status

The most widely used measure of weight status is the body mass index, or BMI.[1] BMI is a measure of body fat content based on an individual's weight to height ratio (BMI= kg/m^2). The World Health Organization (WHO) and National Institute of Health (NIH) define *overweight* as having a BMI between 25.0 and 29.9 kg/m^2 and *obese* as having a BMI above 30.0 kg/m^2 (Table 1). According to the U.S. Preventive Services Task Force (USPSTF), the BMI is easy to measure, highly reliable, and closely correlated with body fat content.[2]

Decades of research have shown that a high BMI is associated with a myriad of adverse health outcomes including cardiovascular disease (CVD), musculoskeletal disorders, pulmonary disease, type 2 diabetes, cancer (breast, endometrial and colon) and overall mortality.

Increasing evidence has demonstrated that measures of abdominal obesity (waist circumference or waist-hip ratio) are indicative of visceral adipose tissue, which may be more detrimental than overall overweight or obesity in some cases.[3] Clinical guidelines from the National Heart, Lung, and Blood Institute (NHLBI) recommend using the waist-hip ratio *in addition* to BMI when screening for weight status in adults. High waist circumference is defined by cutoffs of >35 inches (>88 cm) for women and >40 inches (>102 cm) for men and increases the risks associated with a given BMI.[4]

The Epidemic

Unhealthy weight has received considerable attention as a major health hazard and rightly so. According to the National Health and Nutrition Examination Surveys (NHANES), in 2009-2010, more than one-third (35.7%; 78 million) of U.S. adults were obese.[5] Florida ranks 40th among states in adult obesity with 65% of the adult population at an unhealthy weight and 25.2% of adults who are obese.[6,7] **If this trend continues unabated, by 2030, almost 60% of adults in Florida will be obese**.[8]

Following the trend in the U.S., minorities in Florida are overrepresented among the overweight and obese populations…

Following the trend in the U.S., minorities in Florida are overrepresented among the unhealthy populations who are either overweight or obese, with non-Hispanic blacks having an obesity rate of 35.6% as compared to Latinos (27.9%) and whites (25.0%).[9] These disproportionate numbers places ethnic minority groups at most risk for obesity and its accompanying diseases and disabilities.

The prevalence of risk factors (e.g. CVD, type 2 diabetes) increases concurrently with the increase in obesity. In Florida by 2030, obesity could contribute to **869,214** new cases of obesity-related cancer; **2,442,415** new cases of type 2 diabetes; **3,266,082** new cases of arthritis; **5,261,978** new cases of hypertension; and **6,188,174** new cases of heart disease and stroke.[9] This rise in risk factor prevalence results in grave financial consequences. Pharmacological control of hypertension, type 2 diabetes and high cholesterol requires long-term/lifelong costly medical therapy. Per capita, it costs $1,429 more per year to medically care for individuals with obesity compared to individuals of normal weight.[10] **In Florida, over the next 17 years, the cost to care for chronic diseases associated with obesity alone is estimated to be $34 billion**[11]; this is costly and unsustainable.

Adult overweightness and obesity have major impacts on the development and course of adverse health events (e.g. CVD, type 2 diabetes); it is the second leading cause of 112,000 preventable deaths per year in the United States, second only to tobacco.[12] Overweight and Obesity affect physical and social functioning, quality of life and cause financial strain and burden. It is imperative that physicians exercise effective screening, interventions, and maintenance strategies to quell obesity and its related health risks.

What Can Physicians Do to Help Patients Achieve a Healthier Weight?

Screen

The American Medical Association (AMA) has designated obesity as a disease[13] deserving of the vigilance and efforts of the medical community. Some doctors have called BMI a vital sign, as crucial to monitor as blood pressure. Unfortunately, screening for obesity has yet to become a standard practice, with only 20% of obese patients being diagnosed with obesity or having a management plan created by their primary care physician.[14]

While using BMI and waist circumference to screen for obesity, it is important that the clinician is cognizant of variations in population characteristics that can influence clinical management of obesity. For example, the degree of body fat and BMI differs somewhat by ethnicity.[15-17] The elderly typically have a higher proportion of internal fat, and BMI correlates least strongly with body fat percentage in this population;[2] however, estimates of body fat percentage based on BMI for the elderly have shown an error of approximately 4%[2], so BMI should still be employed in this population. In addition, the association between body fat and BMI is age-dependent and does not take into account body fat distribution, which is an independent risk factor for health outcomes.[2] Other limitations to BMI do exist. BMI does not take into consideration an individual's muscle composition; the BMI of a muscular individual would appear to be high since muscle weighs more than fat. It is important that clinicians interpret BMI gradients in relation to risk as they differ for each population. Along with BMI and waist circumference measurement, screen patients to ascertain that no medical or psychological conditions exist that would make weight loss inappropriate and unsustainable. The levels of risk can be classified as low, moderate, and high (Table 2) and weight goals should also take into account personal and family history.

Treat

Three major forms of obesity treatment can be offered through various healthcare settings:

A. Counseling and behavioral lifestyle interventions,
B. Pharmacotherapy, and
C. Surgery

A. Counseling and Behavioral Interventions

Patients whose doctors discuss their overweight or obesity status are more likely to take action in losing weight.[18]

When a patient is obese, it is important that clinicians do

more than just mention a refined diet; it is advised that the clinician assess the patient's readiness for a healthy lifestyle change and, if ready, refer these patients for intensive counseling and behavioral interventions to encourage sustained weight loss. One way to assess a patient's readiness is through motivational interviewing (MI). MI is a patient-centered, hallmark approach to collaborative decision-making that provides non-judgmental feedback to patients, allowing patients' resistance to change while encouraging patients to develop their own reasons for engaging in health behavior change.[19] The key to MI is an empathetic listening style to enhance patient's motivation, self-efficacy, confidence, and personal control over the behavior change. MI improves patients' diet, lowers saturated fat intake, increases weight loss, physical fitness and intake of fruits and vegetables.[19] It is inexpensive and can be employed when time is limited in brief appointments with the patient. Examples of MI questions to help assess readiness for lifestyle changes are found in Table 3. For additional sample scripts and guidance on assessing patients' readiness visit: Yale Rudd Center for Food Policy and Obesity's "Examples of motivational interviewing techniques".

When the patient is ready to make healthy lifestyle changes, the clinician and patient can devise a weight management schedule. Successful weight management programs integrate four components: 1) physical activity, 2) high-intensity behavioral modification techniques, 3) frequent, engaging contact with clinician and social support, and 4) an increased length of treatment.

1.) Physical activity

Exercise significantly reduces diastolic blood pressure, triglycerides and fasting glucose, visceral adipose tissue, improves glucose metabolism, and increases the magnitude of weight loss.[21] **Even if no weight is lost, due to these many health benefits it is important to encourage the patient to engage in regular exercise**. Safety is of utmost importance when prescribing a weight loss plan; it becomes essential to assess the health risks associated with strenuous activity and instruct the patient on how to recognize and deal with potentially dangerous physical responses to exercise. To lose weight, the clinician can recommend a high amount of physical activity resulting in 1-2 pounds of weight lost per week until a healthy weight is achieved.[24] To maintain weight, the Centers for Disease Control and Prevention (CDC) recommends 150 minutes of moderate-intensity aerobic activity, 75 minutes of vigorous-intensity aerobic activity, or an equal amount of the two each week.[24] However, the exact amount of physical activity necessary to maintain weight varies from person to person, so a patient may need to do more than the recommended activity. For further explanation of moderate and vigorous activities and examples of calories burned in common physical activities visit: CDC's Physical Activity for a Healthy Weight.

2.) High-intensity behavioral modification techniques

a) Goal setting

It is important to help the patient to set realistic weight loss goals through diet, exercise, and lifestyle modifications. An initial weight loss of 5-10% of baseline weight is considered to be reasonable and safe and can significantly reduce a patient's risk of heart disease and diabetes.[20] Setting goals allows the patient to gradually adopt changes to ensure success.

It is important to help the patient to set realistic weight loss goals through diet, exercise, and lifestyle modifications.

b) Normalized healthy eating

Decrease in caloric intake through normalized healthy eating is the biggest contributing factor to weight lost and maintenance.[27] Advise overweight and obese patients to control caloric intake by introducing or reinforcing strategies, such as meal planning, portion control, consuming fresh fruits and vegetables and less processed foods, and incorporating these habits into their daily routine, so over time these healthy behaviors become normalized. Low Glycemic Index (LGI) diets have shown to be more effective than traditional diets in significantly decreasing total fat, BMI, Low-density Lipoprotien (LDL) and total cholesterol.[31] In addition, low-carbohydrate/high-protein diets are more effective at six months and are as effective, if not more, as low-fat diets in reducing weight and cardiovascular disease risk up to one year.[32] A diet deficient in 500-1,000 kcal/day should be an integral part of the patient's program aimed at

achieving a weight loss of 1-2 lbs/week. Explain the benefits of LGI and low-carbohydrate/high-protein diets with patients and recommend that they meet with a nutritionist to decide the best program for them.

c) Self-monitoring

Encourage the patient to record his/her daily intake through a food journal and exercise regime using a pedometer. As physicians are limited on time, quick tools such as free smartphone applications (apps) can be referred to patients to help track food, exercise, and weight loss. According to a 2013 study, MyNetDiary, a free app for iPhone users, had the highest proportion of evidence-based behavioral weight-loss strategies.[30] These apps allow clients to be cognizant of their caloric needs and expenditures. Working with a physician, they can adjust them as needed to reduce/maintain weight, and analyze road blocks that hinder them from reaching their goals (i.e. Do they spend too much time around a desk at work? Do they consume excess calories when depressed or stressed?).

3.) Frequent, engaging contact with the physician and social support

Frequent patient-clinician engagement and peer and family support helps patients in reaching their weight loss and maintenance goals. Regular physician-patient contact will also allow the physician to assess and address any dysfunction or limited social support, which can inhibit or delay progress in weight loss/maintenance.

Connecting patients to worksite wellness programs is a great way to engage patients in order to increase accountability, provide social support, and increase the likelihood of weight loss success. Worksite wellness programs consist of weight management programs, health education and coaching, medical screenings, health fairs, on-site fitness programs, etc. These programs have proven to be effective in significantly reducing BMI.[22] Since most adults have to work, the work environment is a convenient location to participate in wellness activities. For examples of worksite wellness activities see Table 4.

4.) Increased length of treatment

Long-term interventions lasting 24-54 months have demonstrated to be most effective for weight loss and maintenance.[2] One of the key features to weight loss/maintenance that a physician can stress is the greater importance of diet changes vs. dieting. Gradual changes, moderations, and substitutions in diet over time have a longer-lasting effect on weight loss/maintenance than short-term diets, which have shown that up to 2/3 of people regain all lost weight plus more within four or five years.[26, 29]

Cultural and Socioeconomic Diversity

Bearing in mind the cultural and socioeconomic diversity in Florida, physicians cannot transpose interventions on various ethnic and socioeconomic populations. It is recommended that clinicians ascertain if there is financially feasible access to healthy foods. Culturally tailored programs require more time-intensive resources and given the many time restraints of physicians, patients could be referred to consulting dieticians who can create culturally tailored interventions that take into account the individual's views on weight, body shape, customs, beliefs and preferences that rule their food consumption. For cultural and ethnic food and nutrition materials visit: www.nal.usda.gov/fnic/pubs/ethnic.pdf.

B. Pharmacotherapy

Studies show that weight-loss drugs work best in conjunction with a weight-control program.[26] When healthy eating and regular physical activity are not enough for the patient to lose weight and maintain weight loss, prescription medications may be discussed with the patient. Weight loss drugs approved by the Food and Drug Administration (FDA) are to be used as part of a comprehensive weight loss

program, including dietary therapy and physical activity, for those with a BMI of ≥30 with no concomitant obesity-related risk factors or disease, as well for patients with a BMI of ≥27 with concomitant risk factors or diseases. Advise the patient that weight loss drugs should never be used without concomitant lifestyle modifications. Continually assess the safety and efficacy of drug therapy; if the drug is safe and effective in helping the patient to lose and maintain weight loss with no serious side effects, it can be continued.[26] See Table 5 for FDA approved prescriptions drugs and Table 6 for natural medicines for obesity.

C. Bariatric Surgery

For carefully selected patients with clinically severe obesity (BMI ≥40 or ≥35 with comorbid conditions), weight loss surgery is an option when less invasive weight loss methods have failed and the patient is at high risk for obesity-related morbidities and mortality. Surgery can result in reductions in comorbidities (i.e. diabetes, hypertension) and improves health-related quality of life after two years.[26] The most appropriate surgery options and the potential side effects can be discussed between a surgeon and patient.

Provide Positive Reinforcement

Once the goal of a weight loss program has been achieved, maintaining a lower body weight can be challenging. After successful weight loss, it is imperative that the practitioner, whenever possible, continues to frequently meet with their patient to observe, monitor and encourage them to continue a program indefinitely. The program should include the same components of the patient's weight loss program (i.e. dietary therapy, physical activity, and behavioral activity) with emphasis on dietary modifications, which has been shown to been the most effective on weight loss results when the duration of intervention is at least 6 months.[26] The National Weight Control Registry provides information from successful weight loss maintainers (average member lost 33 kg (72 lbs) and maintained the loss for >5 years) about strategies to maintain long-term weight loss. Many members reported engaging in high levels of physical activity (~1 hr/day), eating a low-fat/low-calorie diet, regularly eating breakfast, monitoring their weight, and maintaining a consistent eating pattern each week to maintain their weight long-term.[27] Weight loss may get easier over time; after those who suc-

After successful weight loss, it is imperative that the practitioner, whenever possible, continues to frequently meet with their patient to observe, monitor and encourage them to continue a program indefinitely.

cessfully maintained weight loss for 2-5 years, the chances of longer-term success greatly increases. Drug therapy can also be used, however drug safety and efficacy beyond one year of treatment has not been established.

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Table 1: BMI Classification

BMI (kg/m²)	Classification
< 18.5	Underweight
18.5-24.9	Normal Weight
25.0-29.9	Overweight
≥ 30.0	Obese
30.0-34.9	*– Class I Obesity*
35.0-39.9	*– Class II Obesity*
≥ 40.0	*– Class III Obesity*

Adapted from WHO, 2014[28]

Table 2: Patient Risk Classification

Risk category	Definition
Low-risk	No known health problems or conditions needing medical monitoring
Moderate-risk	Medical conditions that could be complicated by weight loss or weight loss treatment
High-risk	Severe, life-threatening conditions needing direct medical monitoring during treatment

Table 3: Sample MI Questions for Obesity

1. **What kinds of changes have you made in the past to improve your eating (or physical activity)?**
2. **What strategies have worked for you in the past?**
3. **Some people talk about part of them wanting to change their eating patterns, and part of them not really wanting to change. Is this true for you?**
4. **On a scale from 1-10, how ready are you to make changes in your eating patterns?**
5. **How much of you is not wanting to change?**
6. **What was your life like before you gained weight?**
7. **What do you think will happen if your health behaviors don't change?**
8. **What are your hopes for the future if you are able to become healthier?**
9. **How would your life be different if you lost weight or adopted a healthier lifestyle?**
10. **What kinds of healthy changes do you think you could make this week?**

From UCLA Center for Human Nutrition. Available at: www.cellinteractive.com/ucla/physcian_ed/interview_alg.html

Table 4: Examples of Worksite Wellness Activities

1. **Encourage physical activity during breaks (i.e. stretch or walk) and take stairs instead of the elevator**
2. **Offer healthier choices in vending machines**
3. **Display health posters around the worksite**
4. **Hold walking rather than sitting meetings**
5. **Provide healthy snacks (i.e. fresh fruits and vegetables) during meetings**
6. **Offer financial and other incentives for participation**
7. **Offer discounts/partial reimbursements for gym memberships**

Table 5: Prescription Drugs Approved for Obesity Treatment

Weight-loss drug	Approved for	Mechanism of action	Common side effects
Orlistat (prescription sold as Xenical, OTC sold as Alli)	Xenical: adults and children over the age of 12	Blocks fat absorption	Stomach pain, gas, diarrhea, oily spotting. ***Note:** *rare cases of severe liver injury reported. Should not be taken with cyclosporine.*
Lorcaserin (Belviq)	Adults	Acts on serotonin receptors in the brain to help decrease appetite and increase satiety after eating small amounts of food	Headaches, dizziness, increased heart rate, nausea, dry mouth, cough, constipation, feeling tired. ***Note:** *should not be taken with selective serotonin reuptake inhibitors (SSRIs) and monoamine oxidase inhibitors (MOIs).*
Phentermine-topiramate (Qsymia)	Adults	A mix of two drugs: Phentermine suppresses appetite and curbs desire to eat. Topiramate increases the feeling of fullness and makes food taste less appealing.	Tingling of hands and feet, dizziness, taste alterations (especially with carbonated beverages), difficulty sleeping, constipation, dry mouth, increased heart rate, anxiety ***Note:** *MAY LEAD TO BIRTH DEFECTS. CONTRAINDICATED IN PREGNANT WOMEN OR THOSE PLANNING A PREGNANCY*
Appetite suppressants: • *Phentermine (Adipex, Suprenza)* • *Benzphetamine (Didrex)* • *Diethylpropion (Tenuate)* • *Phendimetrazine (Bontril)*	Adults: Only FDA approved for a short period of time (up to 12 weeks).	Increases chemicals in the brain that affect appetite. Decreases appetite, increases feeling of fullness	Dry mouth, insomnia, dizziness, headache, nervousness, restlessness, upset stomach, diarrhea, constipation

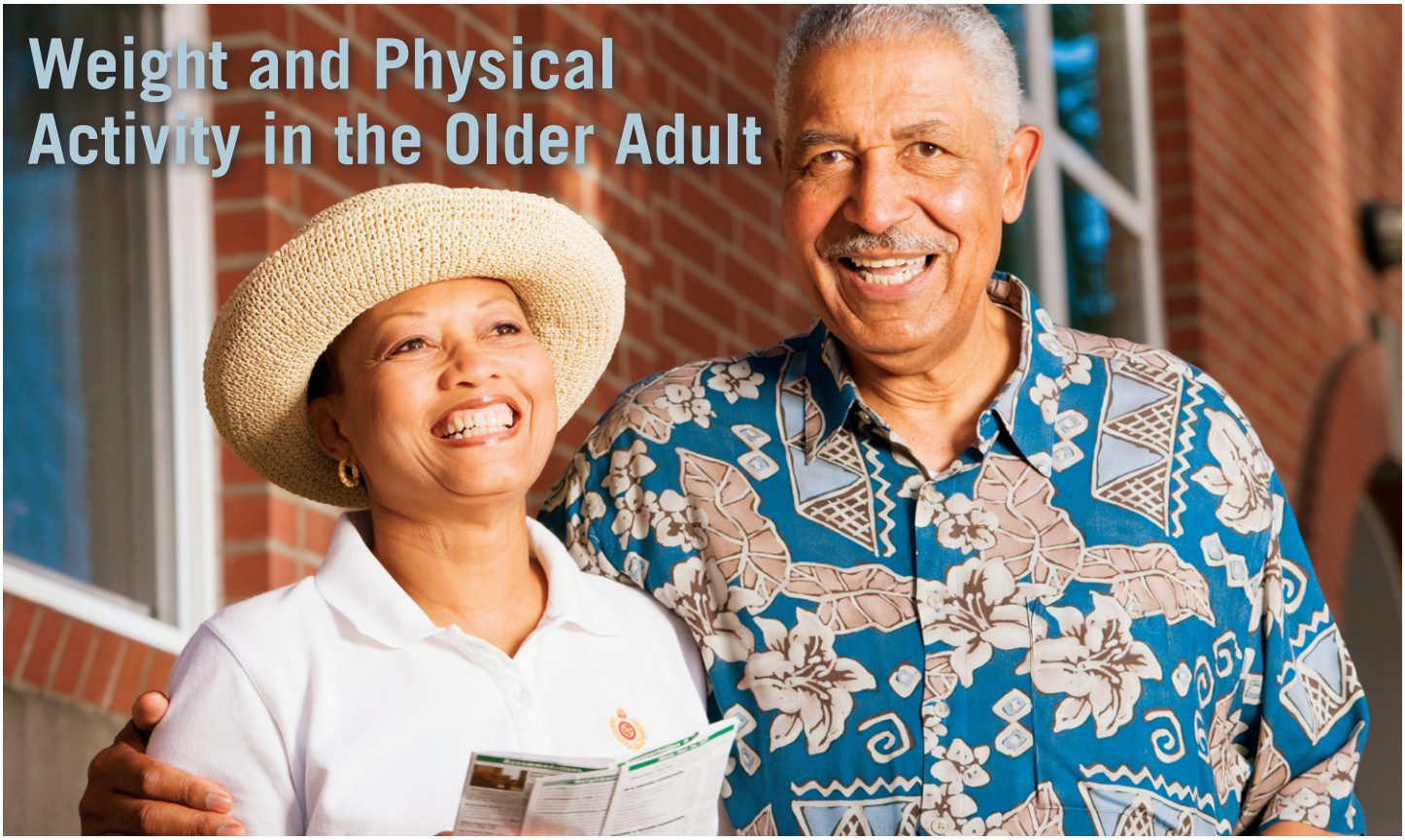
Adapted from Mayo Foundation for Medical Education and Research (MFMER); National Institute of Diabetes and Digestive and Kidney Diseases. Available at: www.win.niddk.nih.gov/publications/PDFs/Prescription_Medications.pdf

Table 6: Natural Medicines for Obesity

Product	Claim	Effectiveness	Side effects
Bitter orange	Increases calories burned	Probably ineffective	Similar to ephedra: raised blood pressure and heart rate
Chitosan	Blocks absorption of dietary fat	Probably ineffective	Uncommon: upset stomach, nausea, gas, increased stool bulk, constipation
Chromium	Decreases appetite and increases calories burned	Probably ineffective	Uncommon: headache, insomnia, irritability, mood changes, cognitive dysfunction
Conjugated linoleic acid	Reduces body fat	Possibly effective	Upset stomach, nausea, loose stools
Green tea extract	Decreases appetite, and increases calorie and fat metabolism	Insufficient evidence to evaluate	Dizziness, insomnia, agitation, nausea, vomiting, bloating, gas, diarrhea
Guar gum	Blocks absorption of dietary fat and increases feeling of fullness	Possibly ineffective	Abdominal pain, gas, diarrhea
Hoodia	Decreases appetite	Insufficient evidence to evaluate	Insufficient information available

Sources: U.S. Food and Drug Administration, 2011; Natural Medicines Comprehensive Database, 2011 at: www.naturaldatabase.therapeuticresearch.com/ce/ceCourse.aspx?pm=5&pc=09-32

Weight and Physical Activity in the Older Adult



Alice Pomidor, MD, MPH

Part 1—Meet Mrs. C

Mrs. C is a 78 year-old woman with osteoarthritis, hypertension, type 2 diabetes, a family history of coronary artery disease and osteoporosis who comes in for her 6-month visit. She says that she wants to lose 20 lbs before the upcoming family reunion in five months, and also wonders if she should get a mobility scooter for it. She has tried to diet but says "it's not working." Her neighbor has advised her to start a golden Zumba class at a local facility. What do you recommend?

Like many older adults in the United States, Mrs. C. has medical comorbidities that are intimately related to lifestyle factors as well as personal genetics and, potentially, limited resources. Approximately 20% of older adults over the age of 65 have diabetes, and 64-68% of those are between the ages of 65-74. For women, 80% over the age of 75 have hypertension, and 23-47% of both men and women over the age of 65 have heart disease.[1] Coincidentally, the incidence of obesity (body mass index greater than or equal to 30) among older Americans 65-74 years of age has doubled in the last 30 years to 36% and continues into 26% of elders surviving past age 75. A general distribution of the proportion of obese adults in the U.S. can be seen in Figure 1. This bears a striking resemblance to the distribution of low levels of physical activity among adults in the U.S. seen in Figure 2. Although most clinicians commonly use the standard of body mass index (BMI) for comparing individuals of different heights and weights, BMI alone does not capture differences in body composition and fat distribution seen with aging. Central obesity, which can be determined in the office by a waist circumference over approximately 100 cm or 40 inches in men and 88 cm or 35 inches in women, may be a better indicator of risk for hypertension, diabetes resistance, metabolic syndrome, heart disease, and overall mortality than BMI alone.[2, 3]

The "obesity paradox" for older adults is that although overweight and obese persons have higher risk for developing these comorbidities, they have better survival outcomes with these conditions than normal weight individuals.

On review of the majority of the literature, the optimal

BMI range for the lowest mortality in the elderly is actually overweight and mildly obese. Older adults typically lose lean body mass at about 0.7 lbs, or 0.3 kg per year, lose skeletal height, and tend to have fat redistribution to visceral/abdominal and intramuscular deposits, peaking at about age 60. The mean body fat content of an 80-year-old individual is twice that of a 20-year-old of the same weight. A loss of lean body mass reduces total body protein reserves when combating acute illness and injury, both of which require intensive amounts of protein consumption in addition to compensating for frequent periods of starvation for medical procedures. There are relatively few randomized controlled trials on intentional weight loss interventions in obese adults over the age of 65 years. Lifestyle interventions using a combination of diet and exercise can be successful in achieving a 10% weight loss over three to twelve months, with positive changes in physical function, metabolic outcomes and cardiovascular risks, but there will still be some lean mass and bone mineral density losses.[4, 5]

This has led many clinicians to avoid recommending weight loss to older adults at all, despite the known benefits for cognition, depression, functional ability, cardiovascular risk, and metabolic parameters. Giving Mrs. C helpful, evidence-based guidance from a health care professional's perspective will therefore depend on many more factors at her age than perhaps those at younger ages, where body physiology is more forgiving and persons may have more reserves to cope with the stresses of malnutrition, disease, and physical activity limitations. It is important to consider whether the overweight/obese older adult suffers from sarcopenic obesity and/or protein malnutrition, since well-intentioned efforts to lose weight that do not factor this in can push them farther out of balance and towards failure-to-thrive and frailty. The etiology of sarcopenic obesity in the elderly is multifactorial and includes decreased resting metabolism, sedentary lifestyle, reduced calorie-protein intake, decreased growth and sex hormones, and increased cytokine activity.[4] Clinically relevant evaluation of sarcopenic obesity, which appears to have an overall prevalence of about 10% in older adults, can be achieved more easily by measuring muscle strength by handgrip rather than measuring muscle mass with various scanning or impedence techniques.

Most experts now recommend weight loss only for obese older adults with a BMI over 30…

Most experts now recommend weight-loss only for obese older adults with a BMI over 30 and who have functional limitations or metabolic complications that may benefit from weight loss by a weight-loss therapy that minimizes muscle and bone loss. Clinical trials of a 500 kcal/day reduction from the usual diet, incorporating a protein recommendation of 1-1.5 gm/kg/day to avoid lean body mass loss, including supplementary calcium and vitamin D to at least Recommended Dietary Allowances (RDA) levels, plus a multicomponent exercise program to sustain long-term benefits have been successful in older adults. Use of pharmacotherapy and surgery are rarely, if ever, effective or helpful in this age group, and most studies of these modalities exclude people aged 65 years and older.[6]

Part 2—Motivation and Baseline Status

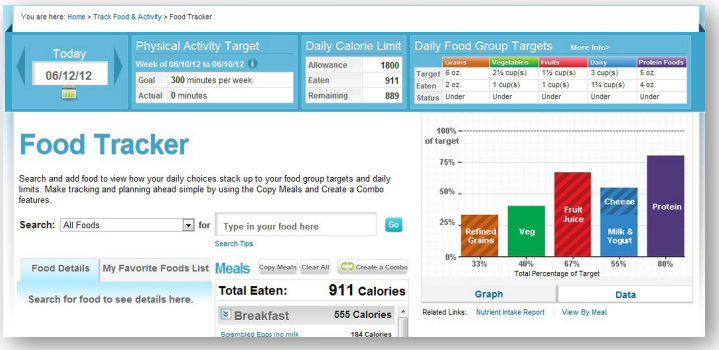
Mrs. C states that she weighs about 200 lbs (90 kg) and her stated height is about 5 feet 4 inches (162 cm). Her BMI is therefore 34.3. Her baseline diet by recall is about 2700 kcals with approximately two servings of protein (60 gm) per day. Her stated goal of 20 lbs of weight loss is a reasonable estimate of what would be a healthier weight, which would reduce her BMI to just over 30.

The health care professional's plan for helping Mrs. C manage her obesity and potential lifestyle changes should include: 1) Determining the patient's stage of change and possible motivation, 2) Assessing the patient's nutritional status, 3) Assessing the type of physical activity likely to benefit the patient, 4) Recommending a nutritional change, and 5) Writing an exercise prescription.

1) Determining the patient's stage of change and possible motivation. Both motivational interviewing and using stages of change theory have been fairly successful in assisting individuals to achieve health behavior change. Prochaska's stages of change model describes how individuals act over time for successful behavior change[7] through the stages of precontemplation, contemplation, preparation, action, and maintenance. Interventions need to be matched to the stage

of the patient, and the time spent in each stage will vary according to the individual. Assessing what stage the older adult is in is essential. This can be done by asking "Would you say you are not ready to change in the next six months (precontemplation), thinking about changing in the next six months (contemplation), thinking about changing in the next month (preparation), or have you already made some progress (action)?" Precontemplation is the stage in which there is no intention to change behavior in the foreseeable future. Contemplation is when patients are seriously considering behavior change but have not yet made a commitment to take action. Preparation is when individuals intend to take action in the next month and are reporting some small behavioral changes, but have not yet reached effective action. Action is the stage in which individuals actually modify their behavior, experiences, and/or environment. Maintenance is the stage in which people work to prevent relapse and consolidate the gains attained during action. In general, a behavior change needs to last at least six weeks to become a routine habit.

2) Assessing the patient's nutritional status. Office-based nutritional assessment can be performed using the most appropriate tool for the clinical setting. The ABCDs is a handy way to remember the different dimensions involved. Anthropometric methods would include a measured (rather than stated) weight and height, calculating the BMI, and measuring waist circumference. Biochemical methods should include baseline measures of areas relevant to



the older individual, but in many cases should include a pre-albumin, vitamin D, vitamin B12, CBC, and HgA1C levels. Clinical assessment should include a basic cardiopulmonary assessment and an evaluation of cardiac risk factors for vigorous activities, as well as a medical history and exam particularly relevant to previous injuries, musculoskeletal integrity, and endocrinologic abnormalities.[8] A simple screening for malnutrition using the Mini-Nutritional Assessment (MNA) plus a minimum of a 24-hour diet recall will contain most of the essential elements for a successful plan.[9] In addition, older adults and staff with good internet navigation skills can utilize the ChooseMyPlate website at www.choosemyplate.gov and its Supertracker tool at www.supertracker.usda.gov/default.aspx to create individualized goals, plans, and diaries.[10, 11]

Part 3—Medical History

Mrs. C appears to be in the contemplation stage, but she has not actually begun to prepare to act. Her current clinical parameters include a blood pressure of 145/90 at rest, blood sugars by home monitoring that range from 110-320, and a normal lipid profile. She is a nonsmoker and reports that her osteoarthritis gives her morning stiffness. She takes acetaminophen QID for relief. Other regular medications include HCTZ, lisinopril, and metformin. Her current physical activity level consists of walking from her couch to mailbox and necessary shopping only.

3) Assessing the type of physical activity likely to benefit the patient. This will be specific to the older adult, depending on the functional abilities that may be selected for improvement and the medical conditions that are present. Older adults may identify these functional issues by completing a self-assessment primarily developed by the American Physical Therapy Association at www.FirstStep-toActiveHealth.com, which provides a checklist of common activities, such as carrying groceries or picking up objects from the floor, mapped to the type of exercise that could be helpful. Health care professionals can objectively assess the older adult's condition by completing the Senior Fitness Test in the office, which has been shown to be practical and can be completed within 15 minutes by a nurse practitioner.[12] This assessment can provide a baseline to compare progress. It consists of eight measures described below in Table 1.

Part 4—Physical Fitness Assessment

Mrs. C could benefit from endurance (aerobic) activity for her weight loss goals, blood pressure control, increased mobility, and reduction of cardiac risk. Weight-bearing and strengthening (resistance) activities could improve her osteoporosis. Flexibility (stretching) activities could improve her arthritis symptoms. She should have a treadmill stress test prior to starting her endurance activity.

4) Recommending a nutritional change. This will vary with the older adult and their medical conditions, as well as social and cultural factors that may limit or affect their choices. When possible, food intake that is prepared under the older adult's supervision is the optimal situation. Use of dietary supplements, tube feedings, and pre-packaged commercial diets afford less flexibility and are frequently more expensive. In general, a 500 kcal/day reduction from the current diet with a protein recommendation of 1-1.5 gm/kg/day to avoid lean body mass loss, plus supplementary calcium and vitamin D to RDA levels, has been successful in clinical trials.

Part 5—Nutrition Recommendation

By using the calculators available for creating individual Daily Food Plans at www.choosemyplate.gov created by the USDA, with physical activity of less than 30 minutes per day, Mrs. C would need a drastic reduction in calories to approximately 1800 kcal/day to achieve her goal of losing one pound per week by the family reunion. This is likely unrealistic and would place her at risk of sarcopenic obesity. If she was able to increase her activity level to 30-60 minutes of physical activity a day, her daily calorie allowance could be about 2000 kcal/day, which would be a far more achievable goal.

5) Writing an exercise prescription. Multicomponent exercise is recommended by the American College of Sports Medicine[13] whenever possible and includes flexibility, balance, and aerobic exercise and resistance training. Safety, physical ability, motivation, support, individual clinical considerations, and goals all need to be factored in. Exercise prescriptions should include FITTS: Frequency, Intensity, Type, Time, and Specific instructions for physical activity. Walking for 10 minutes a day is a start; others who may not be able to walk can begin some upper body strengthening; and others may be ready for a well-rounded daily routine. It is important to remember that 30 minutes in a day does not have to be completed all at the same time, but can be broken up into segments of 10 minutes each,[14] with similar benefits accruing to the older adult. The overall goal of the program is to facilitate a behavioral change among older adults to begin some type of physical activity, eventually working toward the recommendations of the ACSM to incorporate moderate activity for a goal of 30 minutes at least four days per week, perform strengthening activities at least two days per week, include warm-up and cool-down activities with each workout, and incorporate balance activities into daily activities.

Older adults should be taught the "talk test" method of assessing exertion for self-monitoring during physical activity, which is simpler and easier than attempting heart rate monitoring and takes variation in fitness into account. During light physical exertion, the older adult should be able to talk or sing during the activity. During moderate exertion, it is easy to talk but not to sing. During vigorous exertion, talking is difficult. The older adult should notice an increase in heart rate and breathing with all levels of exertion.

Part 6—Exercise Prescription

Mrs. C's exercise prescription

Rx

FREQUENCY: 5 x per week — Start Low, Go Slow

INTENSITY: Moderate

TYPE: Warm up: Gentle back/leg stretches — 5 min

Endurance: Walking around the block/the mall

TIME

Week 1:	10 min
Week 2:	15 min
Week 3:	20 min
Week 4:	25 min
Week 5:	30 min

Cool Down: Easy stretches, end relaxed — 5-10 min

Strength: Lift half-full half-gallon milk jugs, 10 times x 2 days

Specific Instructions, Precautions, Modifications

Stretches to be done on a floor mat or against a wall if she can get up and down from the floor; if not, on a sofa or bed (no unsupported back stretches).

Breathing should increase but she should be able to talk.

Resources

There are many free resources for physicians and older adults when developing nutrition and physical activity plans. The most comprehensive single location for comprehensive exercise advice, condition-specific handouts, nutritional advice, sample workouts, and DVDs providing advice on how to begin and sustain healthy nutrition and physical activity is the Go 4 Life program developed by the National Institute on Aging found at http://go4life.nia.nih.gov/. In addition, the USDA ChooseMyPlate and SuperTracker websites noted above provide general guidance for adults. The National Institutes of Health's SeniorHealth websites (www.nihseniorhealth.gov/eatingwellasyougetolder/benefitsofeatingwell/01.html) has additional guidelines tailored specifically for older adults on choosing healthy dietary content, portion size, resources, and videos. Finally, the American College of Sports Medicine website Exercise is Medicine at www.exerciseismedicine.org/ has more detailed handouts that provide exercise recommendations specifically geared towards medical conditions such as congestive heart failure, diabetes, and stroke.

Summary

In summary, weight loss is recommended only for obese older adults with a BMI over 30 and who have functional limitations or metabolic complications that may benefit from weight loss by a weight-loss therapy that minimizes muscle and bone loss. A reduction of 500 kcal/day from the usual diet, incorporating a protein recommendation of 1-1.5 gm/kg/day to avoid lean body mass loss, including supplementary calcium and vitamin D to at least RDA levels, plus a multicomponent exercise program to sustain long-term benefits have been successful in older adults. Use of pharmacotherapy and surgery are rarely, if ever, effective or helpful in this age group, and most studies of these modalities exclude people aged 65 years and older. Physical activity can improve cardiovascular health, cognition, mood, bone density, and sarcopenia. Well-rounded programs should include endurance, strength, flexibility, and balance.

Exercise prescriptions should include FITTS: Frequency, Intensity, Type, Time, and Specific instructions for physical activity. Assessing and supporting patient goals and motivation is essential for success.

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Nestlé Nutrition Institute

Mini Nutritional Assessment MNA®

Last name: First name:

Sex: Age: Weight, kg: Height, cm: Date:

Complete the screen by filling in the boxes with the appropriate numbers. Add the numbers for the screen. If score is 11 or less, continue with the assessment to gain a Malnutrition Indicator Score.

Screening

A Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?
0 = severe decrease in food intake
1 = moderate decrease in food intake
2 = no decrease in food intake ☐

B Weight loss during the last 3 months
0 = weight loss greater than 3kg (6.6lbs)
1 = does not know
2 = weight loss between 1 and 3kg (2.2 and 6.6 lbs)
3 = no weight loss ☐

C Mobility
0 = bed or chair bound
1 = able to get out of bed / chair but does not go out
2 = goes out ☐

D Has suffered psychological stress or acute disease in the past 3 months?
0 = yes 2 = no ☐

E Neuropsychological problems
0 = severe dementia or depression
1 = mild dementia
2 = no psychological problems ☐

F Body Mass Index (BMI) (weight in kg) / (height in m^2)
0 = BMI less than 19
1 = BMI 19 to less than 21
2 = BMI 21 to less than 23
3 = BMI 23 or greater ☐

Screening score ☐☐
(subtotal max. 14 points)

12-14 points:	Normal nutritional status
8-11 points:	At risk of malnutrition
0-7 points:	Malnourished

For a more in-depth assessment, continue with questions G-R

Assessment

G Lives independently (not in nursing home or hospital)
1 = yes 0 = no ☐

H Takes more than 3 prescription drugs per day
0 = yes 1 = no ☐

I Pressure sores or skin ulcers
0 = yes 1 = no ☐

J How many full meals does the patient eat daily?
0 = 1 meal
1 = 2 meals
2 = 3 meals ☐

K Selected consumption markers for protein intake
- At least one serving of dairy products (milk, cheese, yoghurt) per day yes ☐ no ☐
- Two or more servings of legumes or eggs per week yes ☐ no ☐
- Meat, fish or poultry every day yes ☐ no ☐

0.0 = if 0 or 1 yes
0.5 = if 2 yes
1.0 = if 3 yes ☐.☐

L Consumes two or more servings of fruit or vegetables per day?
0 = no 1 = yes ☐

M How much fluid (water, juice, coffee, tea, milk...) is consumed per day?
0.0 = less than 3 cups
0.5 = 3 to 5 cups
1.0 = more than 5 cups ☐.☐

N Mode of feeding
0 = unable to eat without assistance
1 = self-fed with some difficulty
2 = self-fed without any problem ☐

O Self view of nutritional status
0 = views self as being malnourished
1 = is uncertain of nutritional state
2 = views self as having no nutritional problem ☐

P In comparison with other people of the same age, how does the patient consider his / her health status?
0.0 = not as good
0.5 = does not know
1.0 = as good
2.0 = better ☐.☐

Q Mid-arm circumference (MAC) in cm
0.0 = MAC less than 21
0.5 = MAC 21 to 22
1.0 = MAC 22 or greater ☐.☐

R Calf circumference (CC) in cm
0 = CC less than 31
1 = CC 31 or greater ☐

Assessment (max. 16 points) ☐☐.☐

Screening score ☐☐.☐

Total Assessment (max. 30 points) ☐☐.☐

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For more information: www.mna-elderly.com

Malnutrition Indicator Score

24 to 30 points	☐	normal nutritional status
17 to 23.5 points	☐	at risk of malnutrition
Less than 17 points	☐	malnourished

Table 1: Senior Fitness Test

Test item	Calculation	Equipment
BMI	Weight in kg/ht in meters squared	Scale with height measure
Waist measurement	Place tape measure around bare abdomen just above hip bone. Make tape snug (examiner can put only 1 finger breadth between). Have patient relax, exhale, and then measure	Tape measure
Chair stand (lower body strength)	Number of full stands completed in 30 s with arms crossed at wrists and held against the chest	Stop watch, chair
Arm curl (upper body strength)	No. of biceps curls completed in 30 s holding hand weight (women 5, men 8 dumbbells).	Hand weights
2-min step	Count of the number of full steps completed in 2 min, raising each knee to midway between the patella and the iliac crest	Marker for appropriate height 18-inch ruler
Chair sit-and-reach	No. of inches between fingers to tip of toe when reaching from a sitting position. Sitting on straight-backed chair, move forward until at edge of seat. Extend preferred leg out from the hip, heel on floor, and foot dorsiflexed to 90°. Bend other leg with sole of foot flat on floor. Extended leg straight and hands on top of each other, palms down; "slowly bend forward at the hip, keeping the spine as straight as possible and the head straight." Reach down and try to touch toes. Hold static for 2 s measure middle of toe at end of shoe as 0. Reaches short of toes are measured as minus, beyond are plus scores. Use ruler positioned parallel to leg	
Back scratch	No. of inches between fingers with one hand reaching over shoulder and one up middle of back	Tape measure
8-foot up and go	No. of seconds required to rise from seated position, walk 8 feet, turn, and return to start position	Stop watch, marker at 8 feet

Figures 1 & 2

2011 estimates were modeled from the Behavioral Risk Factor Surveillance System (BRFSS), which uses self-reported data from state-based adult telephone surveys, and 2010 census information.
http://www.cdc.gov/brfss/gis/gis_maps.htm[15]

Figure 1

BRFSS Maps
Year – 2011
Weight classification by Body Mass Index (BMI)
Percentage of respondents reporting Obese (BMI 30.0 – 99.8)

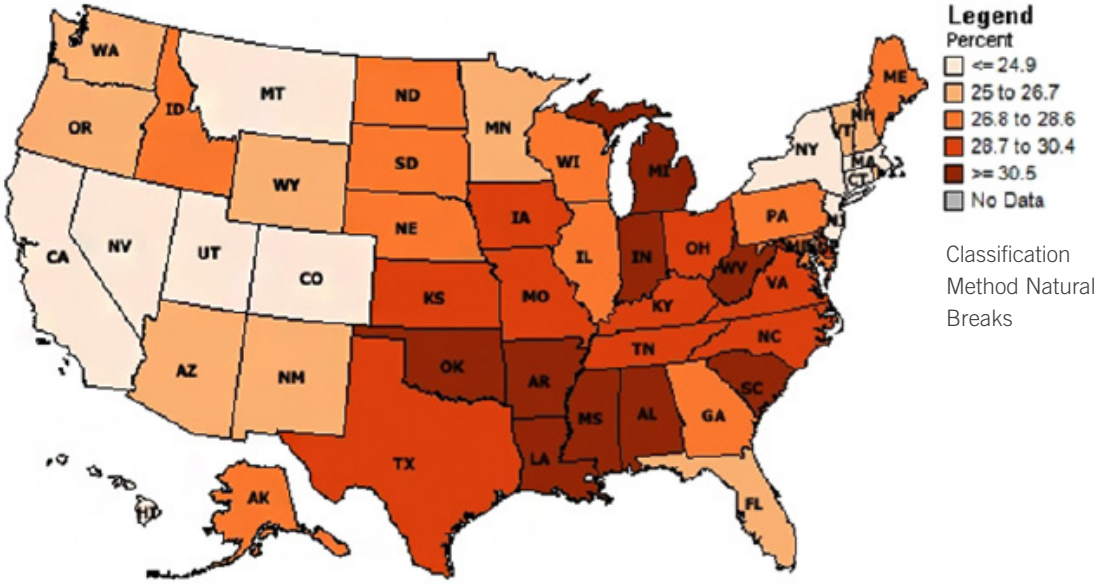
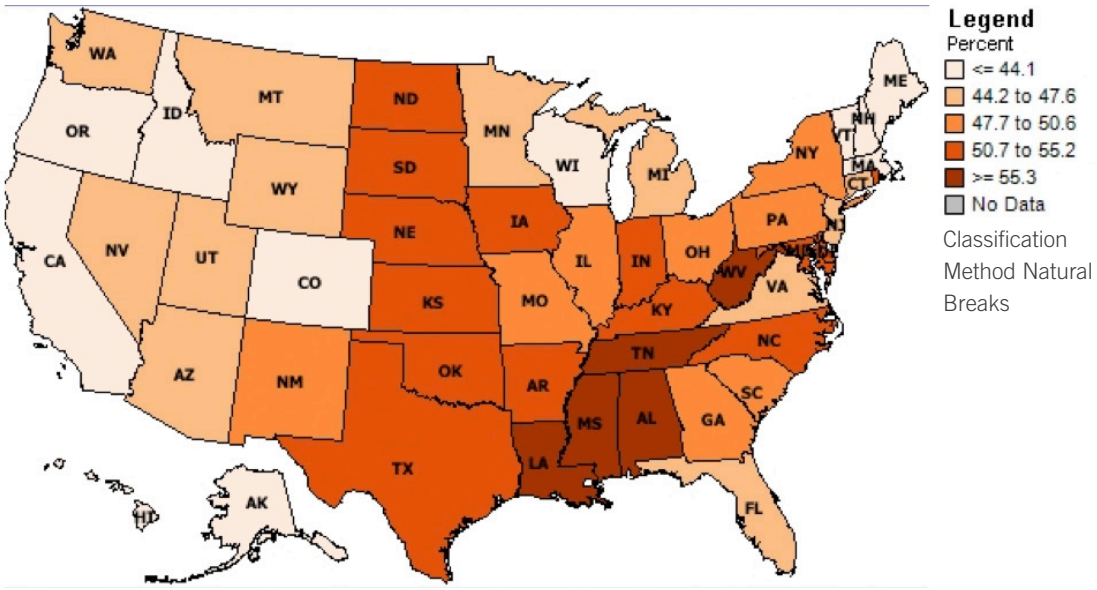


Figure 2

BRFSS Maps
Year – 2011
Participated in 150 minutes or more of Aerobic Physical Activity per week
Percentage of respondents reporting No