

2018 Certificate of Training in Obesity Interventions for Adults
Online Course

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Obesity Interventions for Adults Online Course Introduction

Thank you for purchasing the Obesity Interventions for Adults Online Course. This course was developed to address the evolving competencies of today's and tomorrow's weight management RDNs and NDTRs in ways that support the needs of modern learners. The vision for the training is for participants to be able to:

- Competently deliver weight management services that are patient-centered, evidence-based
- Apply weight management competencies to a variety of settings
- Engage clients where they live, work and play

We recognize that RDNs and NDTRs practice in a myriad of settings and with diverse adult patient/client populations. Thus, we have created a flexible training that you can tailor to your needs and interests. We also know that the scientific evidence and best practices in weight management and nutrition and dietetics rapidly advance so the training is designed to be a launching point for your continued learning and leading in the weight management intervention field.

We estimate that approximately thirty eight (38) hours will be required to complete the readings and worksheets contained in the course. To successfully attain the online self-study course learning objectives and prepare for the online assessment test, you should complete all readings and worksheets. Please review the module thoroughly before completing the online assessment test.

Upon submission of the online assessment test, an email will be sent to you documenting the 38 hours. Please retain the email as verification of the hours. The passing score (80% or higher) from the online assessment test will meet the pre-work requirement for a Certificate of Training in Obesity Interventions for Adults program offered until June 30, 2019. If you wish to attend a program offered after June 30, 2019, you will be required to complete the self-study module and assessment test for that appropriate year.

Please note that this online self-study course is separate and distinct from the Certificate of Training in Obesity Interventions for Adults. If you wish to obtain the certificate of training, you will need to attend the on-site program and pass the post-test in addition to completing the self-study online course and assessment test. For additional information on the Certificate of Training in Obesity Interventions for Adults, please click [here](#).

It is important to understand that the Certificate of Training in Obesity Interventions for Adults program is a training program and not a certification program. Upon completion

of this program, participants are not awarded a designation or credential. **Please note individuals who complete this certificate of training are not certified.** The term certification should only be used when referencing the completion of a certification examination as the Registration Examination for Dietitians. For definitions of a certificate program and a certification program, please click [here](#).

Should you have any questions, please feel free to contact CDR at 1/800-877-1600, extension 4783 or at weightmgmt@eatright.org.

Obesity Interventions for Adults Online Course

Where Do I Start?

This training will help you build knowledge and skill competencies in adult weight management. You can maximize the experience by identifying what you want to get out of it. You can do this by first reflecting on your current knowledge and skills in adult weight management. This will help you know what areas you may want and need to develop during and subsequent to this training.

The Academy and the Weight Management DPG, have developed Standards of Practice and Standards of Professional Performance (SOP/SOPP) for Registered Dietitians in adult weight management. The resource includes specific indicators for the application of standards at the competent, proficient and expert levels. The following activity walks you through steps for using the resource in conjunction with this training.

Self-assessment Activity

Take a moment now to download the SOP/SOPP for adult weight management. You're going to need to:

1. make notes in the document. Please print it out or use the comment feature in your pdf reader software.
2. review your notes at the end of the online course.

[Jortberg B, Myers E, Gigliotti L, et al., Academy of Nutrition and Dietetics: Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists \(Competent, Proficient, and Expert\) in Adult Weight Management. *J Acad Nutr Diet*. 2015; 115\(4\):609-618.e40.](#)

Review:

1. Put a checkmark beside the practice/performance indicators you feel you're currently doing at least at a competent level.
2. Put an open circle beside the ones which you're not doing now or want to improve.

Required Activity

1. Of the things you identified as practice/performance indicators that you want to improve, what are your top 5 priorities?
-

Obesity Interventions for Adults Online Course

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Obesity Interventions for Adults Online Course

How Do I Navigate the Online Course?

The online course topics range from the latest findings from weight management research to consensus guidelines in weight management treatment to practical tips and tools you can share with your patient/clients. The course is organized into ten modules with all modules following a general flow of

- Introduction
- Learning goals
- Learning activities
- Reflection
- Evaluation

Each module is delivered by a researcher or practitioner who is an expert in the subject. The learning activities vary across the different modules and include:

- Reading and reflection of seminal research articles to provide a foundation
- Video presentations and demonstrations to highlight key principles and practices
- Required worksheets to practice processes
- Required quizzes to assess your understanding
- Required and optional reflection questions to help you apply new concepts
- Required case studies to apply important concepts

Note: The videos, worksheets and quizzes will open in a new window. After reviewing them, you will need to close the window to go back to the course.

Click [here](#) to print paper copies of the assessment test, online course content pages, articles and pdf versions of the videos.

The modules also vary in length. It has been determined that it will take up to thirty-eight (38) hours to complete the ten modules and take the assessment test.

- Start early. Don't wait until last minute to do all the modules.
- Break up your learning sessions.
- Complete the modules in sequence. Some of the later modules build on earlier ones. Plus, the navigation requires you complete a module before moving on to the next one.
- Keep track of the sessions you've finished so you can easily find your starting point at your next learning session. You will also be able to use the "Course Navigation History" link to reassume where you left off.
- Block time for your sessions. While the digital and online format makes learning convenient, it's also tempting to try to multi-task. Research clearly shows that multitasking hinders learning.

If you have questions or need assistance, please email CDR staff at weightmgmt@eatright.org or contact:

Beth Crowley Garst, MS, RDN, LDN
Senior Manager, Credentialing Services
Commission on Dietetic Registration
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E: bcrowley@eatright.org

Science of Obesity Module

Science of Obesity Module

Introduction

Welcome to the Science of Obesity domain. Obesity is a complex disease as it is an interaction between our genetics and the environment we live in:

Obesity is characterized by an increase in body fat mass and a metabolic disorder that increases risk for cardiovascular disease, type 2 diabetes, certain types of cancer, osteoarthritis, sleep apnea, and nonalcoholic liver disease. Accumulation of adipocytes results in secretion of a number of hormones and cytokines called adipokines. These adipokines participate in the regulation of food intake, lipid storage and metabolism, insulin sensitivity, vascular homeostasis, blood pressure regulation, angiogenesis, the inflammatory and immune responses, female reproduction, and the regulation of energy metabolism.

The presentations and case study scenarios in this module will describe the role of adipose tissue as an endocrine organ and outline the accumulating evidence that currently exists. Over the past decades scientists have discovered that as adipose tissue (and the fat cell) accumulates as seen in overweight and obesity, the fat cell secretes a complex system of hormones and cytokines directly impacting appetite and body weight regulation. It is paramount that dietitians have a solid understanding of emerging evidence of the intricate interactions occurring physiologically in clients as they gain and lose weight. This information is relevant to understanding the challenges clients face when losing weight and the risk associated with regaining weight and maintaining the weight they have lost. The information will be applied so it is clinically relevant to those working with clients who have overweight and obesity.

Check Your Knowledge 1 - Science of Obesity - What Do You Know?

Required Activity

Answer this question, save your answer and click "next" to see the correct answer.

1. Adipose tissue, once considered benign tissue, is now recognized as an active endocrine organ that secretes hormones and cytokines impacting major systems of the body.



a) True



b) False

Save

Science of Obesity Module

Module Orientation and Objectives

This module has seven Learning Activities to enhance your understanding of the science of obesity, and how to apply to your patients and clients. In this module, you will:

- Listen to a series of five short PowerPoint slide presentations
- Read and review three relevant research articles
- Answer “knowledge check” questions
- Reflect on the key concepts of this module and how you can apply them to working with your patients and clients.

Learning Objectives:

1. Describe the key obesity-related physiological and metabolic pathways.
2. Describe how adipose tissue functions as an endocrine organ and the metabolic impact.
3. Cite these terms and describe their effect on metabolism and implications for treatment of overweight and obesity.
4. Cite the hormones that regulate hunger and satiety and describe implications for weight management treatment.
5. Describe the role of liver fat and the impact on comorbidities of obesity.
6. Describe the impact of genetic imprinting and the intrauterine environment and the impact on the development of obesity.
7. Discuss the microbiome and the possible effects and dietary treatment options.

Essential Practice Competencies addressed:

4.2 Reflects, integrates and evaluates using critical thinking when faced with problems, issues and challenges.

81. Interprets and applies current food and nutrition science and principles in dietetics practice.

8.2 Recognizes and respects the physical, social, cultural, institutional and economic environments of the individual, group, community and population in practice.

Learning Needs Codes:

2100 Nutritional biochemistry

2110 Physiology, exercise physiology

3030 Anthropometrics, body composition

4040 Disease prevention

5090 Adults

5370 Weight management, obesity

9020 Evaluation and application of research

Science of Obesity Module

Learning Activities - #1 - #5

Please watch the next five videos which describe the key concepts of the science of obesity. Each video is presented by Dr. Robert Kushner, MD, Professor of Medicine (Endocrinology) at the Feinberg School of Medicine at Northwestern University in Chicago, IL.

Learning Activity #1: [Appetite Regulations – Overview and Gut Hormones](#)

Click [here](#) for a pdf version of this video

In this first video, Dr. Kushner provides an overview of appetite regulation, specifically focusing on the effect of gut hormones.

Learning Activity #2: [Appetite Regulations – Adiposity Signals](#)

Click [here](#) for a pdf version of this video

Dr. Kushner continues with his presentation on appetite regulation, and this second video focuses on the effect of adiposity signals on appetite regulation.

Learning Activity #3: [Appetite Regulations – Central Mechanisms](#)

Click [here](#) for a pdf version of this video

Dr. Kushner continues with his presentation on appetite regulation, with this video focusing on central mechanisms.

Learning Activity #4: [Pathophysiology of Obesity – Lipotoxicity](#)

Click [here](#) for a pdf version of this video

In this next video, Dr. Kushner describes the pathophysiology of obesity, specifically lipotoxicity.

Learning Activity #5: [Pathophysiology of Obesity – Other Mechanisms](#)

Click [here](#) for a pdf version of this video

In this final video, Dr. Kushner discusses other mechanisms for the pathophysiology of obesity.

Science of Obesity Module

Learning Activity #6: Literature Review Article #1

In this section, you will review three recent articles which are the most relevant to the science of obesity.

Article #1: [Sumithran P, Proietto J. The defence of body weight: a physiological basis for weight regain after weight loss. *Clinical Science*. 2013;124:231-241.](#)

Key Points:

Although weight loss can often be achieved through dietary restriction and/or increased physical activity, the overwhelming majority of people regain the weight that they lost over the long-term. This article reviews data from human studies, and begins with an outline of body weight regulation to provide the context for the subsequent discussion of short-and long-term physiological changes which accompany diet-induced weight loss.

Homoeostatic Regulation:

The ARC (arcuate nucleus) of the hypothalamus is the primary brain region involved in the homeostatic control of food intake. Within the ARC, there are two distinct but interconnected groups of neurons with opposing effects on energy balance.

Hedonic Influence on Appetite:

The hypothalamus also receives inputs from the cortex and reward circuits in the limbic system ('hedonic pathways') related to the sight, smell, and taste of food, along with emotional and social factors, which are all integrated to have an impact upon energy intake and expenditure. The hedonic pathways can override the homoeostatic system, increasing the desire to consume palatable energy-dense food even when energy stores and food supply are abundant.

Physiological Adaptations to Weight Loss:

There is accumulating evidence that diet-induced weight loss brings about compensatory changes in several biological pathways involved in the utilization and storage of energy, and the regulation of appetite, which collectively predispose to weight regain. These biological pathways are summarized in Table 2 in the article.

Strategies for Successful Weight Loss Maintenance and Future Directions:

Several weight maintenance strategies are described through data from the National Weight Control Registry, which is detailed in the Weight Maintenance module. New medications also show promise for weight loss and maintenance, and the growing evidence of sustained physiological adaptations to weight loss which encourages weight regain justifies the long-term use of medications to assist with weight loss maintenance.

Check Your Knowledge 2 - Science of Obesity - Literature Review

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. _____ are considered to be reward circuits in the limbic system and are related to the sight, smell, and taste of food:

- ☐ a) Leptin
- ☐ b) Hedonic pathways
- ☐ c) Ghrelin
- ☐ d) All of the above

2. There is accumulating evidence that diet-induced weight loss brings about compensatory changes which may make it more difficult to maintain weight loss.

- ☐ a) True
- ☐ b) False

Save

Science of Obesity Module

Learning Activity - #6 - Literature Review Article #2

Article #2: [Buhmann H, le Roux CW. The gut-brain axis in obesity. Best Practice & Research Clinical Gastroenterology. 2014; 28:559-571.](#)

Key Points:

The underlying mechanism of the success of bariatric surgery appears to be the alteration of circulating gut hormone levels. Gut hormones seem to communicate information from the gastrointestinal tract to the regulatory appetite centers within the central system (CNS) via the so-called 'Gut-Brain Axis'. The hypothalamus belongs to the central melanocortin system and is a key element of eating control. The hypothalamus contains a number of nuclei including the arcuate nucleus (ARC), which receives peripheral appetite signals. The neurons in the medial ARC respond by increasing hunger and appetite and stimulate eating and body weight gain. In contrast, the neurons in the lateral ARC reduce hunger and decrease appetite and lead to a reduction in eating and subsequent body weight loss. The balance between the activities of these neuronal circuits is critical for the maintenance of body weight. Once food is ingested, sensory information can be forwarded from the GI tract to the CNS either via vagal and somatosensory afferent fibers or via the bloodstream by gut hormones. Changes in body adiposity triggers the brain physiological homeostatic mechanisms that resist weight change through compensatory changes in appetite modulating neurotransmitters and metabolic rate. Understanding these mechanisms is critical for working effectively with patients and clients for weight loss and maintenance.

Gastrointestinal (GI) Hormones

Table 1 in the article describes the key GI hormones altered after Roux-en-Y bypass surgery. Ghrelin stimulates an increase in food intake while glucagon-like peptide 1, Peptide YY 3-36, gastric inhibitory polypeptide, cholecystokinin, pancreatic polypeptide, oxyntomodulin, glucagon, and amylin all stimulate a decrease in food intake.

Adipose tissue mass is positively correlated with circulating insulin and leptin levels, as both are important long-term mediators of energy balance. Leptin is predominately secreted by white adipose tissue and its circulating levels correspond with the fat mass of the individual. Resistance to leptin and insulin is common in patients with obesity.

In summary, the gut-brain axis constitutes a major mediator of the complex neuroendocrine regulation of appetite and energy homeostasis. Alteration of gut hormone levels following weight loss surgery may at least partly explain both the significant and sustained weight loss that can be observed after surgery. Modified gut hormonal release may provide new treatments and targets for obesity, appetite and metabolic disorders.

Check Your Knowledge 3 - Science of Obesity - Literature Review

Required Activity

Answer this question, save your answer and click "next" to see the correct answer.

1. _____ stimulates an increase in food intake:



a) Ghrelin



b) Peptide YY



c) Glucagon



d) Amylin

Save

Science of Obesity Module

Learning Activity - #6 - Literature Review Article #3

Article #3: [Despres JP. Body Fat Distribution and Risk of Cardiovascular Disease: An Update. Circulation. 2012;126:1301-1313.](#)

Key Points:

Advances in the identification of cardiovascular disease (CVD) risk factors has led to a 50% decrease in coronary heart disease mortality over the past 50 years. However, the current overconsumption of processed and energy-dense food products of poor nutritional value combined with our sedentary lifestyle have contributed to the emergence of new drivers of CVD risk: obesity and type 2 diabetes. The exploding obesity epidemic has put this emerging risk factor at the front of CVD risk assessment and management. This review article discusses to what extent the individual variation in regional fat distribution is one of the key variables explaining the metabolic heterogeneity of obesity and its related CVD risk.

For more than two decades, it has been known that equally overweight and obese individuals having the same amount of total body fat could be characterized by different risk factor profiles. Persons with excess abdominal visceral adipose tissue have alterations in their metabolic risk profile, such as hypertriglyceridemia, low HDL-cholesterol, high apolipoprotein B, inflammation, insulin resistance, glucose intolerance, and endothelial dysfunction (see Figure 1).

Figure 5 illustrates the “lipid overflow-fat model.” In this scenario, excess visceral fat accumulation may be causally related to the features of insulin resistance, but it may be a marker of a dysfunctional adipose tissue not being able to appropriately store the energy excess. Under this model, the body’s ability to cope with the surplus of calories (resulting from excess caloric consumption, a sedentary lifestyle, or a combination of both factors) may ultimately determine the individual’s susceptibility to develop features of the metabolic syndrome. In this case where there is dysfunctional adipose tissue, the triglyceride surplus is deposited at undesirable sites such as the liver, the heart, the skeletal muscle, and in visceral adipose tissue, a phenomenon described as ectopic fat distribution. The resulting metabolic consequence of this defect is a constellation of abnormalities defining the metabolic syndrome: visceral adiposity, insulin resistance, atherogenic dyslipidemia, and a prothrombotic, inflammatory profile.

Figure 6 illustrates the working model for the classification of ectopic fat deposits as a function of their putative systematic and local effects. Ectopic fat deposits with systemic effects include liver fat, visceral adipose tissue, intracellular lipids, and pancreas fat.

Liver fat is a key ectopic fat deposit and is associated with the development of nonalcoholic steatohepatitis. With the availability of magnetic resonance spectroscopy, very strong associations have been reported between liver fat content and features of the cardiometabolic risk profile predicting risk of type 2 diabetes and CVD. The liver is a key organ that is central to the control of carbohydrate and lipid metabolism. For instance, it is a major site of insulin uptake and degradation. Some recent data suggest that a high liver fat content, largely associated with abdominal obesity (reflected by a high waist circumference), may result in a reduced hepatic extraction of insulin, leading to increased intrahepatic insulin exposure. In addition, hepatic glucose output is increased among subjects with a high liver fat content. This phenomenon contributes to glucose intolerance and largely explains the hyperglycemic state of patients with type 2 diabetes, because their hepatic glucose production also becomes resistant to the inhibitory effect of insulin. Furthermore, the fatty liver pumps out more triglyceride-rich lipoproteins through an overproduction of large VLDL1 particles. Increased lipid availability also protects apolipoprotein B against its local degradation in the hepatocyte, explaining the elevated plasma apolipoprotein B concentrations observed among individuals with a high liver fat content. Thus, a high liver fat content can, by itself, largely explain the hyperinsulinemic, hyperglycemic, hypertriglyceridemic, and elevated apolipoprotein B dysmetabolic state of visceral adiposity without involving a specific contribution of visceral adipose tissue. From this evidence, it appears reasonable to conclude that both visceral adipose tissue and liver fat are two key drivers of cardiometabolic risk associated with a given level of total body fat.

Check Your Knowledge 4 - Science of Obesity - Literature Review

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. In the "lipid overflow-fat model", excess visceral fat accumulation:

- ☐ a) Has no metabolic effect
- ☐ b) Is related to low liver fat and normal function
- ☐ c) May be a marker of dysfunctional adipose tissue not being able to appropriately store energy excess
- ☐ d) Results in low muscle fat

2. Ectopic fat deposits with systemic effects include:

- ☐ a) Liver fat
- ☐ b) Visceral adipose tissue
- ☐ c) Intracellular lipids
- ☐ d) Pancreas fat
- ☐ e) All of the above

Save

Putting it into Practice - Science of Obesity - Fall 2018

1. How do I want to apply this information to my practice?

2. What more do I want to learn about this topic?

Science of Obesity Module Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

Science of Obesity Module - Fall 2018

I spent _____ hours completing this module.



Save

Diet and Nutrition Module

Diet and Nutrition Module

Introduction

Welcome to the Diet and Nutrition Module. Obesity is a complex disease and evidence-based nutrition management is key to helping patients and clients lose weight and keep it off. This module is presented by Laura Andromalos, MS, RD, CDE. Laura is the Nutrition Program Manager at Northwest Weight and Wellness in Everett, WA, and a bilingual Certified Diabetes Educator Coach for the telehealth company, Fit4D.

There are several recent evidence-based obesity and nutrition guidelines which provide a framework for the weight management treatment. These guidelines include:

1. The 2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults. [Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Journal of the American College of Cardiology*. 2014;63\(25\):2889-2934.](#)
2. [Academy of Nutrition and Dietetics Adult Weight Management Evidence-Based Nutrition Practice Guidelines](#). The new guideline is divided into four subtopics: 1) Eating frequency and patterns; 2) Estimating resting metabolic rate; 3) Nutrient adequacy and caloric restriction; and 4) new technology and telenutrition. Non-members, please click [here](#) for instructions which will give you a six-month access to the EAL.
3. Weight Management Standards of Practice and Professional Performance. [Jortberg B, Myers E, Gigliotti L, et al., Academy of Nutrition and Dietetics: Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists \(Competent, Proficient, and Expert\) in Adult Weight Management. *J Acad Nutr Diet*. 2015; 115\(4\):609-618.e40.](#) The Weight Management Dietetic Practice Group, with guidance from the Academy of Nutrition and Dietetics Quality Management Committee, has developed Standards of Practice and Standards of Professional Performance (SOP/SOPPs) for Registered Dietitian Nutritionists (RDNs) in Adult Weight Management as a resource for RDNs working in weight management. This document allows RDNs to assess their current skill levels and to identify areas for further professional development in this expanding practice area. This document describes the current standards for weight management practice for RDNs.

Diet and Nutrition Module

Module Orientation

This module has seven Learning Activities to enhance your understanding and application of diet and nutrition for weight management. In this module, you will:

- Listen to a series of five short PowerPoint slide presentations
- Read and review three relevant research articles
- Answer “knowledge check” questions
- Reflect on the key concepts of this module and how you can apply to working with your patients and clients.

Learning Objectives:

1. Describe the latest evidence-based guidelines for adult weight management treatment.
2. Apply the key nutrition-related guidelines to a weight management treatment plan.
3. Specify evidence-based tools for adult weight management, such as meal replacements and other portion control tools.

Essential Practice Competencies:

- 1.3 Applies customer-centered principles in practice.
- 4.2 Reflects, integrates and evaluates using critical thinking when faced with problems, issues and challenges.
- 8.1 Interprets and applies current food and nutrition science and principles in dietetics practice.
- 9.2 Establishes, develops, and implements program outlines and learning plans to meet the needs of various individuals, groups and populations.

Learning Needs Codes:

- 2070 Macronutrients: carbohydrate, fat, protein, fiber, water
- 4030 Dietary guidelines, DRIs, Food Guide Pyramid, food labeling
- 5090 Adults
- 5370 Weight management, obesity
- 5410 Client protocols, clinical guidelines
- 9020 Evaluation and application of research

Diet and Nutrition Module

Learning Activities #1 - #6

Please watch the next six videos which discuss the key components of evidence-based nutrition for obesity treatment. Each video is presented by Laura Andromalos, MS, RD, CDE. Laura is an outpatient dietitian at the Virginia Mason Medical Center and the Northwest Weight Loss Surgery Center in Seattle, WA.

Click [here](#) for a pdf document of the six videos included below.

Learning Activity #1:

[Diet and Nutrition – Video 1 - Introduction](#)

In this first video, Laura provides an overview of each video in this module.

Learning Activity #2:

[Diet and Nutrition – Video 2](#)

In this video, Laura describes what types of diets work for weight loss.

Learning Activity #3:

[Diet and Nutrition – Video 3](#)

In this video, Laura discusses matching nutrition interventions with obesity-related conditions.

Learning Activity #4:

[Diet and Nutrition – Video 4](#)

In this next video, Laura describes the best evidence for specific diet interventions, utilizing the Academy's Adult Weight Management Evidence-Based Nutrition Practice Guidelines.

Learning Activity #5:

[Diet and Nutrition – Video 5](#)

In this video, Laura describes how to apply nutrition interventions with actual tools, such as meal replacements, portion control, and logging or tracking.

Learning Activity #6:

[Diet and Nutrition – Video 6](#)

In this final video, Laura describes resources and references for your information.

Diet and Nutrition Module
Learning Activity #7

Read the following two case studies and then complete the questions that follow based on information contained in the module.

Diet and Nutrition - Case 1

Jill is a 42-year-old woman with two children ages 13 and 10 years old. She works from home as a computer programmer and typically spends 9-10 hours daily at her desk. Her relevant health history is as follows:

Height: 65"

Weight: 213 pounds

BMI: 35.4

Medical problems: Hypertension controlled with medication

Supplements: daily multivitamin, raspberry ketones

Weight history: Lowest adult weight was 154 pounds at age 24. Gained weight with each pregnancy and was not able to lose it all. Has gained 15 pounds over past three years.

Diet history: Weight Watchers, Jenny Craig, self-directed diet efforts with low-carbohydrate diet and gluten-free diet. Was most successful the first time she did Weight Watchers 11 years ago and lost 25 pounds but has regained.

Exercise: walks the dog on weekdays for 20 minutes

24-hour food recall:

7am – coffee with cream

10am – 2 pieces toast, peanut butter, 1 glass milk

12pm –takeout from Chinese restaurant: orange-glazed chicken, broccoli, white rice, fortune cookie, water

2pm – “sometimes I snack on something from the cupboards”

7pm – dinner with family: spaghetti with meat sauce, ice cream, water

She is seeing you for an outpatient nutrition appointment. She would like to “lose as much weight as I need to lose to be healthy” and is willing to follow whatever diet you recommend. She asks about the best supplements for weight loss as she is currently using raspberry ketones and hasn’t had as much success as she had hoped. She has tried food logging in the past but would forget to carry her journal with her so wasn’t logging consistently. She reports her readiness for change as seven out of 10.

1. How would you determine what type of diet to recommend?

2. How would you respond regarding her desire to “lose as much weight as I need to lose to be healthy”?

3. How would you answer her question about supplements?



4. Are there any relevant weight management tools that you would suggest?



Save

Diet and Nutrition - Case 2 - Fall 2018

James is a 38-year-old man who lives alone and works as an insurance agent. He is on the road visiting clients four days per week and sometimes has business travel out of the state. He often buys snacks from gas stations. He has been dating someone for a few months and reports more frequent restaurant meals since their relationship started. He was diagnosed with diabetes two months ago and has started taking Metformin. His relevant health history is as follows:

Height: 69"

Weight: 267 pounds

BMI: 39.5

Medical problems: Type 2 diabetes, obstructive sleep apnea

Supplements: none

Weight history: His lowest adult weight was 220 pounds at age 22. He has not had meaningful weight loss from diet attempts. His highest weight was 275 pounds prior to cholecystectomy two years ago; he lost 20 pounds following surgery due to lack of appetite and has regained that weight.

Diet history: He occasionally "watches what I eat" but he has never followed a structured diet. Since his diabetes diagnosis, he has been avoiding fruit and sugar

Exercise: none

24-hour food recall:

8am – coffee with cream

10:30am – nuts, sugar-free Red Bull

2pm – gas station: nuts, beef jerky, diet soda

7:30pm – restaurant: Caesar salad with steak, 2 breadsticks, 2 glasses wine

He would like to weigh below 200 pounds which would require him to lose nearly 70 pounds. He is interested in a ketogenic diet. He is always tired and relies heavily on caffeine; he is not ready to think about cutting back on caffeine and he's also heard that it helps with weight loss. He has been self-monitoring his blood sugar readings a few times per week; he typically writes them on a piece of scratch paper but sometimes loses it.

1. What topics do you hope to cover during your appointment with James?

A rectangular text box with a light gray border. On the right side, there are three small square buttons stacked vertically. On the bottom left, there are two small square buttons side-by-side. On the bottom right, there is a single small square button.

2. After your discussion, James is interested in a low carbohydrate diet approach that is not as strict as a ketogenic diet. How would you calculate his calorie needs and macronutrient distribution?

A rectangular text box with a light gray border. On the right side, there are three small square buttons stacked vertically. On the bottom left, there are two small square buttons side-by-side. On the bottom right, there is a single small square button.

3. What tools could be effective for James with his nutrition intervention?

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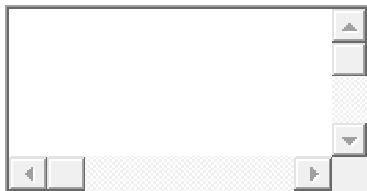
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Putting it into Practice - Diet and Nutrition - Fall 2018

1. How do I want to apply this information to my practice?

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2. What more do I want to learn about this topic?

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Diet and Nutrition Module Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

Diet and Nutrition Module - Fall 2018

I spent _____ hours completing this module.

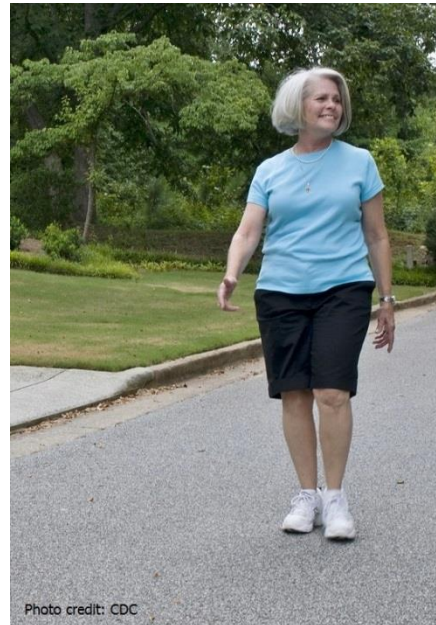


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The Role of Physical Activity in Weight Management Module

The Role of Physical Activity in Weight Management Module

Welcome and Introduction



There's a saying that weight loss happens in the kitchen and weight loss maintenance happens on the sidewalk.

Thus, to help your patients/clients be successful in their weight management efforts, it's important that you embrace and promote the important roles that physical activity plays in weight loss, weight gain prevention, and overall health.

This module dives into why this is important and how registered dietitians (RDs) and dietetic technicians, registered (DTRs) can support their patients/clients in adopting and maintaining a physically active lifestyle.

Meet Your Instructor

Ruth Ann Carpenter, MS, RDN

I grew up in the northeast but transplanted myself to the Lone Star state fresh out of grad school. I spent 22 years at The Cooper Institute in Dallas where I developed dozens of nutrition and physical activity intervention programs for nonprofits, the military, corporations and healthcare organizations. I also co-authored six books including



Active Living Every Day and Healthy Eating Every Day. About 10 years ago, I decided it was time to head back east and I started a health promotion consulting business so I would have more flexibility to spend time with family. I currently live in Cincinnati.

For most of my career, I've been encouraging RDs to build skills and competencies in guiding their clients and patients to move more. I'm delighted to be working with you on this module in physical activity and weight management.

The Role of Physical Activity in Weight Management Module

Getting Ready

Registered dietitians (RDs) and dietetic technicians, registered (DTRs) come to the topic of physical activity holding many different perspectives. Some are very knowledgeable and experienced providing physical activity guidance. Others believe that physical activity guidance is not within their scope of practice. There are some who are confused about what they can and should be doing or saying with regard to helping their weight management clients move more.

In this module, I have tried to sift through the science, the practice standards, the changing roles of registered dietitians in improving the public's health, and my own experience in the nutrition and physical activity fields to build a learning experience that will help you feel more comfortable, competent and confident about where providing physical activity guidance fits in your own life and professional work.

Some of the content may be familiar to you. Other segments may surprise you. I'm hoping the tools and strategies I provide will streamline and support your efforts to guide your patients' and clients' efforts to become more physically active.

Check Your Knowledge 1 - Physical Activity - What Do You Know

Required Activity

First, take a moment to think about what you know and believe about physical activity in weight management practice. For each of the statements below, check the box to indicate "True" or "False," save your answers and click "next" to see the correct answers.

1. If a client has increased their physical activity but has not lost any weight, their health risks have likely not improved.

- ☐ a) True ☐ b) False

2. Being physically active does not fully negate the negative health effects of sitting.

☐ a) True

☐ b) False

3. On average, in weight loss maintenance, doing 150 minutes of moderate-intensity physical activity a week is enough to maintain the weight loss.

☐ a) True

☐ b) False

4. It's within the scope of practice of many registered dietitians to provide physical activity guidance to weight management patients/clients.

☐ a) True

☐ b) False

5. The health benefits associated with physical activity kick in only after patient/client has attained the current aerobic activity guideline of at least 150 minutes per week of moderate-intensity physical activity.

☐ a) True

☐ b) False

6. Registered dietitians should assess the time spent in light-, moderate- and vigorous-intensity physical activity for all of their clients.

☐ a) True

☐ b) False

7. Registered dietitians should obtain clearance from every client's physician or primary care provider before they assist the client with physical activity goals and actions.

☐ a) True

☐ b) False

8. When calculating a patient's total daily energy expenditure, the RD will need to select a physical activity factor with which to multiply the patient's resting energy expenditure. .

☐ a) True

☐ b) False

9. When providing physical activity guidance, RDNs need to use a different set of behavior change strategies than they use for diet interventions.

☐ a) True

☐ b) False

10. The energy balance equation is a complex dynamic relationship between calories in and calories out where changes made on one side of the equation can impact elements on the other side.

☐ a) True

☐ b) False

Save

The Role of Physical Activity in Weight Management Module

Module Orientation

Learning Objectives:

At the end of this module, learners will be able to:

1. Describe the concept of dynamic energy balance.
2. Distinguish the roles of physical activity in the three phases of weight management.
3. Apply cognitive behavioral change strategies appropriately to the adoption of increased physical activity habits for adults.
4. Evaluate when and to whom patients/clients need to be referred for physical activity counseling/intervention.
5. Cite the components of a physical activity assessment for adults.
6. Apply physical activity assessment data to the calculation of total daily energy expenditure for adults.
7. Specify the RD scope of practice regarding physical activity in weight management treatment.
8. Identify **accredited** physical activity-related certifications appropriate for RDs to obtain if desired.
9. Identify credible sources of information regarding physical activity, obesity, and behavior change.

Essential Practice Competencies addressed:

- 1.2 Works within personal and professional limitations and abilities.
- 4.2 Reflects, integrates and evaluates using critical thinking when faced with problems, issues and challenges.
- 8.2 Recognizes and respects the physical, social, cultural, institutional and economic environments of the individual, group community and population in practice.
- 8.3 Demonstrates a commitment to maintaining and enhancing knowledge.
- 9.3 Designs, selects and implements education strategies to meet the learning needs of the individual, group community and population.
- 9.6 Uses effective counseling and coaching skills and strategies in practice.
- 10.2 Implements the Nutrition Care Process to ensure individual health goals are established, monitored and achieved while adhering to the Standards of Practice in Nutrition Care for RDNs.

Learning Needs Codes:

- 2110 Physiology, exercise physiology
- 3005 Nutrition diagnosis
- 3010 Assessment methodology
- 4060 Exercise, fitness, sports nutrition
- 5090 Adults
- 5370 Weight management, obesity
- 6010 Behavior change theories, techniques

How to Navigate the Module

This module has seven learning activities. Within the learning activities there are

- three required readings
- nine brief videos (well, one is 27 minutes)
- six opportunities for reflection
- seven worksheets
- four “Test Your Knowledge” quizzes

You should complete the activities in sequence as later activities build on concepts provided in earlier sections. You may stop the module at any point and return to it at a later time.

Also, I highly encourage you to do all the practice worksheets and reflection activities. It's important that you take time to internalize this content to your life and work as a weight management RD or DTR.

The Role of Physical Activity in Weight Management Module
Learning Activity #1: Health Benefits of Physical Activity

Physical activity is important, right? But just how important is it? Take a look:

[Health Benefits of PA, CDR 2018" Video.](#)

Click [here](#) for a pdf version of this video.

Reflection Question 1 - Physical Activity - Learning Activity 1 - Fall 2018
Take moment to think about what this information means to you.

Question 1 is required. Questions 2 and 3 are optional.

1. If you were told you could practice only one healthy habit, either healthy eating or physical activity, for the remainder of your life, which would you choose? Why?

2. How easy or difficult do you anticipate it will be for you to embrace promoting physical activity for your clients? For your community? For yourself?

3. How would you feel if, after working with a weight management patient for a period of time, she had not lost weight but had become more physically active?

Resources

Resources:

U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans. ODPHP Publication No. U0036. Washington, DC, 2009. Accessed January 15, 2018. <http://www.health.gov/paguidelines/guidelines/default.aspx>

[Chapter 2: Physical Activity Has Many Health Benefits](#)

Barry VW, Baruth M, Beets MW, et al. Fitness vs. fatness on all-cause mortality: a meta-analysis. *Prog Cardiovasc Dis* 2014;56:382-390.

Save

The Role of Physical Activity in Weight Management Module

Learning Activity #2: Physical Activity Guidelines for Adults

The health benefits of physical activity are well-documented. In addition, understanding of the negative health consequences of being sedentary are mounting. But to get health benefits, what should people be shooting for in terms of moderate-intensity activity? Or vigorous intensity? And for that matter...what ARE moderate and vigorous activity?

[Physical Activity Guidelines for Adults, CDR 2018 Video](#)

Click [here](#) for a pdf version of this video

It's important for registered dietitians and dietetic technicians, registered to be able to communicate the current physical activity guidelines to their patients/clients and in interactions with other health-care providers. Be on the lookout for updates to these recommendations when the revised Physical Activity Guidelines for Americans are released in late 2018.

Bottom Line: Doing some physical activity is better than doing no physical activity and doing more is better than doing some.

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. All of the following are classified as moderate-intensity (3-6 MET) physical activities EXCEPT

- ☐ a) Aerobic dancing
- ☐ b) Bicycling (5-10 mph)
- ☐ c) Doubles tennis
- ☐ d) Walking briskly

2. If during physical activity a person is _____, then they are likely exercising at a light-intensity level.

- ☐ a) able to talk
- ☐ b) able to talk and sing
- ☐ c) not able to talk
- ☐ d) not able to whisper

3. Sara averages 100 minutes of moderate-intensity physical activity each week. How many weekly minutes of vigorous-intensity physical activity would she need to do to get a similar health benefit?

- ☐ a) 25 minutes
- ☐ b) 50 minutes
- ☐ c) 75 minutes
- ☐ d) 100 minutes

4. Adults who exceed the current public health guideline for physical activity will likely attain ____ health and fitness benefits as those who meet the physical activity guideline for health.

- ☐ a) the same
- ☐ b) fewer
- ☐ c) more

☐ d) cannot be determined

5. The health risks associated with sedentary behavior can be fully negated by also being physically active.

☐ a) True

☐ b) False

Save

The Role of Physical Activity in Weight Management Module

References Cited

U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans. ODPHP Publication No. U0036. Washington, DC, 2009. <http://www.health.gov/paguidelines/guidelines/default.aspx>

- [Chapter 1: Introduction](#)
- [Chapter 4: Active Adults](#)
- [Chapter 5: Active Older Adults](#)

Biswas A, Oh PI, Faulkner GE, et al. Sedentary time and its association with risk for disease incidence, mortality, and hospitalization in adults: A systematic review and meta-analysis. *Ann Intern Med*. 2015;162(2):123-32.

Diaz KM, Hutto B, Colabianchi N, et al. Patterns of sedentary behavior and mortality in U.S. middle-aged and older adults: A National Cohort Study. *Ann Intern Med*. 2017;167(7):465-475.

Young DR, Hivert M-F, Alhassan S, et al. Sedentary behavior and cardiovascular morbidity and mortality: A science advisory from the American Heart Association. *Circulation*. 2016;134:e262-e279. doi: 10.1161/CIR.0000000000000440.

Resources:

Physical Activity Guidelines for Americans website - <https://health.gov/paguidelines/>

Centers for Disease Control and Prevention – Physical Activity website
<https://www.cdc.gov/physicalactivity/index.html>

The Role of Physical Activity in Weight Management Module

Learning Activity #3: Role of Physical Activity in Weight Management

People often equate the term “weight management” with “weight loss.” In the two videos that follow, I posit that there are really three distinct phases of weight management that RDs and DTRs should be prepared to address.

Before you get started on the videos, read this position paper from the American College of Sports Medicine on the important roles of physical activity interventions in weight management. In the videos, I highlight key points from the article that I think are most relevant to weight management registered dietitians.

“American College of Sports Medicine Position Stand. Appropriate physical activity intervention strategies for weight loss and prevention of weight regain for adults.” Accessible at: http://journals.lww.com/acsm-msse/Fulltext/2009/02000/Appropriate_Physical_Activity_Intervention.26.aspx

Weight Loss Phase

[Physical Activity and Three Phases of Weight Management - Part 1 Video](#)

Click [here](#) for a pdf version of this video.

Bottom Line: To be clear, the best approach for weight loss success and improving health during and after weight loss is for patients/clients to change their diet AND increase their physical activity level. You should work with the client to find the best plan based on their lifestyle, existing diet and physical activity habits, interests and goals to determine when and how to help each client work on moving more.

Weight Loss Maintenance and Weight Gain Prevention Phases

[Physical Activity and Three Phases of Weight Management - Part 2 Video](#)

Click [here](#) for a pdf version of this video.

Bottom Line: Diet and physical activity behaviors both contribute to body weight status as do many other factors such as genetics. With all other things being equal, for weight gain prevention, weight loss, or maintaining lost weight, the more physical activity a patient/client can do in each phase, the higher the likelihood they will be to keep their weight in a healthy zone for a lifetime.

Reflection Questions 2 - Physical Activity - Learning Activity 3 - Fall 2018

Use these optional questions to help you make sense of the roles that physical activity plays in the three phases of weight management.

1. Were you surprised at learning just how critical a high level of physical activity is to weight loss maintenance? If yes, what surprised you? If no, why weren't you surprised?

2. Consider your current physical activity level compared to when you were in high school. If you keep doing what you're doing (or not doing) with regard to physical activity, do you think you're on track to gain weight, lose weight, or maintain your current weight in the years ahead

3. Do you think there is value in helping sedentary people with obesity learn ways to increase their physical activity even though they may not be able to do much activity, especially in the beginning?

Resources:

U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans. ODPHP Publication No. U0036. Washington, DC, 2009. Accessed January 15, 2018. <http://www.health.gov/paguidelines/guidelines/default.aspx>

- [Chapter 2: Physical Activity Has Many Health Benefits](#)

Barry VW, Baruth M, Beets MW, et al. Fitness vs. fatness on all-cause mortality: a meta-analysis. *Prog Cardiovasc Dis* 2014;56:382-390.

Save

Check Your Knowledge 3 - Physical Activity - Learning Activity 3- Fall 2018

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. If a client chooses to create a calorie deficit by only increasing their physical activity level, the data suggest that they may need do _____ minutes of moderate-intensity physical activity each week to achieve significant weight loss.

- ☐ a) 50-75
- ☐ b) 75-100
- ☐ c) 150-225
- ☐ d) 225-420

2. Resistance training is not an effective physical activity approach for weight loss.

- ☐ a) True
- ☐ b) False

3. With regard to weight loss, physical activity is more likely to contribute to weight loss when a client's calorie intake remains.

- ☐ a) above resting metabolic rate
- ☐ b) below resting metabolic rate
- ☐ c) a and b
- ☐ d) Calorie intake in relation to resting metabolic rate doesn't contribute to weight loss.

4. To prevent or minimize weight gain over time, adults should strive to do at least _____ minutes of moderate physical activity each week.

- ☐ a) 45 minutes
- ☐ b) 90 minutes
- ☐ c) 120 minutes
- ☐ d) 150 minutes

References Cited

Donnelly JE, Blair SN, Jakicic JM, Manore MM, Rankin JW, Smith BK. American College of Sports Medicine Position Stand: Appropriate physical activity intervention strategies for weight loss and prevention of weight regain in adults. *Med Sci Sports Exerc.* 2009;41(2):459-471.

Resources

Chin, SH, Kahathuduwa CN, and Binks M. Physical activity and obesity: what we know and what we need to know. *Obesity Reviews.* 2016;17:1226-1244.

Office of Disease Prevention and Health Promotion. 2008 Physical Activity Guidelines Advisory Committee Report. Part G. Section 4 Energy Balance. https://health.gov/paguidelines/report/G4_energy.aspx. Accessed on January 28, 2018.

This is the section from the Scientific Advisory Committee's review of the scientific evidence in physical activity, energy balance and weight management which was then used to create portions of the Physical Activity Guidelines for Americans, 2008.

The Role of Physical Activity in Weight Management Module

Learning Activity #4: Energy Balance and Weight Management

Let's take a moment to review the concept of energy balance. You might be thinking, "What's there to talk about? It's as simple as energy in and energy out, right?"

Read Manore MM, Larson-Meyer DE, Lindsay AR, et al in its entirety and then check back here.

Manore MM, Larson-Meyer DE, Lindsay AR, et al. Dynamic Energy Balance: An Integrated Framework for Discussing Diet and Physical Activity in Obesity Prevention - Is It More Than Eating Less and Exercising More? *Nutrients*. 2017;9:3-14. Free access at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5579698/>.

Key Points Summary:

So energy balance is not a simple, static relationship as you may have thought.

Rather, energy intake and energy expenditure are synergistic, interrelated, and dynamic. The total, types, and timing of food eaten can impact the thermic effect of food as well as how the body stores or uses food substrates during exercise. Physical activity on the other hand can impact total energy expenditure beyond simple caloric burn during movement. It can impact the body's muscle mass and fuel substrates used during physical activity. It can also impact energy intake by altering appetite and appetite-regulating hormones. Figure 2 in the article does a great job of graphically depicting different energy intake and energy expenditure factors and their interrelatedness and synergy with physiological, emotional, cognitive, environmental, lifestyle, and genetic components.

The authors suggest that RDs and DTRs working in weight management should help their clients work toward attaining and maintaining a high energy flux in which a higher level of physical activity is partnered with a corresponding energy intake. High energy flux created by increased physical activity means the client can eat more while maintaining body weight. As the authors state, "Sedentary individuals (e.g., in a low energy flux) can have daily energy needs that are so low that it is easy to consume more food (e.g., kcals) than needed in our current obesogenic environment."

Also, high energy flux helps the body maintain muscle and bone mass and a higher resting metabolic rate while also impacting food intake through appetite control pathways.

All this means that the 3,500 calorie deficit = one pound weight loss "rule" is obsolete. It does not lead to a one pound weight loss for every person, at every stage of weight loss (i.e., weight loss is not linear), or for every life stage. Several researchers have developed models using mathematical algorithms to predict changes in body weight using a more dynamic energy balance approach.

There is an article by Denise Webb in the November 2014 issue of *Today's Dietitian* that

provides a very practical explanation about the 3,500-calorie myth. See the citation at the end of this section.

The bottom line is that we need to help clients create a calorie deficit through diet and physical activity changes but be flexible on setting weight loss expectations based on what we now know to be incorrect math. In addition, we and our clients need to be patient. Energy balance is very dynamic and successful weight loss takes a long time.

You'll learn more about the interrelatedness of energy intake and energy expenditure in the "Weight Loss Maintenance" module.

Reflection Question 3 - Physical Activity - Learning Activity 4 - Fall 2018

Required Activity

Take a few minutes to pause and reflect on what this dynamic energy balance information and the obsolescence of the 3,500- calorie rule mean for you and your weight management practice.

1. How do you feel knowing that you should abandon the “3,500-calorie deficit per week equals one pound of weight loss” rule? What will you “replace” it with?



2. How will you adapt your explanation to a patient/client about what they should expect for weight loss over time?



3. What expectations do you now have about what is most likely for your patients’ weight loss journeys?



References

Manore MM, Larson-Meyer DE, Lindsay AR, Hongu N, and Houtkooper L. Dynamic energy balance: An integrated framework for discussing diet and physical activity in obesity prevention – Is it more than eating less and exercising more? *Nutrients*. 2017;9:905; doi:10.3390/nu9080905.

Webb, D. Farewell to the 3,500-calorie rule. *Today's Diet*. 2014;26:36-39.

<http://www.todaysdietitian.com/newarchives/111114p36.shtml> Accessed January 26, 2018.

Additional resources

Articles

Manore MM, Brown K, Houtkooper L, Jakicic JM, Smith Edge M, Steiber A, Going S, Gable LG, and Krautheim AM. Energy balance at a crossroads: Translating the science into action. *J Acad Nutr Diet*. 2014;114(7):1113-1119.

Manore MM, Larson-Meyer DE, Lindsay AR, Hongu N, and Houtkooper L. Dynamic energy balance: An integrated framework for discussing diet and physical activity in obesity prevention – Is it more than eating less and exercising more? *Nutrients*. 2017;9:905; doi:10.3390/nu9080905.

Melanson E, Kozy-Keedle S, Donnelly JE, Braun B, King NA. Resistance to exercise-induced weight loss: compensatory behavioral adaptations. *Med Sci Sports Exerc*. 2013;45(8):1600-1609.

Weight Loss Calculator

Pennington Biomedical Research Center Weight Loss Predictor – Online calculator that predicts daily weight loss or gain based on gender, age, weight, height, and self-selected calorie reduction or increase. It shows that weight loss is not linear at a set daily calorie deficit and takes into consideration the impact of weight loss on metabolism. <http://www.pbrc.edu/research-and-faculty/calculators/weight-loss-predictor/> Accessed January 26, 2018.

Save

The Role of Physical Activity in Weight Management Module

Learning Activity #5: The RD's Role in Promoting Physical Activity

You may be wondering whether you should be talking to your clients/patients about physical activity? The answer is “it depends.”

In this video, I define “physical activity guidance” and differentiate it from “exercise prescription.” I also emphasize the need for each RD and DTR to reflect upon their own individual scope of practice and what that means for helping patients/clients find ways to increase their physical activity.

Part way through, I have you pause the video and complete a worksheet. Click [here](#) to download and print the worksheet.

Now go ahead and start the video.

[RDNs Role in Promoting Physical Activity Video](#)

Click [here](#) for a pdf version of this video

Providing physical activity guidance is included among the performance indicators for competent practice in adult weight management. The remainder of this module will provide information and tools to help RDs in reaching many of these performance indicators.

But before you move on to the next learning activity, take a moment to peruse the [Physical Activity Toolkit for Registered Dietitians](#). This resource was compiled by RDs in collaboration with the American College of Sports Medicine’s “Exercise is Medicine” campaign to support RDs in providing physical activity guidance. It’s a collection of useful tools – especially in the Appendices – and I’ll refer to it frequently in the next few segments.

I recommend you download the entire document to your desktop, digital library, or other folder that can make accessing it easy for the remainder of this module – and for your future reference. Also, it will be updated once the new *Physical Activity Guidelines for Americans* document is released in late 2018 or early 2019.

Finally, if you want to explore further how your individual scope of practice intersects with providing physical activity guidance, the Academy has a robust set of [resources](#) that can guide you through a self-assessment.

Reflection Question 4 - Physical Activity - Learning Activity 5 - Fall 2018

Required Activity

Answer these questions, save your answers and click "next" for the correct answers

1. How has this learning activity impacted your views about providing guidance to and supporting your clients in their efforts to move more?

2. What else are you curious about regarding your individual scope of practice and physical activity promotion?

Resources

[A Physical Activity Toolkit for Registered Dietitians: Utilizing Resources of Exercise is Medicine: 2013.](#) Free.

Academy of Nutrition and Dietetics

The Scope of Practice [webpage](#) has many documents, definitions, tools and explanatory videos that will help you learn more about scope of practice and your work as a registered dietitian or dietetic technician, registered.

[Scope of Practice Decision Tool – interactive tool that walks the user through a series of questions to ascertain if a specific activity is within the individual's scope of practice. Slight fee charged.](#)

[Academy of Nutrition and Dietetics: Standards of practice in nutrition care and standards of professional performance for the registered dietitian nutritionists \(competent, proficient, and expert\) in adult weight management. *J Acad Nutr Diet.* 2015;115:609-618.](#)

[Academy of Nutrition and Dietetics: Revised 2017 scope of practice for the registered dietitian nutritionist. *J Acad Nutr Diet.* 2018;118:141-165.](#)

[Academy of Nutrition and Dietetics: Revised 2017 standards of practice in nutrition care and standards of professional performance for registered dietitian nutritionists. *J Acad Nutr Diet.* 2018;118:132-140.e15](#)

[Academy of Nutrition and Dietetics: Revised 2017 scope of practice for the nutrition dietetics technician, registered. *J Acad Nutr Diet.* 2018;118:327-342.](#)

[Academy of Nutrition and Dietetics: Revised 2017 standards of practice in nutrition care and standards of professional performance for the nutrition dietetics technician, registered. *J Acad Nutr Diet.* 2018;118:317-326.e13.](#)

Save

The Role of Physical Activity in Weight Management Module

Learning Activity #6: Physical Activity through the Nutrition Care Process

To this point in the module I've been providing background and context – the “why” – regarding RDs and physical activity. I've also equipped you with some tools and language for working with patients, clients, other care providers, and communities on the issue of promoting physical activity.

Now we dig into the “how.” The next few segments will help equip you to address physical activity in each step of the Nutrition Care Process.

Nutrition Assessment and Diagnosis

The nutrition assessment step provides the foundational information and documentation on which a RD can base a diagnosis and eventually, a patient-centered care plan. In this critical step in providing nutrition care, RDs must collect and synthesize a tremendous amount of data, including data related to physical activity...

... which is often overlooked due to perceived lack of importance, lack of time, competing priorities, and lack of knowledge about how to do a physical activity assessment or how to use the collected data.

Physical Activity Assessment: Part One

In this segment, I walk you through the process and some available tools for assessing medical readiness and determining a patient's current physical activity level. Before you start the video, access these worksheets and tools in the [RD Physical Activity Toolkit](#) or download them here.

- [Physical Activity Readiness Questionnaire \(Toolkit pages 68 and 82\)](#)
- [Physical Activity Assessment Form: Step One \(Toolkit page 67\)](#)

Physical Activity Assessment Part One Video

Click [here](#) for a pdf version of this video

Physical Activity Assessment and Diagnosis: Part Two

The physical activity assessment described in the previous video is the exercise analog to a food or diet recall. Similar process...different habit being assessed. And just as with a diet assessment, it's critical that the physical activity data you collect is complete and

of good quality.

In the next video you'll see why. You'll learn a process for better estimating total daily energy needs, calculating a daily energy prescription, and assessing physical activity attitudes, history, and motivational readiness. The video is a bit longer in length because I walk you through several calculations and worksheets. I also address physical activity in the diagnosis step.

Before you start the video, access these worksheets and tools by downloading them here. Some can be found in the [RD Physical Activity Toolkit](#) if you've already downloaded that resource.

- [Total Daily Energy Expenditure Cheat Sheet](#)
- [Worked Examples for Total Daily Energy Expenditure](#)
- [Physical Activity History \(RD Physical Activity Toolkit, page 70\)](#)
- [Stages of Readiness to Change \(RD Physical Activity Toolkit, page 69\)](#)

[Physical Activity Assessment Part Two Video](#)

Click [here](#) for a pdf version of this video.

This may seem like a lot of information to take in and digest. In learning any new skill, it takes practice to get competent at it. I've provided a cheat sheet that you can keep handy until the decisions and calculations become second nature. And take time to test yourself with the worked examples handout that's provided.

Check Your Knowledge 4 - Physical Activity - Learning Activity 6 - Fall 2018

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. A patient answered "no" to all the questions on the Physical Activity Readiness Questionnaire (PARQ). The next step the RD should take is to

- ☐ a) obtain medical clearance from patient's physician or primary care provider.
- ☐ b) proceed with providing physical activity guidance
- ☐ c) discontinue any further guidance regarding physical activity.
- ☐ d) refer patient to a personal trainer.

Case

The RD has estimated Jorge's resting energy expenditure (REE) to be 1645 and his current physical activity habits as follows:

Walking (briskly) the dog - 10 minutes, 4 times per week
Spin class at the gym - 60 minutes, 1 time per week
Brisk walking group at work - 40 minutes, 2 times per week
Standing at work - 3 hours, throughout the day
Sitting, reclining, napping - 10 hours per day

1. How many minutes of moderate-intensity physical activity is Jorge getting per week?

- ☐ a) 0
- ☐ b) 40
- ☐ c) 80
- ☐ d) 120

2. How many minutes of vigorous-intensity is Jorge getting per week?

- ☐ a) 0
- ☐ b) 40
- ☐ c) 60

☐ d) 80

3. How should the RD categorize Jorge's physical activity level according to the Physical Activity Guideline for Americans aerobic activity recommendation for adults?

☐ a) Not meeting the basic aerobic physical activity guideline

☐ b) Meeting the basic aerobic physical activity guideline

☐ c) Exceeding the basic aerobic physical activity guideline

☐ d) None of the above

Which Physical Activity Factor category should the RD use when estimating Jorge's total daily energy expenditure?

☐ a) Sedentary

☐ b) Low Active

☐ c) Active

☐ d) Very Active

6. The RD has chosen to use the "Low Active" Physical Activity Factor in calculating Jorge's total daily energy needs

☐ a) She can choose any number as long as it's in the range.

☐ b) At the low end (close to 1.4)

☐ c) In the middle (1.5)

☐ d) At the high end (close to 1.59)

Save

The Role of Physical Activity in Weight Management

References

Academy of Nutrition and Dietetics and American College of Sports Medicine. [A Physical Activity Toolkit for Registered Dietitians: Utilizing Resources of Exercise is Medicine: 2013.](#) Free.

Academy of Nutrition and Dietetics Evidence Analysis Library. Adult weight management guideline: Assess energy needs." Accessed 29 January 2018: https://www.andeal.org/template.cfm?template=guide_summary&key=4341

U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans. ODPHP Publication No. U0036. Washington, DC, 2009. Accessed January 15, 2018. <http://www.health.gov/paguidelines/guidelines/default.aspx>

The Role of Physical Activity in Weight Management Module Intervention, Monitoring & Evaluation

Once you have completed a thorough nutrition assessment – including a physical activity assessment – and have prioritized the diagnoses, you may find that in collaboration with your patient/client, you decide not to pursue a physical activity intervention. Or you may decide to postpone intervention planning, monitoring, and evaluation until a future time when the more urgent issues have been advanced or resolved.

When you and your patient/client decide it's time to work on improving their physical activity, use the information in this segment to help you develop a plan, make referrals when necessary, and support the patient/client by monitoring and evaluating their efforts and outcomes.

In this video, I address the nuts and bolts of implementing the intervention and monitoring and evaluation steps related to physical activity.

[Physical Intervention Monitoring and Intervention Video](#)

Click [here](#) for a pdf version of this video

Cognitive and Behavioral Skills in Physical Activity Guidance

You know that it's important for your patients/clients to build new ways of thinking and acting so they can make healthy lifestyle changes that will last a lifetime. This video addresses the critical cognitive and behavioral skills (e.g., goal-setting, self-monitoring, social support, etc.) that you use to help your patients/clients make dietary changes. I've looked at them through a physical activity "lens."

[Cognitive Behavior Skill Building Strategies Video](#)

Click [here](#) for a pdf version of this video

Sorry for the abrupt ending on that last video. To summarize, just like for dietary change, using cognitive and behavioral strategies will help your patients/clients change their lifestyle so they can adopt and maintain improved physical activity habits. Which is essential - as you know – for successful weight management. There is much, much more to know about physical activity and behavior change strategies and tools than can be addressed in this introductory module. In the next segment, I will highlight some of the "hot" topics and offer resources for continued learning in this area.

Reflection Question 5 - Physical Activity - Intervention, Monitoring and Evaluation - Fall 2018

Optional Activity

1. How prepared do you feel for creating a patient-centered intervention for increasing physical activity?

2. If you don't already have a referral list of exercise professionals, what are your plans for creating one?

3. If you do have a referral list of exercise professionals, do you need to take any actions to update it (e.g., check if the professionals' hold accredited certifications) so you're confident in the professionals to whom you're referring your weight management clients?

4. Have you ever considered obtaining an exercise credential? If you're interested, what's holding you back?

Resources

Books

Clifford D and Curtis L. *Motivational interviewing in nutrition and fitness*. 2015. New York: Guilford Press.

Nigg C, editor. *ACSM's Behavioral Aspects of Physical Activity and Exercise*. 2014. Philadelphia: Lippincott Williams & Wilkins.

Exercise Certifications

[U.S. Registry of Exercise Professionals](#)

A nonprofit that maintains a registry of exercise professionals who have attained a certification that has been accredited by the National Commission for Certifying Agencies. Click [here](#) to access the registry to locate professionals that hold accreditation in your local area.

[Institute for Credentialing Excellence](#)

If you're interested in pursuing an exercise credential for yourself,

1. Click [here](#) to look up the credentials that are accredited by National Commission for Certifying Agencies.
2. Then select "Fitness and Wellness" under "Industry"
3. Click "Search"

You'll see a list of organizations and the programs each offers that have received accreditation. You will need to go to each organizations' website to learn more about what they offer.

Save

The Role of Physical Activity in Weight Management Module

Learning Activity #7: Physical Activity Tips and Resources

To this point in the module, I have covered many of the topics and issues that I've run into with clients or been asked about by RDs. I'd like to address two final topics that I often get asked to comment on – time and technology.

Time

The number one reason most people give for not being physically active is “lack of time.” This really translates into “lack of priority” since everyone has the same 24 hours in a day; it's just a matter of how we choose to spend those 24 hours. We can help clients learn how to prioritize physical activity in their lives by reinforcing the concept that they can accumulate shorter bouts of physical activity to meet their daily goal.

One study by Jakicic et al (1995) demonstrated the benefit of accumulating physical activity for weight loss. The researchers had 56 women with obesity exercise 40 minutes a day, five days per week for 20 weeks. They randomized the women into two groups. The “long-bout” group was asked to do their physical activity in one continuous 40 minute bout, five days a week. The “short-bout” group was assigned to doing their 40 minutes per day in four, 10-minute segments. The women in both groups could determine where and when they did their activity.

The results showed that after 20 weeks, the short-bout group:

- Performed more total minutes of activity each week
- Exercised on more days of the week
- Lost more weight

By breaking the physical activity into smaller segments, the short-bout group was able to more easily fit physical activity into their busy days. They may not have gotten the full 40 minutes in each day, but they did something. This enabled them to exercise on more days, accumulate more minutes, and lose more weight than the long-bout group.

Here's another way to look at it.

This graph displays different approaches to physical activity. The horizontal axis represents 24 hours in one-hour segments. The vertical axis shows energy expenditure in metabolic equivalents (METS). The body at rest expends energy at a 1 MET level. Recall that moderate-intensity physical activities are in the 3-6 MET range.

The colored lines on the graph show “a day in the life” of three hypothetical people:

- someone who’s sedentary all day (red line);
- someone who goes for a noontime run but is sedentary the rest of the day (blue line)
- someone (green line) who does short bouts of moderate-intensity physical activity throughout the day by walking briskly to the bus, climbing several flights of stairs frequently during the day, walking to a diner six blocks away for her lunch, and going for a long walk after dinner instead of watching TV.

What’s the point?

Obviously, the people doing “leisure” and “lifestyle” physical activity were using more energy (burning more calories) than the “sedentary” person. But over the course of the day, the leisure and lifestyle people burned the same amount of calories. They just did it in different ways. Of course, as you have learned, the optimal option is for people to work both lifestyle and structured exercise into their lives.

The reality however, especially for people who have overweight or obesity, is they are not fit enough to do vigorous-intensity, structured activities. So small bouts of moderate-intensity can be a good place for people to start to increase energy expenditure...and begin to build fitness to be able to do more.

Again, this is a hypothetical illustration. But it’s a good way to drive home the point of needing to move more, even if it’s in short bouts. Please feel free to share it with your patients/clients.

Here’s a way you can help your patients/clients make this concept actionable. Ask them to identify:

- seated activities they can do standing.
- standing (or seated) activities they can do walking.
- walking activities they can do more briskly.

Encourage them to be creative with their answers. You'll be surprised what they come up with. And you might want to give it a try for yourself!

The Role of Physical Activity in Weight Management Technology & Moving More

It's kind of ironic how innovation and technology have contributed to our physical inactivity crisis and how we are now looking to technology to try to help us solve this problem. For example, humankind has created industrial machines (tractors, robots), transportation inventions (trains, cars, autos), and devices (garage door openers, elevators, vacuums, washing machines) to save time and reduce the effort and energy expended in manual labor. Individually, they don't have much of an effect on daily calorie expenditure but collectively, and with the change from an agrarian- to industrial- and now to a service-based economy, the reduction in occupation-related energy expenditure is a likely culprit in our obesity epidemic (Church and Martin, 2018).

So now we have invented websites, mobile apps, and wearable trackers to help motivate and cajole us into moving more. Do they work? Read this review article and see what the research shows.

Sullivan AN, Lachman ME. Behavior Change with Fitness Technology in Sedentary Adults: A Review of the Evidence for Increasing Physical Activity. *Frontiers in Public Health*. 2017;4:1-16. Free access at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5225122/>.

Key Points Summary

This article provides a comprehensive look at the promise and pitfalls of fitness technology in helping people change their physical activity habits. Wearables and apps are

Good for:

- *Goal-setting* – though the apps/wearables should provide more instruction/guidance on how and when to do goal-setting and what are realistic goals based the user's current status, interests, etc.
- *Feedback* – they provide frequent information on the user's activity and goal status (which is often motivating) but more work is needed on personalizing the tone and type of messaging given, especially when people are not on track to their daily goals.
- *Social Support* – provided as cooperative (cheering) and/or competitive ("Who's winning?") messaging, fitness technology can be very effective but only if the

user has their support network (friends, family, etc.) using the same brand of wearable.

Getting better at:

- *Accuracy* – data suggest wearables are good for heart rate and step counts but not good for calorie expenditure estimates; simple step counters are more reliable; waist-worn has better accuracy than wrist worn but consumers prefer wrist worn; may be less accurate in older adults with low mobility; smartphone apps may be as accurate as wearables, thus making the technology accessible to more people.
- *Efficacy* – may, by themselves, increase physical activity at least initially, when used regularly. Better efficacy when tied to an app, website, or program that uses theoretically-driven behavior change strategies.
- *Instruction* – some wearables provide exercise “how to” tutorials and demonstrations via a connected app but not all that’s available is accurate and of good quality.
- *Peer Coaching* – getting advice and feedback from a peer shows promise in the physical activity intervention literature but it has not been operationalized well in the building of fitness technologies.

Still inadequate with:

- *Awareness and confidence building* – most fitness technologies do not include content or designs that help people understand and manage their thoughts (e.g., cognitive restructuring) and beliefs (e.g., self-efficacy) about how to increase physical activity.
- *Problem-solving and action planning* – most don’t have ways to help users with cognitive and behavioral strategies to cope with lapses, identify barriers, develop new action steps, and to monitor the new plan.
- *Environmental consciousness* – few make users aware of opportunities for and barriers to physical activity in their local area (e.g., walkability); virtually none provide real-time geolocation of physical activity assets and barriers.
- *Rewards* – more work is needed to learn how fitness technology can incorporate rewards to increase motivation and engagement.

In addition, there are persistent challenges and concerns with using fitness technology that have not yet been fully resolved.

Expense – most wearables (except for simple step counters) are expensive, especially when you consider they need to be paired with a smartphone for real-time data uploading and visualization. Also, paid apps are more likely to have more of the behavioral and cognitive strategies built into the app than the free versions. The cost barriers make the technology less accessible to the majority of the population.

Abandonment – Having a wearable device is no guarantee that a user will adopt and maintain physical activity for a lifetime. In fact, industry data suggest 30-50% of purchased devices are not being used after six months. Boredom, annoyance with or anxiety produced by frequent updates, breakage, and battery life are some of the

possible contributing factors. Future versions that are waterproof, more comfortable, and have better batteries may help reduce abandonment rates.

Privacy and data security – Fitness trackers collect all sorts of personal data such as geolocation, heartrate, type of activities, food intake, social contacts, sleep habits, etc. Device makers use the data to improve the product and some aggregate data to sell to other entities who want to learn about consumer habits. Stolen in a data breach, hackers would know a lot about you through your fitness tracker. Weaknesses in the data security of devices have been identified recently and the device makers are aware of the need to provide updates to better protect user data. Currently, there's no warranty that users' data are completely safe.

Bottom Line: The use of fitness technology in promoting physical activity is not guaranteed to instill a behavior change. More work is needed to optimize the potential that fitness technologies have for a population-wide improvement in sedentary and physical activity habits. In the meantime, RDs are well positioned to use fitness technologies as a behavior change tool because they can supplement the devices' features with

- Social support
- Action planning strategies
- Educational information
- Barrier identification and problem-solving
- Cognitive restructuring techniques

If you want to use apps and/or wearables with some of your patients/clients, bear in mind that the clients who are more likely to adopt physical activity technologies are

- Younger
- Already active or very motivated to be active
- Data-driven – like to see and use data to drive decisions
- Technophile – comfortable with using today's technologies
- Using a smartphone
- Comfortable using apps on their smartphone

Ways RDs can use fitness technologies include

- Helping patient/clients set realistic goals based on their current level of activity. Guide client to increase time and/or frequency of overall activity before increasing intensity.

- Asking client to allow you to “peek” into their data between visits. Look for trends; is client making progress or does it look like they’re headed to a lapse or relapse? Reach out with support either way.
- Using the client’s data to guide you in helping them problem-solve lapses. When and where are they occurring? What else is going on that might contribute to the lapses?
- Encouraging them to set a timer on their smartphone or wearable device to get up and move around periodically.

Reflection Question 6 - Physical Activity - Technology and Moving More - Fall 2018

Required Activity

Take a moment to think about how you could prepare yourself to address issues regarding time and technology with your patients and clients.

1. How will you answer clients’ inevitable statement that they “don’t have time” to be physically activity?

2. How can you leverage possible intersections between clients’ perceived lack of time and the potential of fitness technologies to help promote physical activity adoption?

3. How comfortable are you personally with using fitness apps or wearables? Will your comfort (or lack thereof) bias you in your interactions with patients or clients around adopting fitness technologies?

References

Church T and Martin CK. The obesity epidemic: A consequence of reduced energy expenditure and the uncoupling of energy intake? *Obesity*. 2018;26:14-16.

Jakicic JM, Wing RR, Butler BA and Robertson RJ. Prescribing exercise in multiple short bouts versus one continuous bout: effects on adherence, cardiorespiratory fitness, and weight loss in overweight women. *Int J Obes Relat Metab*

Disord. 1995;19(12):893-901.

Sullivan AN and Lachman ME. Behavior change with fitness technology in sedentary adults: A review of the evidence for increasing physical activity. *Front Public Health*. 2016;4:289. Doi: 10.3389/pubh.2016.00289.

Scherbina A, Mattsson CM, Waggott D, Salisbury H, Christle JW, Hastie T, Wheeler MT, and Ashley EA. Accuracy in wrist-worn, sensor-based measurements of heart rate and energy expenditure in a diverse cohort. *J Pers Med*. 2017;7,3; doi:10.3390/jpm7020003.

Save

The Role of Physical Activity in Weight Management Module Summary

This module has provided a lot of information. I've tried to address physical activity topics and issues that are of importance and interest to most RDs and DTRs working in weight management. Here are the knowledge and skill competencies we've addressed:

Key Concepts

- Physical activity promotes health – regardless of weight loss
- Physical activity guidelines for adults
- Energy balance is dynamic
- Physical activity is important in all phases of weight management and is especially important for weight loss maintenance
- Understanding individual scope of practice

Assessment

- Medical readiness
- Physical activity history
- Current physical activity and sedentary habits
- Estimate Total Daily Energy Expenditure
- Motivational readiness to change

Intervention

- Assist with goals while considering Physical Activity Guidelines
- Provide support and education
- Refer appropriately

Despite the length of this module, I've only scratched the surface of the physical activity domain. I've provided a few additional resources on the next page.

I encourage you to continue to strengthen your confidence and competence in providing physical activity guidance for your weight management clients. Follow your curiosity and connect with others who can help you learn more deeply into physical activity topics that interest you.

Enjoy the journey!

The Role of Physical Activity in Weight Management Module

Other Resources

Patients with Obesity

You are likely to have opportunities to work with patients who have significant obesity and/or who may be considering bariatric surgery. There are many good reasons for RDs working with such patients to incorporate physical activity pre- and post-surgery (see King and Bond paper). However, be aware that these patients may have special needs that require adaptations, such as seated exercises. And be sure to team up or refer patients to other professionals (physical therapists, exercise professional) as needed.

Review Paper

King WC and Bond DS. The importance of pre and postoperative physical activity counseling in bariatric surgery. *Exerc Sport Sci Rev.* 2013;41(1):26-35.
doi:10.1097/JES.0b013e31826444e0

Patient Materials

[“Active at Any Size”](#) – a webpage with useful tips and appropriate photos of people affected by obesity

- Chair Exercise DVDs - (Not all videos show people with obesity exercising)
- Chair Dancing Fitness - www.chairdancing.com
- Sit and Be Fit - www.sitandbenefit.org

Useful Websites

[American College of Sports Medicine Brochures](#) – This webpage has dozens of downloadable pdfs on physical activity, sports medicine, and nutrition. Not all are relevant to RDNs’ work, but you are likely to find some that are of interest and benefit to you and your clients.

[CDC Division of Nutrition, PA & Obesity](#)

[NIDDK Weight Management](#) – A great federal website with consumer and professional education resources

[National Coalition for Promoting Physical Activity](#)

[National Physical Activity Plan](#)

[Healthy People 2020: Physical Activity](#)

[Safe Routes to School Resources](#)

[Physical Activity for Seniors Resource Clearinghouse](#)

Putting it into Practice - Physical Activity - Fall 2018

1. How do I want to apply this information to my practice?

2. What more do I want to learn about this topic?

Save

The Role of Physical Activity in Weight Management Module Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

The Role of Physical Activity in Weight Management - Fall 2018

I spent _____ hours completing this module.



Save

Obesity Management through Adult Life Stages Module

Obesity Management through Adult Life Stages Module

Welcome and Introduction

Meet Your Instructor

Cynthia Thomson, PhD, RDN is a doctoral trained nutrition scientists who has an established outreach and research program in wellness. She is a Professor in Health promotion Sciences and Distinguished outreach Faculty at the Mel and Enid Zuckerman College of Public Health, University of Arizona in Tucson, Arizona. Her outreach is focused on improving health in underserved children through the promotion of healthy eating, physical activity and personal care. Her research program is largely focused on cancer survivorship and the role of diet activity and weight management to promote improved quality of life and survival after a cancer diagnosis. Her interest in obesity prevention stemmed from over 16 years of clinical dietetics practice in which the detrimental impact of lifestyle choices and propensity for weight gain and inactivity in cancer survivors were seen firsthand. Given the modifiable nature of these behaviors she sought to develop effective programs and strategies to enhance health after cancer. Eventually this passion led her to the realization that primary prevention needed to start at a much younger age, and thus her interest in developing effective outreach programs to promote wellness in young children. She has led numerous studies to promote weight management in adult females including cancer survivors, those at risk for cancer and obese women more broadly.

Obesity Management through Adult Life Stages Module

Introduction

Hello, I've designed this module to give you insights to the impact various life stages can have on the weight trajectories of adults. In this brief video, I provide an overview of this important topic and why it's relevant to weight management RDNs.

[Introduction - Life Transitions and Weight Control](#)

Click [here](#) for a pdf of the six videos contained in this course.

Obesity Management through Adult Life Stages Module Learning Objectives

At the end of this session, learners will be able to:

1. Describe strategies for preventing gestational weight gain.
2. Describe strategies for preventing adult weight gain.
3. Describe strategies for preventing advanced-age sarcopenic obesity.
4. Demonstrate how RDN should modify treatment approaches for patients/clients at different life stages.

Essential Practice Competencies Addressed:

8.1 Interprets and applies current food and nutrition science and principles in dietetics practice.

8.2 Recognizes and respects the physical, social, cultural, institutional and economic environments of the individual, group, community and population.

Learning Needs Codes:

4120 Life Cycle

5370 Weight Management, obesity

This module has four learning sections that address three different stages of the life cycle and the impact of each life cycle on weight management for that particular life stage and adulthood. The learning activities include:

1. three brief videos
2. recent research articles that are required reading plus several additional recommended readings
3. reflection questions and case examples to encourage application of principles to your particular practice
4. links to helpful YouTube videos on weight assessment techniques for several life stages
5. list of citations and resources.

Obesity Management through Adult Life Stages Module

Learning Activity #1 - Overview

Required Reading

Brisbois TD, Farmer AP, McCargar LJ. Early markers of adult obesity: a review. *Obesity Reviews*. 2012;13(4):347-367. This article has open access at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3531624/>

Key Points Summary:

This review provides a conceptual framework of the most significant predictors of the development of obesity in adulthood. Factors of interest (n=42) were identified from a systematic review of over 8800 manuscripts (135 selected for inclusion) and identified exposures/insults across the lifecycle, as well as other socio-demographic variables that are associated with adult obesity risk.

- Possible early markers of obesity included maternal smoking and maternal weight gain during pregnancy.
- Probable early markers of obesity included maternal body mass index, childhood growth patterns (early rapid growth and early adiposity rebound), childhood obesity and father's employment (a proxy measure for SES in many studies).
- These factors should be considered as targets for effective interventions to reduce the risk of adult obesity.

Obesity Management through Adult Life Stages Module

Learning Activity #2 - Gestational Weight Gain

Pregnancy can be a vulnerable time for weight gain beyond what's healthiest for the baby and mother. This video addresses the special considerations for weight gain during pregnancy.

[Video - Gestational Weight Gain](#)

Here are several tasks that will help you apply the concepts from this video.

Step 1: Review Pregnancy Weight Gain Guidelines

<https://www.youtube.com/watch?v=1PyRpvCwZF0>

Step 2: Plotting Weight

Using this web-based calculator, plot the weight gain of the following two women:

<https://www.babycenter.com/pregnancy-weight-gain-estimator>

Mom #1: Griselda is 5'2" and her pre-pregnancy weight was 145 pounds. She is now 8 weeks into her pregnancy and has gained 5 pounds.

Mom #2: Casey is 5'6" and her pre-pregnancy weight was 145 pounds. She is now 18 weeks pregnant and has gained 5 pounds.

Step 3: Making Recommendations

Less than 30% of women gain the appropriate amount of weight during pregnancy. How can we do better?

Using your cellphone video record yourself providing your best tips for preventing unhealthy weight gain during pregnancy.

Check your ideas with recommendations available in the National Academy of Sciences Implementation Guide:

<http://www.nationalacademies.org/hmd/~media/Files/About%20the%20IOM/Pregnancy-Weight/ProvidersBro-Final.pdf>

Other Resources:

Pregnancy weight management: video to promote walking during pregnancy:

<https://www.youtube.com/watch?v=KLkOfwQ7CcU>

Ahmad, N. N., W. S. Butsch, et al. Clinical Management of Obesity in Women: Addressing a Lifecycle of Risk. *Obstet Gynecol Clin North Am.* 2016;43(2): 201-230.

The World Health Organization estimates that nearly 2 billion people worldwide are overweight, 600 million of whom are obese.

The increasing prevalence of this condition in women is of particular concern given its impact on reproductive health and mortality. Data implicate maternal obesity in fetal programming and the metabolic health of future generations. Health care professionals are infrequently engaged in obesity management of pregnant women. This article provides a conceptual understanding of obesity and a rational approach to treatment.

Reflection Question 1 - Obesity Management through Adult Life Stages Module- Fall 2018

Required Activity

Compare and contrast the results of each of the Mom's weight gain assessment.

1. Have they gained an appropriate amount of weight at this point in their pregnancy?



2. What factors influenced the results?



Save

Obesity Management through Adult Life Stages Module

Learning Activity #3 - Preventing Adult Obesity

Prevalence of adult obesity continues to be a major concern for U.S. Individuals entering adulthood within the obese categories for BMI have a high likelihood of life-long obesity. Beyond learned eating behaviors, other health behaviors such as inactivity/sedentary time and sleep also influence obesity risk during this period. Ideally, these behaviors can be modified to promote healthy weight. An additional influence on weight in mid-life, is menopause and the hormonal sequelae that, through a number of biological mechanisms, alters energy requirements and lipogenesis escalating the risk for weight gain. Understanding these influences on weight in adult life affords an opportunity to improve diet, activity and sleep behaviors such that healthy BMI can be maintained for those entering adulthood with a normal BMI. For those who are already obese, efforts to promote weight loss consistent with therapeutic guidelines should be implemented, understanding that even independent of achieving a normal BMI, improvements in metabolic health can be demonstrated with weight reductions of 5-10% usual bodyweight.

[Video - Adulthood/Menopause](#)

Reflection Question 2 - Obesity Management through Adult Life Stages Module - Fall 2018

Required Activity

A 52-year-old woman present with weight gain of 10 pounds in last two years. She's always been able to keep her BMI at 24 kg/m² but now it's in the overweight range and despite dieting, she continues to see "waist creepage."

1. What would you advise in terms of:
- Weight goals short-term (0-6 months) and longer-term (> 12 months)
 - Dietary choices (wants to try ketogenic diet) • Physical activity • Sedentary time • Alcohol • Sleep
-



Save

Obesity Management through Adult Life Stages Module

Recommended Reading

These resources all use the socioecological model as a framework for the RDN to use in addressing nutrition and weight management issues.

1. [Academy of Nutrition and Dietetics. Position of the Academy of Nutrition and Dietetics: Interventions for the treatment of overweight and obesity in adults. *J Acad Nutr Diet.* 2016;116:129-147.](#)
2. [Academy of Nutrition and Dietetics. Position of the Academy of Nutrition and Dietetics: The role of nutrition in health promotion and chronic disease prevention. *J Acad Nutr Diet.* 2013;113:972-979.](#)
3. [Academy of Nutrition and Dietetics. Practice paper of the Academy of Nutrition and Dietetics: The role of nutrition in health promotion and chronic disease prevention. *J Acad Nutr Diet.* 2013;113:98.](#)

The impact of obesity on chronic disease burden has not been systematically evaluated. Data from 195 countries representing 68.5 M people were reviewed to assess obesity prevalence across the lifespan. The Global Burden of Disease study data showed that in 2015,

- A total of 107.7 million children and 603.7 million adults were obese.
- Since 1980, the prevalence of obesity has doubled in more than 70 countries.
- High BMI accounted for 4.0 million deaths globally, most due to cardiovascular disease.
- The disease burden related to high BMI has increased since 1990; however, the rate of this increase has been attenuated owing to decreases in underlying rates of death from cardiovascular disease.
- There is a dire need for implementation and evaluation of evidence-based interventions to reduce the obesity disease burden.

Obesity Management through Adult Life Stages Module

Learning Activity #4: Weight Management in Older Adults

As we age our bodies demonstrate a slow, steady reduction in lean mass. This loss in lean mass is frequently associated with no significant change in fat mass – resulting in an imbalance in body composition that reflects higher % adipose and lower percent lean. Importantly, this shift in body composition is most apparent in muscle tissue and directly impacts muscle function leading to reduced function and increase fall risk. Efforts to slow this age-related process include promotion of physical activity, particularly in relation to resistance training, and possibly a diet rich in protein as well as anti-inflammatory foods. Independent of BMI, this sarcopenic obesity can impact quality of life with advancing age.

Here is a summary of weight management issues when working with patients/clients who are older adults.

[Video - Advanced Aging](#)

Required Reading

[Gill BA, Bartels, CJ, Batis JA. Weight Management in Older Adults. Curr Obes Rep. 2015;4\(3\):379-388.](#)

Key Point Summary

Age-related changes in body composition contribute to sarcopenic obesity (SO) which in turn heightens risk for cardio-metabolic disease. Sarcopenic obesity doubles metabolic burden derived from low muscle mass (sarcopenia) and excess adiposity (obesity). This review provides a 10-year update of this syndrome. There is no consensus on the definition of SO with wide heterogeneity of diagnostic criteria and choice of body composition components needed to assess this phenotype. Importantly, muscle function has been added as a key component due to its adverse effects on health. To manage SO, it is important to make lifestyle changes that incorporate weight loss, physical exercise and protein supplementation. To assess the impact of SO on function, clinicians use the Short physical Performance Battery to complete quick (5-10 minute) assessments. <https://www.nia.nih.gov/research/labs/leps/short-physical-performance-battery-sppb>.

Reflection Question 3 - Obesity Management through Adult Life Stages Module - Fall 2018

Required Activity

A 78-year-old grandfather presents with pre-diabetes and fatigue. His BMI is 24.8 kg/m² and weight is stable. A DXA scan shows low lean mass and high abdominal obesity.

Think about an optimal MNT plan. Would you? • Assess his resting energy expenditure to determine energy requirements? • Restrict his energy intake? • Assess his intake of protein and how would you assess it? • Provide physical activity guidance and if so, what would that be?



Save

Obesity Management through Adult Life Stages Module Case Study

With advanced age comes a greater risk for sarcopenic obesity. Sarcopenic obesity is defined by the European Working Group as "a syndrome characterized by progressive and generalized loss of skeletal muscle mass and strength with a risk of adverse outcomes such as physical disability, poor quality of life and death." Sarcopenic obesity is also commonly associated with increased inflammatory state and metabolic dysregulation.

You are asked to consult on an 82-year-old female client who has reported a reduction in appetite and 4 pound weight loss in the past 6 months. She is 5'3" tall and weighs 148 pounds

Click [here](#) to download a document to show her daily reported intake on 24 hour recall. Review the menu and in the blank side of the table provide suggestions to reduce her risk of sarcopenic obesity. The paper by Gill provides key information to assist in your recommendations.

Required Activity

What nutrients did you consider in developing your suggestions?

Did you alter the menu items to reduce inflammation?

Did you alter the menu items to reduce metabolic dysfunction such as increase glucose, insulin or lipids?

How would you address physical activity?

Save

Obesity Management through Adult Life Stages Module Summary

Obesity remains a major health problem in the U.S. and globally. The best approach is primary prevention. Understanding the life course-related risks for undesirable weight gain can help to inform on when and for whom RDNs should practice in a primary prevention mindset. Further, even small gains in weight at each life stage should be addressed so as not to compound the obesity problem over the lifespan. The resources and activities here provide support for RDNs to understand the risk of weight gain faced by their clients as well as supportive information and skills to provide quality medical nutrition therapy for promotion of healthy weight throughout the lifespan.

Obesity Management through Adult Life Stages Module

Resources and Citations

Resources

1. Centers for Disease Control and prevention adult obesity data: <https://www.cdc.gov/obesity/data/prevalence-maps.htm>
2. CDC Social media tools to support obesity prevention efforts
3. Short Physical Performance Battery <https://www.nia.nih.gov/research/labs/leaps/short-physical-performance-battery-sppb>

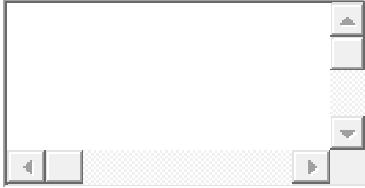
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Putting it into Practice - Obesity Management through Adult Life Stages Module - Fall 2018

1. How do I want to apply this information to my practice?



2. What more do I want to learn about this topic?



Save

Obesity Management through Adult Life Stages Module Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

End of Module Evaluation - Obesity Management through Adult Life Stages Module - Fall 2018

Rating from 1-5 with 1 being Strongly Disagree, 3 is Neutral and 5 being Strongly Agree

1. The self-study module was informative.

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
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2. The length of the module was appropriate for the amount of material covered.

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
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How Was Your Experience?

4. What is your estimate of the total time it took you to complete the module? _____ hours

4. How could we improve this module learning experience?

Save

Behavioral Management and Counseling Module

Behavioral Management and Counseling Module

Welcome and Introduction

Counseling means a lot of things to a lot of different people. For some, it means going to a therapist. For others, it means receiving good advice from friends. And others still, it's a nebulous concept that is full of mystery. In addition to the issue of *what* counseling actually is, the issue of *who* provides it can be a source of confusion. For example, is counseling only provided by behavioral health professionals (e.g., psychologists, social workers)? Is counseling provided by others? What kind of training is needed for someone to be a counselor?

Perhaps most importantly to this module, does a RDN provide counseling?

Take a moment to think about it. List some reasons why you think that a RDN does and doesn't provide counseling.

The definition of counseling is actually "the provision of assistance and guidance in resolving personal, social, or psychological problems and difficulties, especially by a professional."- *Oxford Dictionaries*. This definition covers the issue of both what counseling is and who provides it.

First, let's handle the issue of *who*. It's someone with professional training in a specific area. Clearly, RDNs have specialized training in a specific area. Remember how many hours you spent in obtaining your credential.

Now for the *what* counseling is. Traditionally, we viewed this as something that a psychologist or someone in the field of mental health provided (you'll even notice that in the definition above: "psychological problems and difficulties"). However, you'll also notice the definition includes issues that are personal or social. Is obesity a personal or social issue? Again, the answer is a resounding "yes."

Behavioral Management and Counseling Module

Getting Ready

One of the issues with counseling is that it requires both informational and experiential learning. In order to be proficient, professionals need to understand the actual skills. They need to be able to discuss what the different techniques are, identify the appropriate time to use them, understand the strengths and limitations of these approaches, and ultimately, apply all of this information with their clients. This knowledge is necessary and critical. However, it is not enough.

Professionals also need to have experiential learning to provide the best care possible. They need to be able to try these skills, receive feedback on how their skills are received by the client, and attempt skills in which they are less confident. This kind of learning is an ongoing process. By being a constant learner in counseling skills, we seek to provide the best care for our clients.

This module addresses the first issue of informational learning. I want everyone to have a solid foundation on counseling skills. Some of this may be familiar to you. If that is the case, remember the advice of Samuel Johnson, who wrote *A Dictionary of the English Language*, "People need to be reminded more often than they need to be instructed." The goal of this module is for all of us to have the same foundation as we prepare to hone our counseling skills. Each of the sections that follow has articles that address core concepts. If you feel that you have a good grasp of the subject area after reading the article provided, continue on to the next section. If you feel that you need a little more information or background, additional suggested readings are provided. Stated differently, the suggested readings are only necessary if you feel that you need (or want) additional information.

Behavioral Management and Counseling Module

Module Orientation

Learning Objectives

At the end of this module, learners will be able to:

- Describe the behavioral skills and techniques used in cognitive behavior therapy (CBT) to help clients modify eating and activity habits.
- Describe characteristics of CBT for obesity management.
- Describe cognitive skills utilized in a CBT approach to weight management.
- Describe the four main components of motivational interviewing (MI).
- Explain the importance of accurate reflective statements.
- Understand the techniques for providing clients with objective feedback.
- Describe the dietitian and client outcomes attained from trained dietitians in basic MI interviewing skills.
- Describe the differences between individual and group weight management counseling.
- Define the key elements to successfully facilitating groups.
- Describe the methods to adapt MI counseling principles to a group setting.

Essential Practice Competencies:

9.6 Uses effective counseling and coaching skills and strategies in practice.

Learning Needs Codes:

5090 Adults

5370 Weight management, obesity

6010 Behavior change theories, techniques

6020 Counseling, therapy, facilitation skills

6070 Interviewing and listening skills

How to Navigate the Module

This module has five learning activities. Some are brief and some will take a little time to work through the content. You should complete these activities in the order provided. Although each of these activities “stand alone,” they’re ordered from basic to more advanced. Each of the activities provided are intended to improve retention of the material.

Behavioral Management and Counseling Module

Learning Activity #1 - Basics of Cognitive Behavioral Theory

Learning Activity #1: Basics of Cognitive Behavioral Theory

Before we get started in this section, it is important to clarify a point. Is there a difference between behavior modification and cognitive behavioral therapy? The answer is, technically, "yes". (If you want to read more on this, please refer to Fabricatore, 2007). Although technically there are differences, in practice, behavior modification and cognitive behavior therapy are very similar (Foreyt and Johnston, 2016). In fact, the core concepts in treatment are shared between the two. Please don't be confused by any back-and-forth of terminology used in the readings.

[ABC's of Behavior Modification Video](#)

Click [here](#) for a pdf version of this video.

Read the following article to learn about the power of behavioral treatment for obesity.

Butryn ML, Webb V, Wadden TA. Behavioral Treatment of Obesity. *The Psychiatric clinics of North America*. 2011;34(4):841-859. Free access at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3233993/>.

Key Points Summary:

As this article points out, "behavioral treatment should be the first line of intervention for overweight and obese individuals" (page 841) and can produce recommended levels of weight loss. The authors highlight that

- three key components of behavioral treatment – goal setting, self-monitoring, and stimulus control – are essential for weight management success.
- frequent, long-term contact with patients improves likelihood of weight loss success, especially weight loss maintenance.
- technology such as phone, websites, and emails can extend clinicians' ability to stay in contact with more patients over time and thus, improve client's weight loss maintenance outcomes. Though it is usually less effective than face-to-face contact in follow-up, it can be an option for those who don't have access to face-to-face counseling.
- high levels of physical activity are beneficial for weight loss maintenance.
- while providing intensive behavioral treatment for obesity is effective, many populations don't benefit because of expense, lack of time and/or lack of access.
- dissemination of behaviorally-focused weight management programs through primary care settings and community organizations (e.g., YMCA), worksites, and commercial programs (e.g., Weight Watchers) extend the reach of weight loss treatment but seem to produce just modest weight loss outcomes.

Now, read this article.

[Spahn JM, Reeves RS, Keim, KS, et al. State of the Evidence Regarding Behavior Change Theories and Strategies in Nutrition Counseling to Facilitate Health and Food Behavior Change. *J Am Diet Assoc.* 2010;110:879-891.](#)

Key Points Summary:

The Academy of Nutrition and Dietetics Evidence Analysis Library Nutrition Counseling Workgroup conducted a systematic review of the peer-reviewed literature related to behavior change theories and strategies used in nutrition education, including weight management. Results of this review for weight management showed:

- Cognitive behavioral therapy (CBT): all studies reported significantly improved weight loss with behavioral therapy and strong evidence that weight loss achieved with CBT of six months or less duration resulted in sustained weight loss and prevention of further weight gain at least 18 months post-treatment.
- Motivational Interviewing (counseling strategy): strong evidence that MI significantly enhanced adherence to program recommendations and improved targeted diet-related outcomes, including weight loss.
- Self-Monitoring (counseling strategy): strong evidence that self-monitoring of food intake improves nutrition-related outcomes related to weight loss. An Academy review article on self-monitoring in weight loss by Yu, et al is not required reading but it provides an excellent review of the evidence for self-monitoring. You can access it [here](#). It's also listed in the citations at the end of this segment.
- Meal replacements and structured meal plans (counseling strategy): strong evidence that various types of meal replacements and/or structured meal plans were helpful strategies in achieving health and food behavior goals including weight loss.
- Other counseling strategies for rewards, problem solving, social support, goal setting, cognitive restructuring, stress management and stimulus control either did not have enough evidence or showed no effect on weight management.

I have also included this brief video that provides some additional practical information on these techniques.

[Components of Behavior Management Video](#)

Click [here](#) for a pdf version of this video.

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. The "A" in the ABCs of behavior modification stands for

- ☐ a) Attribute
- ☐ b) Autonomy
- ☐ c) Antecedent
- ☐ d) Association

2. When counseling patients/clients who are having difficulty maintaining weight loss, the RDN's goal should be to

- ☐ a) Create ways for regular contact with the patient/client
- ☐ b) Have patients/clients problem-solve barriers on their own
- ☐ c) Focus their time on those patients/clients who are adhering to their weight loss maintenance plan
- ☐ d) None of the above

3. Diet logging is the only self-monitoring skill you should have your weight management patients/clients focus on.

- ☐ a) True
- ☐ b) False

4. All of the following are characteristics of a good goal except

- ☐ a) Measurable
- ☐ b) Achievable
- ☐ c) Time defined
- ☐ d) Big

5. A way to think about stimulus control is that it's a skill in which patients/clients implement actions to change their environment in helpful ways.

☐ a) True

☐ b) False

6. Which of the following describes the skill of cognitive restructuring?

☐ a) Changing thoughts

☐ b) Changing behaviors

☐ c) Changing actions

☐ d) Changing habits

7. When it comes to getting social support for weight management, any help a patient/client can get from family, colleagues, or friends is beneficial.

☐ a) True

☐ b) False

Citations

Butryn ML, Webb V, and Wadden MA. Behavioral treatment of obesity. *Psychiatr Clin N Am* 2011;841-859.

Fabricatore AN. Behavior Therapy and Cognitive - Behavioral Therapy of Obesity: Is There a Difference? *J Am Diet Assoc.* 2007;107(1):92-99.

Foreyt JP and Johnston CA. (2016). Behavior modification and cognitive therapy. In: Mechanik J, Kushner R. (eds). *Lifestyle Medicine*. Switzerland: Springer International Publishing.

Spahn JM, Reeves RS, Keim, KS, et al. State of the evidence regarding behavior change theories and strategies in nutrition counseling to facilitate health and food behavior change. *J Am Diet Assoc.* 2010;110:879-891.

Yu Z, Sealey-Potts C, and Rodriguez J. Dietary self-monitoring in weight management: Current evidence on efficacy and adherence. *JAND*;115(12):1931-1938.

Save

Behavioral Management and Counseling Module

Learning Activity #2 - The Issue of Adherence

What is the best diet for someone? Most likely, the diet that an individual is able to follow for the longest amount of time (Johnston et al., 2014). Perhaps the most difficult issue that needs to be addressed in terms of lifestyle change is adherence. Knowledge is necessary. Additionally, a plan that is manageable, goals that are measurable, and concrete small steps toward behavior change all are important. However, each of these won't make much of a difference if your client doesn't follow the plan. Engaging in the behaviors that have been identified is adherence, and ultimately, it is adherence that leads to success.

[Adherence Video](#)

Click [here](#) for a pdf version of this video.

Reflection Questions - Behavioral Management - Issue of Adherence - 2018

Required activity.

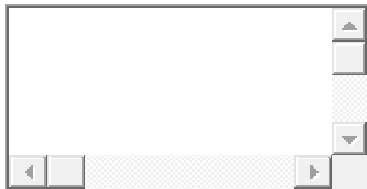
1. The statement, "Knowledge doesn't change adherence," means RDNs need to do more than tell patients/clients "what" to do. How does this align with how you currently counsel your patients/clients?



2. How often do you help your patients/clients understand the "why" behind their necessary or desired changes?



3. How often do your clients leave your sessions with a very specific, detailed plan describing actions, dates, details and solutions to potential barriers identified?



4. How will you deal with your patient's/client's non-adherence in the future?



Save

Behavior Management and Counseling Module

Learning Activity #3 - Basics of Counseling

Patients/clients are too often presented with the components of good counseling without the clinician considering how the actual interaction that will take place. It's a common mistake. This section will focus on that interaction.

Instead of focusing on getting the correct behavioral components (discussed in the previous learning activity) into a session at the right time, what would happen if your initial thought was to pay attention first to what your client is trying to communicate? For some RDNs, that sounds like a disaster. A list of questions and concerns come to mind immediately.

“Who knows what my client would say?”

“What if the client doesn't talk about what I think is important?”

“How do I stop someone from sharing something that I'm not qualified to treat?”

All of these (and many others) are valid. While considering those concerns, do you think that a client really holds the keys to making the best behavioral change step for himself? For sure, the client is the one who makes the decision to change (or not to change). So we need to be sure to put some basic skills of counseling first.

One of the clearest examples of this is active listening. Take a moment (it is only a few pages) to read the following online text on active listening.

[Active Listening - Karie Tennant; Tammy J.Toney-Butler.](#)

This brief reminder of how to engage in active listening is intended to get you started thinking about basic counseling skills. The following presentation goes into a bit more detail about the basic counseling skills that we should try to maintain having “first importance.”

[Basics of Counseling Video](#)

Click [here](#) for a pdf version of this video.

This section of the learning activity focuses closely on the theory behind the basics of counseling. It gives a brief history and some great suggestions that were originally discussed by Carl Rogers, the “father” of client-centered counseling.

[Patient-Centered Video](#)

Click [here](#) for a pdf version of this video.

Reflection Questions - Behavioral Management - Basics of Counseling - Fall 2018

Question 1 is required. Questions 2 and 3 are optional.

1. Think about the way you interact with your patients/clients. Is your approach more “sage on the stage” or “guide at the side?”



2. How does the “50/50 rule” – the RDN doesn’t talk more than 50% of the time – feel to you?



3. Think of a recent experience in which the counseling interaction didn’t go well for you and the patient/client. Could any of the client-centered strategies discussed in these videos have helped that session be more effective?



Save

Behavioral Management and Counseling Module

Learning Activity #4 - Overview of Motivational Interviewing

Motivational interviewing (MI) was developed with the previously-mentioned core counseling concepts in mind. It has become extremely popular recently and been shown to have good outcomes with a number of problems.

Motivational interviewing is a counseling method that helps people resolve ambivalent feelings and insecurities to find the internal motivation they need to change their behavior. Initially developed by Miller and Rollnick in 1991 to help problem drinkers become more engaged in available treatments, MI techniques have been expanded to the management of chronic diseases, such as type 2 diabetes and obesity. Motivational interviewing is an effective strategy when combined with cognitive behavioral therapy (CBT) weight loss programs because it

- addresses ambivalence as part of the weight loss process.
- seeks to move clients into action by identifying discrepancies between current behavior and desired goals.
- tailors treatment to client-specific goals.

Specific strategies for MI are:

1. Eliciting self-motivational statements
2. Reflecting
3. Using objective data
4. Negotiating a plan and strategies for overcoming ambivalence

Please read the following articles as they provide a good foundation on the topic of motivational interviewing.

Christie D, Channon S. The potential for motivational interviewing to improve outcomes in the management of diabetes and obesity in paediatric and adult

populations: a clinical review. *Diabetes, Obesity & Metabolism*. 2014;16(5):381-387. Free access at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4237607/>.

[DiLillo V, Siegfried NJ, West DS. Incorporating MI into behavioral obesity treatment. *Cognitive and Behavioral Practice*. 2003;10:120-130.](#)

Reflection Questions - Behavioral Management - Overview of Motivational Interviewing

Required Activity

1. Which of the MI strategies do you plan to add to your counseling toolkit?

2. How often do you find yourself trying to persuade patients/clients of the importance of a behavior change? How will you shift this approach to trying to ascertain what are the patient's/client's interests or reasons for changing (or not changing) their behavior?

3. What do you think of the strategy of asking permission to share your knowledge or ideas?

Save

Behavioral Management and Counseling Module

Learning Activity #4 - Overview of Motivational Interviewing (Continued)

Evidence that MI Works

Dietitians can successfully incorporate the motivational interviewing skills into their counseling style. In a 2007 study (Brug et al), dietitians were randomly assigned to receive either basic training in MI interviewing skills, or a control group of no training. Outcome measures included evaluating the counseling style of dietitians, total self-reported intake of saturated fat, fruits and vegetables, measured body mass index (BMI), waist circumference, and glycated hemoglobin of patients. The study found that MI-trained dietitians were significantly more empathetic, used more reflections and talked less than control dietitians. The study found that MI training was associated with a significantly larger change in patient self-reported saturated fat intake scores.

Other recently published studies have shown that MI as an adjunct to CBT is more effective than MI alone for weight loss. Three of these studies employed MI as an adjunct to cognitive-behavioral therapy and one employed MI as an adjunct therapy to a self-help program. In all cases, the motivational interviewing group achieved significantly better outcomes. In another study, researchers sought to determine whether adding MI to a behavioral weight control program would improve weight loss outcomes as well as glycemic control for overweight women with type 2 diabetes. Motivational interviewing was supported as an adjunct to behavior therapy for both weight loss and glycemic control.

For more information on these studies, the citations are included here:

1. Armstrong MJ, Mottershead TA, Ronksley PE, et al. Motivational interviewing to improve weight loss in overweight and/or obese patients: a systematic review and meta-analysis of randomized controlled trials. *Obesity Reviews*. 2011;12(9):709-723.
2. Brug J, Spikmans F, Aartsen C, et al. Training dietitians in basic motivational interviewing skills results in changes in their counseling style and in lower fat intakes in their patients. *J Nutr Educ Behav*. 2007;39:8-1
3. Hardcastle SJ, Taylor AH, Bailey MP, Harley RA, Hagger MS. Effectiveness of a motivational interviewing intervention on weight loss, physical activity and cardiovascular diseases risk factors: a randomized controlled trial with a 12-

month post-intervention follow-up. *International Journal of Behavioral Nutrition and Physical Activity*. 2013, 10:40.

4. West D, DiLillo V, Bursac Z, et al. Motivational interviewing improves weight loss in women with type 2 diabetes. *Diabetes Care*. 2007;30(5):1081-1087.

Clearly, motivational interviewing techniques can be useful in helping clinicians help their patients/clients. I synthesize the research to describe practical strategies that you might consider using to strengthen your counseling skills.

[Motivational Interviewing Video](#)

A pdf version of this video is not available.

Behavioral Management and Counseling Module

Learning Activity #5 - Counseling Skills Applied to Groups and Telehealth - Part 1

All of the skills listed previously were intended to be used in a variety of ways. For the most part, we think of using them in a one-on-one setting. However, these skills can be used whenever we are trying to communicate in a therapeutic way. For example, these skills can be applied to group settings by encouraging the group to engage in some of the core concepts of counseling (e.g., active listening). In fact, it is not required that you even see the person with whom you are communicating. These skills have also been found to be useful in contacting clients over the phone. This section focuses briefly on how these skills can be adapted to multiple ways of interacting with people.

Counseling in Groups

Up to this point, we have predominately been discussing how to provide counseling in one-on-one sessions, yet most weight management programs occur in group settings. This segment addresses some strategies to use with groups. In addition, recent research has given some insight into cultural considerations for group counseling and this research will be reviewed.

Individual vs. Group Therapy

More and more RDs are conducting weight management counseling in a group setting. Groups can offer some benefits for weight management counseling, including:

- Provide a supportive environment for participants struggling with the same issues.
- Provide an effective way for participants to problem-solve and learn from other members of the group.
- Allow the RD to efficiently work with several participants at the same time.

Read the following article:

[Renjilian DA, Nezu AM, Shermer, RL, et al. Individual versus group therapy for obesity: Effects of matching participants to the treatment preferences. *Journal of Consulting and Clinical Psychology*. 2001;69\(4\):717-721.](#)

Key Points Summary:

The goal of this study was to test whether matching obese persons in their preference for group or individual treatment would improve weight loss outcomes, and to compare the effects of group versus individual therapy. The major outcome of the study was change in body weight as assessed by BMI. Participants in both the individual and group conditions received 26 weekly sessions of standard cognitive behavioral weight management training; were instructed to follow a low-calorie diet; and to complete a home-based exercise program consisting of 30 minutes of brisk walking 6 days/week. Doctoral candidates in clinical psychology led the intervention.

The results of this study complements other research that has shown that group counseling targeted to weight or diabetes management in middle-aged subjects is more effective than individual counseling. The results of these studies are summarized in the Academy's Evidence Analysis Library under the "Nutrition Counseling" project.

While there may be some benefits to group versus individual counseling for weight management, effective group facilitation skills are necessary for successful group dynamics.

Review the video and consider what the RD facilitating a group session could have done better.

[Group Counseling Video 1](#)

Now, review a second video and answer the questions that follow.

[Group Counseling Video 2](#)

Note that pdf versions of these videos are not available.

Reflection Question - Behavioral Management - Overview of Motivational Interviewing- Fall 2018

Required Activity

1. What went well and why were the group dynamics so much better than the first video?



Save

Behavioral Management and Counseling Module

Learning Activity #5 - Counseling Skills Applied to Groups and Telehealth - Part 2

Motivational interviewing has been widely utilized in individual settings, but there is emerging evidence that MI can be adapted, with a few critical modifications, to a group format. Read the following article for insight into applying MI strategies to groups and some useful examples:

[Velasquez MM, Stephens NS, Ingersoll K. Motivational interviewing in groups. *Journal of Groups in Addiction & Recovery*. 2006;1\(1\):27-50.](#)

Key Points Summary:

Present the style and spirit of MI when opening the group

Present an overview of how the group will be conducted by telling participants that you are here to help them learn more about themselves and ask whether there are any changes they would like to make. Assure them that while you have knowledge and the skills to be helpful, if there is any changing to be done, they will be the ones to do it. It can be helpful to open the group using the acronym “OPEN”:

- **O**pen with group purpose: to learn more about members’ thoughts, concerns, and choices
- **P**ersonal choice is emphasized
- **E**nvironment is one of respect and encouragement for all members
- **N**on-confrontational nature of the group

Focus on collaboration and creating an atmosphere of partnership

Consistent with the MI approach, avoid the “expert” trap by focusing on collaboration and creating a “partnership” atmosphere.

- Whenever possible, arrange chairs in a circle
- Introduce discussions with collaborative language, such as “Today, your experiences will be really useful in helping us begin to explore how your weight has affected your life.”
- During and following the presentation of information, use open-ended questions or statements designed to elicit members’ thoughts about the issues/information,

such as “Tell me what stands out most for you in that information,” or “What do you make of that?”

Use selective reflective listening to build motivation and reinforce change talk

As with MI in an individual format, judicious reflections are the heart of MI group work. Reflections can help establish rapport, express empathy, decrease resistance, selectively highlight responses that are most relevant to the change process, support autonomy, and promote Change Talk. In groups comprised of members in different stages of change, reflections are powerful tools for responding to an individual and applying the individual's response to the benefit of the group.

Use MI methods for handling resistance

MI methods that diffuse resistance in individual counseling also work very well in the group setting. In addition, they can serve as a model for how group members can relate to each other. Group leaders use methods such as empathic reflecting, asking for elaboration on statements that are consistent with the direction of the group, and validating personal choice and responsibility. If a negative, hostile comment by one member does occur, selectively emphasize the most positive part of the comment, reframe the comment, and/or affirm the member.

A group decisional balance exercise can be used to defuse resistance. Ask group members to first brainstorm a list of reasons for not making a change to diet or physical activity habit that would help them with their weight management (the “good things” about their current diet or physical inactivity), then list reasons for making the change (the “not so good things” about their weight, diet and physical inactivity). The group can then use this list to either argue for or against change. In this way, resistance is voiced and then channeled into Change Talk.

Discuss stages of change and encourage members to identify their own stage

Begin the session with a discussion of the various stages, and then present vignettes for a variety of behaviors that allow clients to identify the stage of change for each scenario.

Group summaries

Use group summaries to selectively emphasize the most relevant comments and to reinforce Change Talk. Summaries can be utilized strategically to review and highlight relevant information provided by the group, relate a response by one member to an earlier comment from another member, and transition the group discussion to another area of focus.

Brief written feedback

The use of food and activity records that the client turns in can provide an avenue for the RD to provide feedback on diet and physical activity changes that are supportive of weight management.

Citations

Renjilian DA, Nezu AM, Shermer, RL, et al. Individual versus group therapy for obesity: Effects of matching participants to the treatment preferences. *Journal of Consulting and Clinical Psychology*. 2001;69(4):717-721.

Velasquez MM, Stephens NS, Ingersoll K. Motivational interviewing in groups. *Journal of Groups in Addiction & Recovery*. 2006;1(1):27-50.

Behavioral Management and Counseling Module

Learning Activity #5 - Counseling Skills Applied to Groups and Telehealth - Part 3

TeleHealth

In general, we have more and more ways to be in contact with people. As technology continues to advance, it is likely that we will have opportunities to contact our clients/patients in many different formats. This will not be without its challenges. For example, it can be difficult to connect with someone who you don't see face-to-face. This final presentation provides a brief discussion on some of the concerns and promises and telehealth.

[Telehealth Video](#)

A pdf version of this video is not available.

No matter how far we advance technologically, it's likely that good communication and core counseling skills will increase the likelihood that our patients/clients will not only have a good experience when they seek treatment but that they will also be more likely to engage in positive behavioral change. Improving our basics skills to provide counseling is a central key to providing the best opportunity for change to occur.

Thank you for your participation in this module.

Putting it into Practice - Behavioral Management and Counseling - Fall 2018

1. How do I want to apply this information to my practice?



2. What more do I want to learn about this topic?



Save

Behavioral Management and Counseling Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

Behavioral Management and Counseling Module - Fall 2018

I spent _____ hours completing this module.

Obesity Medical Nutrition Therapy Module

Obesity Medical Nutrition Therapy Module

Welcome and Introduction

Welcome to the Obesity Medical Nutrition Module. There are several components to providing Medical Nutrition Therapy (MNT) for our patients and clients with obesity. These components include understanding the Academy's Standards of Practice and Standards of Professional Practice for weight management, utilizing the Nutrition Care Process (NCP) when counseling patients with obesity, and applying these concepts in your practice.

Obesity Medical Nutrition Therapy Module

Module Orientation

This module has seven Learning Activities to enhance your understanding and application of MNT for obesity. In this module, you will:

- Listen to a series of three PowerPoint slide presentations
- Complete two sets of Learning Activity questions
- Answer “knowledge check” questions
- Reflect on the key concepts of this module and how you can apply to working with your patients and clients.

Learning Objectives:

1. Apply the nutrition-focused physical exam for weight management to case study scenario.
2. Cite the most relevant weight management SOP/SOPPs.
3. Describe the NCP as it relates to weight management treatment.
4. Cite the research for weight management health information technology and how to apply it to weight management plan.
5. Cite specific professional recommendations for self-disclosure and referral.
6. Cite the scientific principles for conducting research.
7. Describe ANDHII and how it can be used in weight management practice.

Essential Practice Competencies addressed:

1.1 Identifies with and adheres to the code of the ethics for the profession.
5.1 Acquires knowledge of technology systems consistent with role and responsibilities.
8.1 Interprets and applies current food and nutrition science and principles in dietetics practice.
10.2 Implements the Nutrition Care Process to ensure individual health goals are established, monitored and achieved while adhering to the Standards of Practice in Nutrition Care for RDNs.
10.5 Documents and maintains records according to the SOP for the RDN, legislation, regulations and organization policies.

Learning Needs Codes:

1065 Informatics
3005 Nutrition diagnosis
3010 Assessment methodology
5090 Adults
5370 Weight management, obesity
5390 Care planning, documentation, evaluation
9020 Evaluation and application of research

Obesity Medical Nutrition Therapy Module

Learning Activities

Please watch the next three videos which discuss the key components of evidence-based nutrition for obesity treatment. Each video is presented by Colleen Tewksbury, PhD, RDN, LDN. Colleen is the Bariatric Surgery Program Manager at University of Pennsylvania Medicine in Philadelphia, PA.

Obesity Medical Nutrition Therapy Module

Learning Activity #1

Step 1 - Obesity MNT

Click [here](#) for a pdf version of this video

In this first video, Colleen

1. describes the Academy's Weight Management Standards of Practice and Standards of Professional Performance guidelines;
2. describes the Nutrition Care Process related to weight management treatment;
3. reviews and applies the nutrition-focused physical exam in weight management.

DIRECTIONS: Read the following readings and then complete questions that follow based on information contained in the readings and independent research.

Read the following paper:

[Jortberg, B., Myers, E., Gigliotti, L., Ivens, B. J., Lebre, M., March, S. B., ... & Turner, T. \(2015\). Academy of Nutrition and Dietetics: Standards of practice and standards of professional performance for registered dietitian nutritionists \(competent, proficient, and expert\) in adult weight management. *Journal of the Academy of Nutrition and Dietetics*, 115\(4\), 609-618.](#)

Reflection - Required Questions

1. Based on the Standards of Practice and Standards of Professional Performance, at which level of practice (competent, proficient, expert) are you currently performing at?

2. What additional tools or skills do you need to increase your performance level?

Test Your Skills

Optional Activity

Use the Standards of Practice to answer Question 3.

3. Andrea is a 45 year-old active woman who runs three times per week and lifts weights on alternative days (up to 3 days/week). She is 66 inches and weighs 168 pounds, a weight she has maintained since age 30. Assessment information: BMI: 27.1, waist circumference 26, large frame, and body fat measured at 19%. Using the Nutrition Care Process, document your Nutrition Assessment, Diagnosis, and Intervention on your patient, Andrea.

Save

Obesity Medical Nutrition Therapy Module

Read the following article.

[Beechy L, Galpern J, Dak SK. Assessment tools in obesity –Psychological measures, diet, activity, and body composition. *Physiol Behav.*2012; 107\(1\):154-171.](#)

Article Key Points and Discussion

The nutrition assessment includes a wide array of information to be collected. Clinicians have access to multiple, validated measures to collect this information. Below are different measure that can be used.

Quality of Life

- Short Form-36
- Impact of Weight on Quality of Life
- Moorehead-Ardeit Quality of Life Questionnaire- II
- Weight Related Symptom Measure and Obesity and Weight Loss Quality of Life
- Obesity Related Well-Being

Hunger

- Three Factor Eating Questionnaire
- Visual Analog Scales
- Pictorial Measures

Sleep

- Epiworth Sleepiness Scale
- Polysomnography
- Actigraphy

Psychological Well-Being Assessment

- Beck Depression Inventory-II
- Center for Epidemiologic Studies Depression Scale
- General Well-Being Schedule
- Rosenberg Self-Esteem Scale

Body Image

- Body Shape Questionnaire
- Multidimensional Body-Self Relations Questionnaire

- Body Image Assessment for Obesity

Physical Activity

- Doubly Labeled Water
- Heart Rate Monitoring
- Accelerometry
- Baecke Questionnaire
- International Physical Activity Questionnaire, 7 day
- Physical Activity Recall Questionnaire
- Behavioral Composition

Body composition will be reviewed in the attached [table](#).

Required Activity

1. What is the primary difference in being overweight versus being obese?

2. For what persons or populations may BMI not be an accurate measure of overweight or obesity?

3. Based on existing literature, describe the application of body composition techniques used to assess body composition in obesity in practice.

Save

Obesity Medical Nutrition Therapy Module

Not required, but recommended as OPTIONAL reading or resources

Belarmino, Giliane, et al. "Adiposity estimated using air displacement plethysmography, body mass index and body adiposity index in a sample of severely obese patients." *Journal of Advanced Nutrition and Human Metabolism* 2 (2016).

Hurst, Pamela R., et al. "Validity and reliability of bioelectrical impedance analysis to estimate body fat percentage against air displacement plethysmography and dual-energy X-ray absorptiometry." *Nutrition & Dietetics* 73.2 (2016): 197-204.

Gallagher D, Kelley DE, Yim JE, et al. Adipose tissue distribution is difference in type 2 diabetes. *Am J Clin Nutr* 2009; 89:807.

Heath EM, Adams TD, Matthews Daines M, Hunt SC. Bioelectric impedance and hydrostatic weighing with and without head submersion in persons who are morbidly obese. *J Am Diet Assoc.*1998;98(8):869-875.

Lee SY, Gallagher D. Assessment methods in human body composition. *Curr Opin Nutri Metab Care* 2008;11:566.

Wang J, Thornton JC, Bari S, et al. Comparisons of waist circumferences measured at 4 sites. *Am J Clin Nutr.* 2003;77(2):379-84. Can be accessed at <http://www.ajcn.org/cgi/reprint/77/2/379>.

Zhu S, Heymsfield SB, Toyoshima H, et al. Race-ethnicity-specific waist circumference cutoffs for identifying cardiovascular disease risk factors. *Am J Clin Nutr.* 2005;81(2):409-15. Can be accessed at <http://www.ajcn.org/cgi/reprint/81/2/409>.

Obesity Medical Nutrition Therapy Module Learning Activity #2:

[Step 3 – Obesity MNT](#)

Click [here](#) for a pdf version of this video

In this video, Colleen describes the recommendations for self-disclosure and for referral to other health-care professionals.

Obesity MNT Learning Activity #2 - Questions - Fall 2018

Required Activity

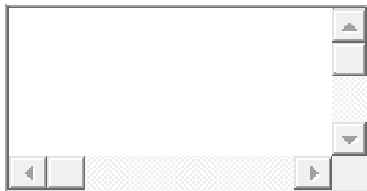
1. What are some situations in which you would need to refer a patient to another provider?



2. What are some effective methods to building referral networks with other providers?



3. Have you ever self-disclosed to a patient? How do you think it may have positively improved the interaction? How may it have negatively impacted it?



Save

Obesity MNT Therapy Module

[Step 5 – Obesity MNT](#)

Click [here](#) for a pdf version of the video

In this video, Colleen discusses health information technology, Clinical Quality Measures (CQMs), the Academy of Nutrition and Dietetics Health Informatics Infrastructure (ANDHII), and nutrition-related research.

Putting it into Practice - Obesity MNT Therapy - Fall 2018

1. How do I want to apply this information to my practice?



2. What more do I want to learn about this topic?



Save

Obesity Medical Nutrition Therapy Module Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

Obesity Medical Nutrition Therapy Module - Fall 2018

I spent _____ hours completing this module.

Pharmacotherapy and Medical Complications in Weight Management Module

Pharmacotherapy and Medical Complications in Weight Management Module

Welcome and Introduction

In this module, you'll learn how medications can be an effective treatment strategy to help patients/clients lose weight, what medications are currently in use, and how Registered Dietitians Nutritionists need to be prepared to provide medical nutrition therapy for patients/clients who are using weight loss medications. You will also learn about the negative impacts obesity has on metabolic, biochemical and physiological systems in the body.

You will meet Jessica Bartfield, MD, Assistant Professor in the Department of Surgery at Wake Forest Baptist Medical Center, where she works as an obesity medicine specialist at the comprehensive weight management center. Dr. Bartfield is uniquely suited to deliver this module as a board-certified internal medicine physician focusing on obesity treatment who is also certified as a physician nutrition specialist.

Pharmacotherapy and Medical Complications in Weight Management

Module

Getting Ready

Do you agree that obesity is a disease? Why or why not?

Adipose tissue was previously thought to be relatively inert cell mainly for lipid storage, lipolysis, and release of free fatty acids during starvation. It's now understood to be a metabolically active, complex cell that secretes hormones and cytokines which influence appetite, energy expenditure, insulin and glucose levels. The interaction of these factors is often impaired leading to disordered signaling of hunger and satiety which can contribute to a chronic and relapsing condition.

Your first required reading will describe the current understanding of the active role fat cells play in obesity. The rest of the module will describe ways that anti-obesity medications can be used to modulate some of these adverse interactions.

Pharmacotherapy and Medical Complications in Weight Management Module Module Orientation

Learning Objectives

At the end of this session, learners will be able to:

1. Cite the history of anti-obesity pharmacotherapy.
2. Describe the current criteria for anti-obesity pharmacotherapy use.
3. Differentiate patients who are potential candidates for anti-obesity pharmacotherapy.
4. Describe the FDA-approved anti-obesity pharmacotherapy options.
5. Cite the mechanisms of action of the FDA-approved anti-obesity medications.
6. Describe average weight loss effects vs duration of time for FDA-approved anti-obesity medications.
7. Describe the contraindications and most common side effects of FDA-approved anti-obesity medications.
8. Cite the common metabolic complications of obesity.
9. Describe the prevalence of common metabolic complications of obesity.
10. Identify the signs and symptoms of common mechanical complications of obesity.
11. Describe the prevalence of mechanical complications of obesity.

Essential Practice Competencies Addressed

4.2 Reflects, integrates and evaluates using critical thinking when faced with problems, issues and challenges.

10.4 Applies knowledge of the interrelationship and impact of pharmacotherapy, dietary supplements, functional foods and nutrients on health and disease in accordance with the Scope of Practice and Standards of Professional Performance for RDNs.

Learning Needs Codes

3070 Pharmacological, drug/nutrient, herbal interaction

5090 Adults

5370 Weight management, obesity

9020 Evaluation and application of research

This module is similar to other modules in this online course. You will read two important research and review articles and complete related reflection questions and quizzes. Dr. Bartfield explains key concepts in five brief video presentations. You will also have the opportunity to download a resource on available anti-obesity medications and to test your understanding through several in-depth and realistic case studies.

Pharmacotherapy and Medical Complications in Weight Management Module

Learning Activities

Learning Activity #1: Required Readings

Reading #1

These two readings give you important background for the rest of the module. The first reading addresses the question raised earlier about classifying obesity as a disease based on what we now know to be the active role that adipocytes play in metabolic diseases.

[Elmquist JK, Scherer PE. Neuroendocrine and endocrine pathways of obesity. JAMA. 2012;308\(11\):1070-1071.](#)

Key Points Summary:

The tremendous increase in obesity prevalence over the past 30 years fueled greater study and research efforts at understanding the science behind this disease. In particular, there is new appreciation for the metabolic activities of the adipocyte cell and adipose tissue, and how it contributes to the metabolic diseases associated with excess adipose tissue. Until recently, fat cells were thought to be mainly inert cells that simply stored excess lipids or broke down lipids and released fatty acids as needed. Now, however, the many endocrine pathways of these cells have been identified. The table below shows the hormonal influences on energy balance.

Hormone	Site of Secretion	Effect on Appetite	Target Organ of influence	Effect on Blood Glucose
Leptin	Adipose tissue	Decreased	Brain (hypothalamus)	Decreases
Adiponectin	Adipose tissue	N/A	Liver and skeletal tissue	Decreases-increased insulin sensitivity
IL-6	Adipose tissue	N/A	Liver, skeletal muscle, adipose tissue	Increases-increased insulin resistance
GLP-1	Ileal L cells	Decreased	Pancreas	Decreases
Insulin	Pancreas	Increased	Brain, liver, skeletal, adipose tissue	Decreases
Ghrelin	Stomach	Increased	Brain (hypothalamus)	No direct effect
Peptide YY	Ileum/colon	Decreased	Brain (hypothalamus)	No direct effect

Leptin:

- Levels increase with increasing obesity

- Higher secretion in females when compared to males
- Obesity causes leptin *resistance*, it does not result from leptin *deficiency*

Adiponectin:

- Levels decrease with increasing obesity
- Lower levels with central obesity
- Positive metabolic effects

Insulin:

- Suppresses glucagon release
- Increased insulin resistance leads to hyperglycemia and potential loss of insulin production

Answer these questions, save your answers and click "next" to see the correct answers.

1. Name two hormones or hormonal products secreted from adipose tissue and the organs they target



a) Leptin - hypothalamus to inhibit food intake



b) Ghrelin - hypothalamus, decreases appetite



c) IL-6 - liver, adipose and skeletal muscle to increase insulin resistance

2. Obesity is thought to be a state of leptin resistance rather than leptin deficiency.



a) True



b) False

Pharmacotherapy and Medical Complications in Weight Management Module

Learning Activity #1: Required Readings

Reading #2

This paper provides key recommendations for the pharmacological management of obesity and assigns each recommendation with a strength (strong=1, weak =2) and the quality of evidence (very low, low, moderate, high) found.

[Apovian C, Arrone L, et. al, Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.* February 2015, 100\(2\):342-362.](#)

Key Points Summary:

The use of anti-obesity pharmacotherapy dates back over one hundred years and ran a difficult course with poor weight loss effects, dangerous side effects, inadequate access, and inappropriate use. Fortunately, despite these obstacles, new therapies have recently obtained FDA approval for obesity treatment. Clinicians must understand how these therapies work and identify which patients may benefit to optimize treatment success.

Clinical evaluation of the patient with excess weight (overweight or obesity)

Providing high-quality care to patients with obesity demands providers' attention to a number of particular details. These patients face significantly different risk for specific diseases and response to different medications when compared to normal weight patients. In addition, the necessary history a provider must gather varies for patients with obesity. Namely, patients with obesity should be screened for **T2DM, heart disease, HTN, dyslipidemia, obstructive sleep apnea (OSA), NAFLD, osteoarthritis (OA), major depression, and have all age-appropriate recommended cancer screenings**. The history should include weight patterns, family history, sleep disorders, eating behaviors, sedentary behaviors, symptoms of secondary causes of obesity (table 1). Clinicians should also review medication lists to identify those that promote weight gain and substitute with a weight neutral agent if appropriate. Finally, clinicians should formulate a treatment plan in accordance with the "AHA/ACC/TOS Guidelines for the Management of Overweight and Obesity in Adults." You can download the article here:

[Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS Guideline for the management of overweight and obesity in adults: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Journal of the American College of Cardiology.* 2014;63\(25\):2889-2934.](#)

Rationale for anti-obesity pharmacotherapy:

Weight reduction leads to hormonal changes or adaptive responses that favor weight regain by increasing appetite and reducing energy expenditure. Long-term weight loss and maintenance remains a significant challenge for the vast majority of the population. Individuals must maintain ongoing caloric reduction and increased energy

expenditure to maintain the weight loss. The currently available medications may increase this adherence by decreasing hunger or increasing satiety. Here are recommendations for the medical management of patients with obesity or overweight.

Recommendation	Strength	Quality of Evidence
Pharmacotherapy used as adjunct to behavior modification for weight loss	Strong	High
Anti-obesity pharmacotherapy should be considered for individuals with BMI >27 and obesity-related comorbidity or BMI >30	Strong	High
Do not use phentermine or diethylpropion in patients with heart disease or uncontrolled HTN	Strong	Moderate
Patients should be followed every month for three months, then every three months while using anti-obesity pharmacotherapy	Weak	Low
Medications should be discontinued if weight loss <5% after three months	Strong	High
Consider metformin, GLP-1 analogs or SGLT-2 inhibitors for patients with T2DM and obesity	Weak	Moderate
Consider lorcaserin or orlistat for patients with history of cardiovascular disease	Weak	Very low
Oral contraceptives recommended over injectable contraceptives	Weak	Very low
Physicians without expertise in obesity medicine or endocrinology should NOT prescribe off-label medications for obesity	Weak	Ungraded- Best Practice Recommendation

Key Notes:

- Antiobesity pharmacotherapy does not work on its own. Must be accompanied with behavior modifications (diet and exercise). The more aggressive the behavior modification, the greater the weight loss.
- BMI criteria for weight loss meds (BMI >27 with comorbidities or BMI >30) arbitrary, but determined by FDA and included on all prescribing information.
- Obesity-related comorbidities include hypertension, type 2 diabetes, dyslipidemia and sleep apnea
- Antiobesity pharmacotherapy used indefinitely; if stopped, weight regain occurs.
- Phentermine is the most commonly prescribed antiobesity medication
- Multiple medications promote significant weight gain
 - Diabetes: Insulin, sulfonylureas, thiazolidinediones
 - Antidepressants: paroxetine, amitriptyline, mirtazapine
 - Antipsychotics: olanzapine, quetiapine, risperidone, ziprasidone, aripiprazole

- Anti-seizure: gabapentin, pregabalin, valproic acid, carbamazepine
- Steroids
- Anti-histamines with higher sedation: promethazine, hydroxyzine, meclizine, Benadryl

Reflection Question Reading #2 - Pharmacotherapy - Fall 2018

Required Activity

Answer the questions, save your answers and click "next" to see the correct answers.

1. Do you review patients' medications at every visit? For which patients would this be most helpful?

A large empty rectangular box for writing an answer. On the right side, there is a vertical toolbar with three icons: a small square, a small square with a dot, and a small square with a triangle. At the bottom, there is a horizontal toolbar with two icons: a left-pointing arrow and a right-pointing arrow.

2. How do anti-obesity medications help with weight loss?

A large empty rectangular box for writing an answer. On the right side, there is a vertical toolbar with three icons: a small square, a small square with a dot, and a small square with a triangle. At the bottom, there is a horizontal toolbar with two icons: a left-pointing arrow and a right-pointing arrow.

Save

Check Your Knowledge - Reading #2 - Pharmacotherapy and Medical Complication - Fall 2018
Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. Which patient would NOT be a candidate for anti-obesity pharmacotherapy?

- ☐ a) 50-year-old female with T2DM, BMI 35.
- ☐ b) 35-year-old male with a history of weight loss and regain for the past 20 years, BMI 37.
- ☐ c) A 21-year-old female with BMI 28 and no medical problems
- ☐ d) A 40-year-old male with BMI 27 and controlled hypertension

2. A 33-year-old obese female with obesity with initial weight of 180 pounds has been taking lorcaserin at the FDA-approved dose for three months and lost 6.5 pounds. Which statement is correct?:

- ☐ a) She should stay on the medication and follow up in three months.
- ☐ b) She should discontinue the medication because she has had < 5% weight loss over three months
- ☐ c) She should try doubling the dose of lorcaserin and follow up in one month.

3. Which of the following patients is at highest risk for medication-associated weight gain?

- ☐ a) A patient with type 2 diabetes on metformin and liraglutide
- ☐ b) A patient with depression on sertraline and bupropion
- ☐ c) A female patient starting oral contraceptives
- ☐ d) A patient with neuropathy on gabapentin and pregabalin

4) Which of the following should be included in the clinical encounter with a patient with overweight or obesity?

- ☐ a) Blood pressure reading, weight, height, and screening for T2DM, dyslipidemia, OSA, NAFLD, and depression.
- ☐ b) Lifelong weight history, current and past eating behaviors.
- ☐ c) Family history of obesity and obesity-related comorbidities.



d) All of the above.

Citations

Apovian CM, Arrone LJ, Bessesen DH, et al. Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Elmqvist JK and Scherer PE. Neuroendocrine and endocrine pathways of obesity. *JAMA*. 2012;308(11):1070-1071.

Save

Pharmacotherapy and Medical Complications in Weight Management Module

Activity # 2

Learn how the historical context for anti-obesity medications is important to understanding their use today.

[History of Medications Video](#)

Click [here](#) for a pdf version of this video.

OI - Check Your Knowledge 2 - Pharmacotherapy - Activity #2 - Fall 2018

Required Activity

Answer this question, save your answer and click "next" to see the correct answer.

1. What year was the first medication for weight loss approved by the FDA?

☐ a) 1890

☐ b) 1922

☐ c) 1947

☐ d) 1967

Save

Reflection Question - History Pharmacotherapy and Medical Complications - Fall 2018

Required Activity

Answer this question, save your answer and click "next" to see the correct answer.

1. Both desoxyn and phentermine were FDA-approved prior to 1962, at which time the government added an amendment to the FDA. How did this change drug development? How might this have changed the approval of these medications?



Check Your Knowledge and Case Study - Pharmacotherapy and Medical Complications Fall 2018
Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. What medication was removed from the market after concerns of causing cardiac valve disease and pulmonary hypertension?

- ☐ a) Desoxy
- ☐ b) Phentermine
- ☐ c) Fenfluramine- also redux (dexfenfluramine)
- ☐ d) Sibutramine

2. Which medication had to reapply for FDA approval following initial rejection?

- ☐ d) all of the above
- ☐ a) Locaserin (Belviq)
- ☐ b) phentermine/Topamax (Qsymia)
- ☐ c) naltrexone/ bupropion (Contrave)

Citations

Apovian CM, Arrone LJ, Bessesen DH, et al. Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Elmqvist JK and Scherer PE. Neuroendocrine and endocrine pathways of obesity. *JAMA*. 2012;308(11):1070-1071.

Save

Case Study - Pharmacotherapy - Fall 2018

Required Activity

KS is a 26-year-old female with recent abnormal weight gain for the past eight years. She successfully lost 15 pounds when she was seventeen years old through dietary changes and increased exercise. However, she has had less success using those same behaviors over the past six months - about 6 pounds lost. Her body mass index is now 29 kg/m², with a waist circumference of 39 inches. She comes to you for nutritional counseling for weight loss, but has many questions about using medications for weight loss. Her blood pressure is 125/85, fasting blood sugar of 95, HDL 50, LDL 130, triglycerides 155. All other lab data is within normal limits, no other significant medical history.

1. Which of the following statements about anti-obesity medications is true?

- ☐ a) Thyroid hormone was the first FDA- approved medication for obesity in 1933.
- ☐ b) There have been at least one or two new FDA- approved medications each year since the 1990's.
- ☐ c) Phentermine is the most widely prescribed weight loss medication in the United States.
- ☐ d) Females lose more weight with anti-obesity pharmacotherapy when compared to men.

2. It would be reasonable to recommend that KS ask her physician about starting a weight loss medication.

- ☐ a) True
- ☐ b) False

Save

History of Pharmacotherapy and Medical Complications -Fall 2018

Optional Activity

Take a moment to consider your answers to these questions.

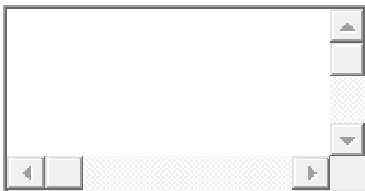
1. Why do you think there have been such long gaps between FDA approval of the various anti-obesity medications since the 1940's?



2. Have you encountered patients who have successfully used weight loss medications?



3. Do most of the patients you encounter who qualify for anti-obesity medication utilize it as part of their treatment plan?



Save

Pharmacotherapy and Medical Complications in Weight Management Activity 3 - Pharmacotherapy - Current Use and Considerations

In this video presentation, Dr. Bartfield discusses considerations for phentermine, diethylpropion, orlistat, and lorcaserin.

[Pharmacotherapy 1](#)

Click [here](#) for a pdf version of this video.

Check Your Knowledge - Pharmacotherapy - Current Use and Considerations - Fall 2018

Required Activity

Here's an opportunity to test your understanding of the use and efficacy of these medications.

Answer this questions, save your answer and click "next" to see the correct answer.

1. Which of the following medications does not decrease appetite?

- ☐ a) Phentermine
- ☐ b) Diethylpropion
- ☐ c) Orlistat
- ☐ d) None of the above

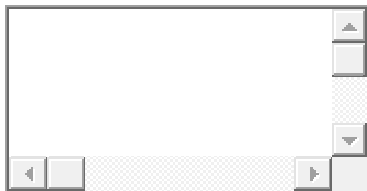
Save

Follow Up Question 1 - Pharmacotherapy - Fall 2018

Required Activity

Answer this question, save your answer and click "next" to see the correct answer.

1. How does orlistat influence weight loss?



Save

Check Your Knowledge - Medication 1 - Fall 2018

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. Which of the following patients would be a candidate for phentermine?

- ☐ a) A 33-year-old male with BMI of 28 and high cholesterol
- ☐ b) A 50-year-old male with blood pressure of 158/95
- ☐ c) A 42-year-old female with glaucoma
- ☐ d) A 22-year-old female with extremely low TSH, and an elevated T4

2. Expert guidelines recommend using anti-obesity pharmacotherapy for patients (with BMI >27 and an obesity-related comorbidity or with BMI >30) as an adjunct treatment to intensive behavior modifications for weight loss because it can help improve patients' adherence to changes, help patients find the changes easier to make, and increase amount of weight loss.

- ☐ a) True
- ☐ b) False

Save

Follow Up Question 2 - Pharmacotherapy - Fall 2018

Required Activity

Answer this question, save your answer and click "next" to see the correct answer.

1. Why is the selectivity of locaserin as a 5HT (serotonin) agonist specific to the brain important?



Save

Pharmacotherapy and Medical Complications in Weight Management

In this second video about the uses, effects, and contraindications of certain anti-obesity medications,

Dr. Bartfield discusses Phentermine/Topamax, Naltrexone/Bupropion, and Liraglutide. She also reminds you about the impact that other medications can have on weight status.

[Pharmacotherapy 2 Video](#)

Click [here](#) for a pdf version of this video.

Check Your Knowledge - Activity 3 - Pharmacotherapy - Current Use and Consideration- Fall 2018

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. Which of the following medications is a hormone analog that is injected subcutaneously once a day?

- ☐ a) Bupropion/naltrexone (Contrave)
- ☐ b) Orlistat (Xenical)
- ☐ c) Phentermine/Topamax (Qsymia)
- ☐ d) Liraglutide 3mg (Saxenda)

2. Which of the following side effects is NOT common with use of bupropion/naltrexone?

- ☐ a) paraesthesias
- ☐ b) nausea
- ☐ c) constipation or diarrhea
- ☐ d) headache

3) A 23-year-old female asks about potential weight loss medications. She is sexually active and on oral contraceptive pills, but notes she often misses her dose. You have learned through counseling sessions that she has a history of bulimia and takes Lexapro for depression. Which of the following medications could you suggest?

- ☐ a) Phentermine
- ☐ b) Phentermine/Topamax

☐ c) locaserin

☐ d) Bupropion/naltrexone

4. All of the five long-term FDA approved anti-obesity medications have been shown to result in 8% weight loss (on average) when compared to placebo.

☐ a) True

☐ b) False

5. Which of the following is NOT a limitation of studies done on anti-obesity weight loss medications?

☐ a) They have high rates of attrition, with over 30% of patients dropping out of the studies

☐ b) There are only short term (six months or less) studies on safety and efficacy

☐ c) Few direct comparison studies for the different medications exist

☐ d) None of above

RECOMMENDED RESOURCE

Recommended Resource

Recalling the different anti-obesity medications and their use can be a daunting task. Click here for a downloadable resource for easy reference.

[Pharmacotherapy Fast Facts Sheet](#)

Save

Pharmacotherapy and Medical Complications in Weight Management
Module
Case Studies

As you've learned, today's anti-obesity medications are an effective adjunctive weight loss treatment modality. While RDNs cannot prescribe anti-obesity medications, they should be prepared to answer patient's questions and to guide patients in dialog they might consider having with their physician. Here are two case studies that ask you to apply your new understanding.

Case Study 1- Anti-Obesity Pharmacotherapy - Fall 2018

Required Activity

You have just started a new job as the dietitian for a comprehensive weight management center. Your first patient is a 37-year-old female referred to the center by her primary care physician for ongoing weight gain. On her initial evaluation she weighs 185 pounds, height measures 64 inches. Labs show fasting blood sugar of 112 with an Hgb A1C of 5.9%. Normal liver function tests, mild anemia, normal TSH. Lipid panel shows total cholesterol 211 with LDL of 139, HDL of 50, triglycerides 180. Blood pressure is 128/76, heart rate 82.

She states her weight remained relatively stable and within normal range throughout her childhood and early 20's. She had her first pregnancy when she was 28, gained 60 pounds and lost over 40 pounds within the first post-partum year. This was followed by a second pregnancy, during which she gained 38 pounds, but has lost only about 12 pounds over the past year despite numerous attempts at weight loss.

She is hoping to lose 50 pounds to improve her energy level and protect her health. She has a strong family history of diabetes which greatly worries her. She has overall been feeling good, but recently has had increased heart burn and acid reflux. She has many questions for you about her health and options for weight loss.

1. Which of the following statements is true about this patient's current health?

- ☐ a) She meets criteria for type 2 diabetes
- ☐ b) She meets criteria for metabolic syndrome based on her fasting blood sugar, her triglyceride level, and her BMI >30
- ☐ c) She meets criteria for pre-diabetes based on Hgb A1c level
- ☐ d) She meets criteria for non-alcoholic fatty liver disease

2. Which of the following meets criteria for metabolic syndrome?

- ☐ a) Fasting blood sugar of 110, blood pressure of 150/95, and BMI of 30

- ☐ b) Fasting blood sugar of 110, blood pressure of 150/95, and waist circumference of 35 inches (for a female)
- ☐ c) Fasting blood sugar of 99, blood pressure of 150/95, and waist circumference of 40 inches (for a male)
- ☐ d) Fasting blood sugar of 100, blood pressure of 150/95, and HDL of 55e

3. Which of the following information would NOT be helpful for screening for other obesity-related complications?

- ☐ a) Does she have morning headaches and/or snoring?
- ☐ b) Does she have regular periods and/or any difficulty in getting pregnant?
- ☐ c) Does she have any joint pains (knee, back, hip)?
- ☐ d) Has she had recent constipation or diarrhea?

Citations

Apovian CM, Arrone LJ, Bessesen DH, et al. Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Elmqvist JK and Scherer PE. Neuroendocrine and endocrine pathways of obesity. *JAMA*. 2012;308(11):1070-1071.

Save

Pharmacotherapy and Medical Complications in Weight Management Module

Case Study 1 - Anti- Obesity Pharmacotherapy

- 1) Answer: She meets criteria for pre-diabetes based on Hgb A1c level- Prediabetes is fasting blood sugar 100-125 and/or Hgb A1C 5.7%-6.4%
- 2) Answer: Fasting blood sugar of 110, Blood pressure of 150/95, and waist circumference of 35 inches (for a female) metabolic syndrome requires 3 of the 5: elevated waist circumference, low HDL, elevated triglycerides, hypertension, impaired fasting glucose or pre-diabetes
- 3) Answer: Has she had recent constipation or diarrhea? – While important question for dietary counseling, not suggestive of any specific obesity related comorbidity. However, morning headaches and/or snoring is suggestive of sleep apnea. Difficulty getting pregnant or irregular periods is suggestive polycystic ovarian syndrome. Joint pain is suggestive of osteoarthritis.

Case Study 2- Anti-Obesity Pharmacotherapy - Fall 2018

Required Activity

You counsel her on dietary changes for weight loss and create a plan that she agrees is very reasonable to begin. She increases her exercise as instructed as well. After nearly four months, she returns for her monthly follow-up visit and has only lost about 4-5 pounds. Waist circumference is measured at 37 inches. She notes improved energy and blood pressure is down to 120/75. Repeat labs show triglycerides down to 152, HDL up a bit, LDL overall stable. Her Hgb A1C remains unchanged. She wants to know if she is a candidate for anti-obesity pharmacotherapy.

1. Which of the following would be an appropriate response?

- ☐ a) She is a candidate for metformin to help treat her pre-diabetes, but she would NOT be a candidate for anti-obesity pharmacotherapy as she has lost weight.
- ☐ b) She no longer meets criteria for metabolic syndrome, therefore she does not meet criteria for anti-obesity pharmacotherapy.
- ☐ c) She is a candidate for anti-obesity pharmacotherapy and it may help increase her rate of weight loss and adherence to recommended behavior changes.
- ☐ d) None of the above

2. She asks you to explain the differences among the various anti-obesity pharmacotherapy options. Which of the following does NOT accurately describe the FDA-approved weight loss medications?

- ☐ a) Phentermine/ Topamax (Qsymia) has been associated with the greatest chance of losing 5% weight loss among the FDA-approved medications for chronic obesity treatment.
- ☐ b) The most common side effect of bupropion/naltrexone (Contrave) is nausea.
- ☐ c) Locaserin (Belviq) is the only weight loss medication safe for use during pregnancy and/or lactation.

- ☐ d) Orlistat (Xenical) is the only FDA-approved weight loss medication with a MOA that does NOT decrease appetite.

3. Upon further questioning, you learn that she has a family history of multiple endocrine neoplasia type 2 and she had two seizures as a teenager. Which of the following weight loss medications would you NOT recommend she consider?

- ☐ a) Liraglutide 3.0 mg (Saxenda)
- ☐ b) Locaserin (Belviq)
- ☐ c) Orlistat (Xenical)
- ☐ d) Phentermine 8 mg (Lomaira)

4. She begins locaserin and tolerates this well. She continues to make recommended dietary changes to reduce her calorie intake, she has been tracking her steps and getting at least 10,000 per day along with three days of 45 minutes of higher intensity cardio (kickboxing classes). After four more months her weight is down to 170 pounds. She is very pleased with her progress. Which of the following would be an appropriate next step in her treatment?

- ☐ a) Recommend stopping the locaserin as she has not lost $\geq 5\%$ of her initial weight.
- ☐ b) Recommend stopping locaserin as she has already lost $\geq 10\%$ of her initial weight.
- ☐ c) Recommend that she continue locaserin and intensify her weight loss behavior efforts under your direction to maximize her weight loss during the next 2-3 months, as she will likely plateau around 6-7 months of treatment.
- ☐ d) Recommend she add on phentermine to increase her rate of weight loss.

Citations

Apovian CM, Arrone LJ, Bessesen DH, et al. Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Elmqvist JK and Scherer PE. Neuroendocrine and endocrine pathways of obesity. *JAMA*. 2012;308(11):1070-1071.

Case Study 3- Anti-Obesity Pharmacotherapy - Fall 2018

Required Activity

Mr. P is a 48-year-old male with initial weight of 221 pounds (BMI 29.2 kg/m²). His endocrinologist, whom he sees for a history of thyroid cancer, has referred him to you for weight loss treatment. His past medical history includes hypertension, thyroid cancer, and kidney stones. Current medications include hydrochlorothiazide and metoprolol. He takes fish oil supplements and a multivitamin on occasion. He maintained fairly normal weight until his late 20's at which time he married his wife and had his first child, followed by two more. He has done Weight Watchers in the past with only about 10 pounds weight loss which he maintained for about six months. About ten years ago he used a medication for weight loss prescribed by his doctor, but it caused him to have terrible gas and diarrhea, so he stopped this. He has also used phentermine in the past with good weight loss effect, but he developed significant insomnia and stopped this as well.

His blood pressure is 118/76, heart rate of 66. Labs show fasting glucose of 118, all other labs normal.

He usually wakes up around 6:00 a.m., but does not have his first meal until 11:30 a.m. to 1:00 p.m. He will drink at least 20 oz. of coffee in the morning. He tends to have significant cravings, particularly for sweets, when he is stressed, anxious, or emotional. He has been using MyFitnessPal for the past two weeks as an attempt to count calories, cutting out fast food and high-fat foods. He drinks mainly water, rarely sweet tea or soda if he is out at a restaurant and very little alcohol. He started counting steps with his Fitbit and averages 6000 per day. He has a gym membership but goes sporadically, maybe 1-2 times per week.

You provide dietary counseling to promote active weight loss and recommend that he increase his steps to 10,000 per day with an additional goal of 30 minutes cardiovascular exercise 3-5 days per week.

After one month he has successfully lost about three pounds but is frustrated. His coworker recently started a weight loss medication and lost nearly 12 pounds in one month. He'd like to discuss using a weight loss medication.

1. Which of the following would be the best response for this patient?

- ☐ a) He does not meet criteria for weight loss medications as he is not considered to have obesity by his BMI.
- ☐ b) He should not use any weight loss medications because he has a history of hypertension.
- ☐ c) He should not use any weight loss medications because he has a history of thyroid cancer.
- ☐ d) He meets criteria for anti-obesity pharmacotherapy use and could likely benefit

2. He has done some research and specifically asks about using Qsymia (phentermine/topamax), Saxenda (liraglutide) and Contrave (naltrexone/bupropion). Which of the following would NOT be true for this patient about these medications?

- ☐ a) Qsymia may be a poor choice due to his history of kidney stones and insomnia with phentermine use.
- ☐ b) Saxenda is the best choice because of his history of hypertension
- ☐ c) He may have the greatest benefit with Contrave as it can significantly reduce emotional eating, cravings and "reward" from food.
- ☐ d) He can expect to lose about 5-10% of his weight during the first 6-12 months with any of these medications.

3. He agrees that Contrave may be a good medication for him but is worried about side effects given his previous experience with weight loss medications. Which of the following would be TRUE regarding the side effect profile of Contrave?

- ☐ a) It can cause significant taste changes
- ☐ b) Nausea is the most common side effect.
- ☐ c) It increases his risk for pancreatitis.
- ☐ d) It is a serotonin agonist, which can cause mood changes.

4. He thinks it might be worth a try, but wonders how long he would have to take this medication?

- ☐ a) 1-3 months
- ☐ b) 3-6 months
- ☐ c) one year
- ☐ d) Indefinitely

Citations

Apovian CM, Arrone LJ, Bessesen DH, et al. Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Elmqvist JK and Scherer PE. Neuroendocrine and endocrine pathways of obesity. *JAMA*. 2012;308(11):1070-1071.

Save

Reflection Questions - Learning Activity #3 - Pharmacotherapy - Fall 2018

Optional Activity

1. How would you answer a patient who asks "Can I take a medication that will make me lose weight?"



2. How would you answer a patient who asks "Are weight loss medications safe?"



Save

Pharmacotherapy and Medical Complications in Weight Management Module

Activity 4 - Medical Complications of Obesity

In this section, Dr. Bartfield reviews how obesity contributes to other disease conditions.

[Metabolic Complications Video](#)

Click [here](#) for a pdf version of this video.

Check Your Knowledge - Activity #4 - Pharmacotherapy - Medical Complications of Obesity - Fall 2018

Required Activity

Here's a chance to apply your understanding of the metabolic complications of obesity.

BT is a 41-year-old male referred for dietitian consultation after his yearly physical with his primary care physician. At that visit, his blood pressure was 135/85, with a heart rate of 82. Labs from that visit revealed a fasting blood glucose of 90, total cholesterol 200 with LDL of 125, triglycerides 165, and HDL 32, AST of 50 (normal 5-40) ALT of 60 (normal 5-50). He has been taking one medication for blood pressure, Lisinopril, for the past year. His weight has increased by about 18 pounds over the past two years and his body mass index now calculates to 32 kg/m². Despite his own efforts at changing his diet and increasing exercise, he has only lost about 3-4 pounds over the past three months.

1. Given his blood pressure and laboratory values, which common metabolic complication of obesity is NOT a likely diagnosis?

- | | |
|-----------------------|-------------------------|
| ☐ | a) hypertriglyceridemia |
| ☐ | b) hypertension |
| ☐ | c) pre-diabetes |
| ☐ | d) NAFLD |

2. The dietitian suggests obtaining a waist circumference measurement, which is measured to be 43 inches. The patient now meets criteria for metabolic syndrome

☐ a) True

☐ b) False

3. Which of the following would be a reasonable health goal for the patient to achieve with dietary counseling and weight loss?

☐ a) LDL of <100

☐ b) HDL >40

☐ c) Total cholesterol 250

☐ d) Triglycerides of 160

4. The patient's elevated ALT and AST may be caused by non-alcoholic fatty liver disease (NAFLD). Which of the following is NOT true about NAFLD?

☐ a) It has a prevalence of 80—90% in adults with obesity

☐ b) It can progress to fibrosis, cirrhosis, and liver failure

☐ c) It has a higher prevalence in patients with type 2 diabetes than in patients without diabetes

☐ d) It can be easily treated with medications

5) Which of the following secreted from his adipose tissue does NOT contribute to inflammation and metabolic disease?

☐ a) Leptin

☐ b) adiponectin

☐ c) IL-6

Citations

Apovian CM, Aronne LJ, Bessesen DH, et al. Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Elmquist JK and Scherer PE. Neuroendocrine and endocrine pathways of obesity. *JAMA*. 2012;308(11):1070-1071.

Save

Pharmacotherapy and Medical Complications in Weight Management Module

Activity #5: Mechanical Complications of Obesity

In this final learning activity, Dr. Bartfield reviews some of the common mechanical complications obesity such as obesity, GERD, and sleep apnea.

[Mechanical Complications Video](#)

Click [here](#) for a pdf version of this video.

Check Your Knowledge - Activity #5 - Pharmacotherapy - Mechanical Complications - Fall 2018

Required Activity

JO is a 52-year-old female who was referred for nutritional counseling as part of her weight loss treatment plan. She has been struggling with her weight since elementary school. Although she has successfully lost 20-30 pounds multiple times throughout her life, she typically regained the weight within a few months. Her BMI has now reached 41 kg/m². She remains highly motivated to lose weight by concerns about her health, knee pain, increasing fatigue and overall discomfort.

1. In addition to daily fatigue and hypersomnolence, what other signs or symptoms may be suggestive of obstructive sleep apnea?

- ☐ a) morning headaches
- ☐ b) back pain
- ☐ c) snoring
- ☐ d) both A and C

2. What is the estimated prevalence of obstructive sleep apnea among patients with severe obesity (BMI >40 kg/m²)?

- ☐ a) 15%

- ☐ b) 32%
- ☐ c) 66%
- ☐ d) up to 90%

3. She wants to know if/how her excess weight impacts her knee pain. A reasonable answer could be:

- ☐ a) Excess weight mainly impacts non-weight bearing joints such as shoulders or hands
- ☐ b) Excess weight has very little effect on joints.
- ☐ c) Each excess pound typically produces an additional 4 pounds of force on weight bearing joints (hips, knees), hastening damage to bone and cartilage and worsening osteoarthritis.
- ☐ d) 80% of patients with obesity suffer from osteoarthritis of the knees.

4. What other mechanical complication of obesity would you be concerned about for her?

- ☐ a) pre-diabetes
- ☐ b) GERD
- ☐ c) depression
- ☐ d) uterine cancer

Citations

Apovian CM, Arrone LJ, Bessesen DH, et al. Pharmacological management of obesity: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Elmqvist JK and Scherer PE. Neuroendocrine and endocrine pathways of obesity. *JAMA*. 2012;308(11):1070-1071.

Save

Putting it into Practice - Pharmacotherapy and Medical Complication - Fall 2018

1. How do I want to apply this information to my practice?

A rectangular box with a dotted pattern and a small icon in the bottom left corner.

2. What more do I want to learn about this topic?

A rectangular box with a dotted pattern and a small icon in the bottom left corner.

Save

**Pharmacotherapy and Medical Complications in Weight Management
Module
Evaluation**

Please click [here](#) to access a short evaluation to provide your feedback on this module.

Nutritional Care of the Bariatric Surgery Patient Module

Nutritional Care of the Bariatric Surgery Patient Module

Welcome and Introduction

Metabolic and bariatric surgery is an effective therapy for individuals with moderate- and high-risk obesity. It has only been since the 1990's that we have developed a better understanding of the physiological regulation of adipose tissue and body weight. Until that time, the standard intervention for overweight and obesity had been diet and exercise. Although diet and exercise are effective interventions for overweight and obesity, for a large subset of our population who suffer from obesity and the obesity-related co-morbidities, diet and exercise interventions have low efficacy. Interventions such as pharmacotherapy and bariatric surgery intervene at the physiological level targeting mechanisms in the weight regulatory system. This module will help participants have a clear understanding of the current bariatric procedures most commonly performed in the U. S. today and how these procedures influence body weight regulation.

My name is Sue Cummings. I am a Registered Dietitian who specializes in the nutritional care of patients who are overweight and who suffer from obesity. I was the Clinical Programs Director and Bariatric Coordinator of the Massachusetts General Hospital Weight Center from 1998 to 2017 when I retired to pursue a private practice and my passion for teaching, public speaking and program development. I have been on the faculty of the CDR Adult Weight Management certificate programs for the past 10 years and am the developer and facilitator of the Bariatric component of the new and revised CDR Certificate of Training in Obesity Interventions for Adults.

In addition to being the American Society of Metabolic and Bariatric Surgery (ASMBS) Course Director of the Obesity Week Integrated Health Advance Nutrition Course and presented in the Academy's Obesity Week Symposium, in 2017, I have consulted with CATALYST Training Lab of Lebanon creating a full-day training program in weight management for dietitians in the Middle East and have been to Dubai, Beirut and Jordan leading these training programs.

I am the editor of the 2nd edition of the Academy's Handbook on Bariatric Nutrition and an Associate Editor of the international journal, *Obesity Surgery*. I am currently the Secretary of the ASMBS Integrated Health Executive Board. I am past WM DPG Bariatric Subunit Chair, WM DPG Network Chair and have received both the WM DPG Excellence in Practice and Shining Star Awards. In 2016, I was awarded the ASMBS Foundation LEAD Award for Excellence in Nutrition.

Nutritional Care of the Bariatric Surgery Patient Module Orientation

Learning Objectives:

At the end of this module, participants will be able to:

- Describe the indications for recommending weight loss surgery.
- Describe the various types of bariatric surgery commonly performed in the U.S. today and the mechanisms of action.
- Describe how the procedures differ in influencing the weight regulatory system.
- Describe how each bariatric procedure influences vitamin and mineral status.

Essential Practice Competencies

4.1.2 Interprets and integrates evidence-based research and literature in decision making.

4.2.2 Reflects on own values, beliefs and biases.

Learning Needs Codes

2090 Micronutrients: vitamins, minerals

2110 Physiology, exercise physiology

3090 Screening parameters, methodology, surveillance

3100 Supplemental nutrients, botanicals

5090 Adults

5125 Bariatric surgery

5280 Nutrient deficiencies, failure to thrive

5370 Weight management, obesity

9020 Evaluation and application of research

This module provides a variety of learning experiences. There are four required readings, three of which will give you a good background before you view the eleven videos. The videos are distributed across seven different learning activities.

You will be challenged to answer questions throughout the videos. Please pause the narration and think about the questions before you answer. The answers will be reviewed at the end of each section.

Nutritional Care of the Bariatric Surgery Patient

Required Readings:

Take a few minutes to read through the seminal papers provided here. For each one, I've given an abstract or summary.

Article #1

Abstract

The global pandemic of obesity is increasing. Inappropriate food intake relative to energy expenditure results in increased adiposity. These factors are partly regulated by signals through the gut-brain and adipose-brain axes. Metabolic operations (otherwise known as bariatric surgery) offer the most effective results for sustained metabolic improvement and weight loss. They modulate a number of gut hormones that constitute the gut-brain axis. This review summarizes the literature to date, reporting the gut hormone changes associated with these operations and their subsequent effects on appetite. Understanding the anatomical differences between each operation and how these can differentially regulate gut hormonal release can provide new treatments and targets for obesity, appetite and metabolic disorders.

Citation

[Hutan Ashrafian AB, Carel W, le Roux B. Metabolic surgery and gut hormones – A review of bariatric entero-humoral modulation. *Physiology & Behavior* 2009;97:620-631.](#)

Article #2

Description:

The development of these updated guidelines was commissioned by the American Association of Clinical Endocrinologists (AACE), The Obesity Society (TOS), and American Society for Metabolic & Bariatric Surgery (ASMBS) Board of Directors and adheres to the AACE 2010 protocol for standardized production of clinical practice guidelines (CPG). Each recommendation was re-evaluated and updated based on the evidence and subjective factors per protocol. Examples of expanded topics in this update include: the roles of sleeve gastrectomy, bariatric surgery in patients with type-2 diabetes, bariatric surgery for patients with mild obesity, copper deficiency, informed consent, and behavioral issues. There are 74 recommendations (of which 56 are revised and two are new in this 2013 update), compared with 164 original recommendations in 2008. There are 403 citations, of which 33 (8.2%) are evidence level (EL) 1, 131 (32.5%) are EL 2, 170 (42.2%) are EL 3, and 69 (17.1%) are EL 4. There is a relatively high proportion (40.4%) of strong (EL 1 and 2) studies, compared with only 16.5% in the 2008 AACE-TOS-ASMBS CPG. These updated guidelines reflect recent additions to the evidence base. Bariatric surgery remains a safe and effective intervention for select patients with obesity. A team approach to perioperative care is mandatory with special attention to nutritional and metabolic issues.

Citation

Mechanick JI, Youdim A, Jones DB, et al. Clinical Practice Guidelines for the Perioperative Nutritional, Metabolic, and Nonsurgical Support of the Bariatric Surgery Patient -- 2013 Update: Cosponsored by American Association of Clinical Endocrinologists, The Obesity Society, and American Society for Metabolic & Bariatric Surgery *Surg Obes and Relat Dis* 2013;9(2):159-191. Free access at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4140628/>.

Article #3

This resource is a set of slides from a recent presentation highlighting the updates regarding micronutrient considerations related to bariatric surgery.

Background

Optimizing postoperative patient outcomes and nutritional status begins preoperatively. Patients should be educated before and after weight loss surgery (WLS) on the expected nutrient deficiencies associated with alterations in physiology. Although surgery can exacerbate pre-existing nutrient deficiencies, preoperative screening for vitamin deficiencies has not been the norm in the majority of WLS practices. Screening is important because it is common for patients who present for WLS to have at least one vitamin or mineral deficiency preoperatively.

Objectives

The focus of this paper is to update the 2008 American Society for Metabolic and Bariatric Surgery Nutrition in Bariatric Surgery Guidelines with key micronutrient research in laparoscopic adjustable gastric banding, Roux-en-Y gastric bypass, laparoscopic sleeve gastrectomy, biliopancreatic diversion, and biliopancreatic diversion/duodenal switch.

Citation

[Parrott J, Frank L, Rabena R, et al. American Society for Metabolic and Bariatric Surgery Integrated Health Nutritional Guidelines for the Surgical Weight Loss Patient 2016 Update: Micronutrients. *Surg Obes Relat Dis*, 2017;13\(5\):727-741.](#)

Nutritional Care of the Bariatric Surgery Patient

Learning Activities #1 - #4

Learning Activity #1

This video provides an overview of the:

- reasons dietitians need to know about bariatric surgery;
- challenges dietitians face,
- most common procedures performed in the U.S. today;
- cost effectiveness of bariatric surgery

[Part 1 - Nutritional Care of the Bariatric Patient](#)

Click [here](#) for a pdf version of this video.

Learning Activity #2

This video is an overview of the types of procedures including animated videos of the sleeve gastrectomy and the Roux-en-Y Gastric Bypass. The video will:

1. compare each procedure including the advantages and disadvantages in choosing one procedure over another.
2. review recent clinical trials comparing the outcomes of the sleeve gastrectomy and the Roux-en-Y Gastric Bypass (see suggested readings to read the abstracts of these trials).

[Part 2a - Nutritional Care of the Bariatric Patient](#)

Click [here](#) for a pdf version of this video.

Learning Activity #3

One of the main goals of this module is to help dietitians understand the mechanisms of bariatric surgery procedures. In order to do that, dietitians need to be aware of the complexity of the weight regulatory system that makes significant and sustained weight loss possible and how bariatric surgical procedures influence this fine-tuned system.

First, read this article.

Sumithran P, Prendergast LA, Delbridge E. Long-term persistence of hormonal adaptations to weight Loss. *N Engl J Med*. 2011; 365:1597-1604. Free access at <http://www.nejm.org/doi/full/10.1056/NEJMoa1105816>.

Background

After weight loss, changes occur in the circulating levels of several peripheral hormones involved in the homeostatic regulation of body weight. Whether these changes are transient or persist over time may be important for an understanding of the reasons behind the high rate of weight regain after diet-induced weight loss.

Conclusions

One year after initial weight reduction, levels of the circulating mediators of appetite that encourage weight regain after diet-induced weight loss do not revert to the levels

recorded before weight loss. Long-term strategies to counteract this change may be needed to prevent obesity relapse.

Now take a look at this video. It provides an overview of the:

- types of surgery mechanisms of action
- key gut hormones that are active in the weight regulatory system and how bariatric surgeries influence these hormones
- role of gut microbiota in obesity and the influence of bariatric procedures on the gut microbiome ecology.
- data related to comorbidity outcomes post-bariatric surgery. (See suggested reading: Schauer P, et al).

[Part 2b - Nutritional Care of the Bariatric Patient](#)

Click [here](#) for a pdf version of this video.

Citations

Sumithran P, Prendergast LA, Delbridge E, Purcell K, Shulkes A, Kriketos A, and Proietto J. Long-Term persistence of hormonal adaptations to weight loss. *N Engl J Med*. 2011;365:1597-1604.

Schauer P et al. Bariatric surgery versus intensive medical therapy for diabetes - 5 Year outcomes. *N Engl J Med* 2017;376:641-51.

Learning Activity #4

This final video reviews weight loss outcomes after each bariatric procedure and discusses the definition of inadequate weight loss. It also, through a series of case studies, tests the RD's knowledge and biases as they relate to bariatric surgery in the outpatient setting.

[Part 3 - Nutritional Care of the Bariatric Patient](#)

Click [here](#) for a pdf version of this video.

Nutritional Care of the Bariatric Surgery Patient Learning Activities #5 - #6

Learning Activity #5

This video reviews the essential components of a comprehensive pre-bariatric surgery evaluation and the role of the RDN is the presurgical preparation.

[Part 4-Nutritional Care of the Bariatric Patient Pre-OP](#)

Click [here](#) for a pdf version of this video.

Learning Activity #6

This video reviews the pre-surgery and post-surgery assessment of micronutrients. Please note that handout tables are provided in this prework to be used as resources for assessing vitamin and mineral deficiencies. The tables include a chart of laboratory monitoring schedule and tables on signs and symptoms of micronutrient deficiencies, markers for assessment and repletion recommendations.

[Part 5 – Nutritional Care of the Bariatric Patient: Micronutrients](#)

Click [here](#) for a pdf version of this video.

Click [here](#) for the handout tables

Nutritional Care of the Bariatric Surgery Patient Learning Activities #7

This video Post-Bariatric Surgery (Part 1) reviews the post-bariatric surgery diet progression which is a "Staged" approach.

[Post-Bariatric Surgery - Part 1](#)

Click [here](#) for a pdf version of this video.

These remaining videos Post-Bariatric Surgery Part 2 - Part 5 review factors related to weight regain after bariatric surgery. These factors include anatomical failure of the surgery; developmental stages including childhood, adolescents, pregnancy, menopause and aging and life style factors such as meal timing, quality of diet, physical inactivity, sleep deprivation, stress and weight promotion medications.

[Post-Bariatric Surgery - Part 2](#)

Click [here](#) for a pdf version of this video.

[Post-Bariatric Surgery - Part 3](#)

Click [here](#) for a pdf version of this video.

[Post-Bariatric Surgery - Part 4](#)

Click [here](#) for a pdf version of this video.

[Post-Bariatric Surgery - Part 5](#)

Click [here](#) for a pdf version of this video.

Nutritional Care of the Bariatric Surgery Patient

References

I encourage you to check out the resources listed here.

Mechanisms of Action

Sumithran P, Proietto J. The defence of body weight: a physiological basis for weight regain after weight loss. *Clin Sci*. 2013. 124:231-241.

Ashrafian, C.W. le Roux, et al. Metabolic surgery and gut hormones – A review of bariatric entero-humoral modulation *Physiology & Behavior* 2009;(97):620–63.

Clinical Guidelines

Mechanick JI, Youdim A, Jones D. et al. Clinical Practice Guidelines for the Perioperative Nutritional, Metabolic, and Nonsurgical Support of the Bariatric Surgery Patient—2013 Update: Co sponsored by American Association of Clinical Endocrinologists, The Obesity Society, and American Society for Metabolic & Bariatric Surgery. *SOARD* 2013;(9) 159–191.

Parrott, et al. American Society for Metabolic and Bariatric Surgery Integrated Health Nutritional Guidelines for the Surgical Weight Loss Patient 2016. Update: Micronutrient. *Surg Obes Relat Dis*. 2017 May;13(5):727-741.

Clinical Outcomes

Schauer P et al. Bariatric surgery versus intensive medical therapy for diabetes - 5 Year Outcomes. *N Engl J Med* 2017;376:641-51.

Sjostrom L, Narbro K, Sjostrom CD, Karason K, et al Swedish Obese Subjects Study; Effects of bariatric surgery on mortality in Swedish obese subjects. *N Engl J Med* 2007;357:741-52.

Hutter M, , Schirmer BD, Jones D, Ko CY, Cohen ME, Merkow RP, Nguyen NT on behalf of the ACS-BSCN Advisory Committee. First Report from the American College of Surgeons -- Bariatric Surgery Center Network: Laparoscopic Sleeve Gastrectomy has Morbidity and Effectiveness Positioned between the Band and the Bypass. *Ann Surg*. 2011;254(3): 410–2.

Koh CY, et al Laparoscopic adjustable gastric band explantation and implantation at academic centers. *Journal of the American College of Surgeons*, Volume 225, Issue 4:532 - 537.

Himpens J1, Cadière GB, Bazi M, Vouche M, Cadière B, Dapri G. Long-term outcomes of laparoscopic adjustable gastric banding. *Arch Surg*. 2011;146(7):802-7.

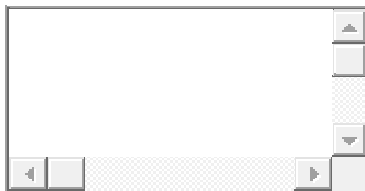
National Organizations

Academy of Nutrition and Dietetics, Weight Management Dietetic Practice Group, Bariatric Subunit. www.wmdpg.org, Sign in as a member of the practice group, click on tab for subunits, click on Bariatric Subunit link to the Bariatric Subunit web page.

American Society for Bariatric Surgery. Gainesville, FL: American Society for Metabolic and Bariatric Surgery, 2008 Accessed July 5, 2008 at www.asbs.org.

Putting it into Practice - Nutritional Care of the Bariatric Surgery Patient - Fall 2018

1. How do I want to apply this information to my practice?



2. What more do I want to learn about this topic?

Nutritional Care of the Bariatric Surgery Patient Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

Nutritional Care of the Bariatric Surgery Patient - Fall 2018

I spent _____ hours completing this module.

Weight Loss Maintenance Module

Weight Loss Maintenance Module

Welcome and Introduction

Weight loss maintenance can be a frustrating and often misunderstood phase of weight management. Some of your clients may have even told you, “Wow, losing weight was easy compared to keeping the weight off.” This module will help you be better prepared to guide your clients into and through this critical part of weight management.

I’m Dr. Corby Martin and in this first video, I will tell you a bit about myself and give you some background on the importance and challenges of weight loss maintenance.

[Introduction to C. Martin and Wt. Maintenance Video](#)

Click [here](#) for a pdf version of this video.

References

1. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of Childhood and Adult Obesity in the United States 2011-2012. *JAMA*. 2014;311(8):806-814.
2. Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of Obesity Among Adults and Youth: United States, 2011–2014. *NCHS data brief*. 2015;219.
3. Li L, Perez A, Wu LT, Ranjit N, Brown HS, Kelder SH. Cardiometabolic Risk Factors among Severely Obese Children and Adolescents in the United States, 1999-2012. *Childhood obesity* (Print). 2016;12(1):12-19.
4. Twig G, Yaniv G, Levine H, et al. Body-Mass Index in 2.3 Million Adolescents and Cardiovascular Death in Adulthood. *New England Journal of Medicine*.0(0):null.
5. Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Circulation*. 2014;129(25 Suppl 2):S102-138.

You can also download the reference list [here](#).

Weight Loss Maintenance Module

Getting Ready

With this video, I challenge you to examine your beliefs about some of the “truths” regarding weight loss maintenance. I also introduce you to some pretty intriguing data that frame the rest of the content in this module.

[Introduction and Reflection Questions Video](#)

Click [here](#) for a pdf version of this video.

References

1. Tataranni PA, Ravussin E. Energy metabolism and obesity. In: Wadden TA, & Stunkard, A. J., ed. *Handbook of Obesity Treatment*. New York: Guilford; 2002:42-72.
2. Pontzer H, Raichlen DA, Wood BM, Mabulla AZ, Racette SB, Marlowe FW. Hunter-gatherer energetics and human obesity. *PLoS One*. 2012;7(7):e40503.
3. Pontzer H, Raichlen DA, Wood BM, et al. Energy expenditure and activity among Hadza hunter-gatherers. *Am J Hum Biol*. 2015;27(5):628-637.
4. Hjorth MF, Chaput JP, Ritz C, et al. Fatness predicts decreased physical activity and increased sedentary time, but not vice versa: support from a longitudinal study in 8- to 11-year-old children. *International Journal of Obesity* (2005). 2014;38(7):959-965.

You can also download the reference list [here](#).

Weight Loss Maintenance Module Module Orientation

Learning Objectives:

At the end of this session, learners will be able to

- Define weight loss maintenance.
- Describe energy balance in the context of weight loss maintenance.
- Describe physiological and behavioral factors that affect energy balance and ultimately, weight loss maintenance.
- Apply findings from the empirical literature on weight loss maintenance in practice settings.
- Identify technologies and tools to facilitate weight loss maintenance.
- Identify who the RDN can work with in interdisciplinary settings to facilitate weight loss maintenance.

Essential Practice Competencies Addressed:

1.2 Works within personal and professional limitations and abilities.
4.1 Demonstrates sound professional judgment and strategic thinking in practice.
4.2 Reflects, integrates and evaluates using critical thinking when faced with problems, issues and challenges.
5.2 Utilizes technology according to organization needs and workplace policies and procedures.
8.2 Recognizes and respects the physical, social, cultural, institutional and economic environments of the individual, group, community and population in practice.
8.3 Demonstrates a commitment to maintaining and enhancing knowledge.

Learning Needs Codes:

2110 Physiology, exercise physiology
4060 exercise, fitness, sports nutrition
5090 Adults
5370 Weight management, obesity
9020 Evaluation and application of research

This video will help you know how the module is organized and give you more details about the learning objectives for the module.

[Orientation to the Module Video](#)

Click [here](#) for a pdf version of the video.

Weight Loss Maintenance Module

Learning Activities

Required Readings

Now is a good time for you to get a cup of coffee, tea, or other beverage, and settle into a comfy chair. The first thing I would like you to do is to read these articles so you can become familiar with important research that's been done in weight loss maintenance. I build upon these articles in the learning activities that follow.

For each reading, I provide a summary of what I believe are the article's major take-away points. I also provide a few questions for you to check your understanding along with additional resources so you can look into the topic more deeply if you wish.

Article #1

The first article by Franz et al. reports the results of a meta-analysis that evaluated weight loss among various weight management programs that followed participants for one or more years.

[Franz MJ, VanWormer JJ, Crain AL, et al. Weight-loss outcomes: a systematic review and meta-analysis of weight-loss clinical trials with a minimum 1-year follow-up. *J Am Diet Assoc.* 2007;107\(10\):1755-67.](#)

Key Points Summary:

- This meta-analysis aimed to identify the types of interventions that contribute to successful weight management
- Randomized clinical trials were eligible for inclusion if they had follow-up ≥ 1 year
- 80 studies were included
- The study reviewed eight types of weight management approaches (e.g., diet alone, exercise alone, etc.), including medications, though the review only included trials with orlistat and sibutramine
- Interventions with a reduced-energy diet and/or weight loss medications had mean weight loss of 5% to 9% in the first six months of treatment
 - Weight loss plateaued around month six
 - Long-term weight loss among studies that followed participants for 48 months was 3% to 6%
- Studies that examined advice-only groups and exercise-only conditions reported little weight loss

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. Mean weight loss of approximately 3% to 4% was maintained over the long-term, i.e., month 24 to 48. What percent of the groups regained all of their weight during follow-up?

- ☐ a) 0%
- ☐ b) 5% to 10%
- ☐ c) 10.1% to 15%
- ☐ d) Greater than 15%

2. The authors noted that weight loss plateaued around month six. To address this plateau, the authors recommend focusing on weight loss maintenance using what strategies?

- ☐ a) regular exercise
- ☐ b) a lower-energy diet
- ☐ c) both regular exercise and a lower-energy diet
- ☐ d) medication alone

Additional Resources

Ramage S, Farmer A, Eccles KA, McCargar L. Healthy strategies for successful weight loss and weight maintenance: a systematic review. *Applied physiology, nutrition, and metabolism*. 2014;39(1):1-20.

Soleymani T, Daniel S, Garvey WT. Weight maintenance: challenges, tools and strategies for primary care physicians. *Obes Rev*. 2016;17(1):81-93.

Save

Weight Loss Maintenance Module

Article #2

The second article describes the results of a trial that found that weight loss produced both metabolic and behavioral changes that affect energy balance.

Redman LM, Heilbronn LK, Martin CK, et al. (2009) Metabolic and Behavioral Compensations in Response to Caloric Restrictions: Implications for the Maintenance of Weight Loss. PLoS ONE. 4(2): e4377. doi:10.1371/journal.pone.0004377. This article has free access on PubMed at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2634841/>.

Key Points Summary:

- This article reviewed the results of a four-arm calorie restriction study that examined the metabolic and behavioral responses to weight loss
- The four arms of the study were: 1) control, 2) calorie restriction (25% energy restriction via dieting), 3) calorie restriction plus exercise (a 25% total energy deficit from 12.5% calorie restriction plus a 12.5% increase in energy expenditure from exercise) and 4) a low-calorie diet of ~890 kcal/day to produce 15% weight loss
- Over six months, weight loss was 1.0%, 10.4%, 10.0%, and 13.9% in the control, calorie restriction, calorie restriction plus exercise, and low-calorie diet groups, respectively
- Metabolic adaptation was detected as total daily energy expenditure was lower than expected after adjusting for body composition in the calorie restriction and low-calorie diet groups combined
- The study also found that physical activity was reduced during weight loss
- Importantly, metabolic adaptation was not found in the calorie restriction plus exercise group, indicating that exercise can prevent metabolic adaptation

Required Activity

Answer these questions, save your answers and click "next" to see the correct answers.

1. The study by Redman et al. is important since it identified two changes that occur in response to weight loss. These two changes serve to limit weight loss and increase the chances of weight regain. First, metabolic adaptation occurred, indicating that energy expenditure decreased more than expected based on the decrease in body mass. What was the second response to weight loss that could limit further weight loss or promote regain?

- ☐ a) The thermic effect of food increased
- ☐ b) Levels of activity decreased
- ☐ c) Spontaneous physical activity increased
- ☐ d) Percent body fat decreased

2. The Redman et al. study also examined the effect of weight loss on physical functioning and vitality measured by a self-report questionnaire. How did these two constructs respond to weight loss?

- ☐ a) Vitality increased during weight loss
- ☐ b) Vitality decreased during weight loss
- ☐ c) Physical functioning increased during weight loss
- ☐ d) Physical functioning decreased during weight loss

Additional Resources

Redman LM, Martin CK, Williamson DA, Ravussin E. Effect of caloric restriction in non-obese humans on physiological, psychological and behavioral outcomes. *Physiol Behav.* 2008;94:643-648.

Leibel RL, Rosenbaum M, Hirsch J. Changes in energy expenditure resulting from altered body weight. *N Engl J Med.* 1995;332(10):621-628.

Rosenbaum M, Hirsch J, Gallagher DA, Leibel RL. Long-term persistence of adaptive thermogenesis in subjects who have maintained a reduced body weight. *Am J Clin Nutr.* 2008;88(4):906-912.

Rosenbaum M, Murphy EM, Heymsfield SB, Matthews DE, Leibel RL. Low dose leptin administration reverses effects of sustained weight-reduction on energy expenditure and circulating concentrations of thyroid hormones. *The Journal of clinical endocrinology and metabolism.* 2002;87(5):2391-2394.

Save

Weight Loss Maintenance Module

Learning Activity #1

In this learning activity, I want to help you develop an understanding about how weight loss maintenance is defined and where the literature in this area has led us. I'll demonstrate how you can apply the concepts and challenge you to find ways you can use your new understanding in your practice. Please note there are two videos to this section.

[Learning Activity 1, Part A Video](#)

[Learning Activity 1, Part B Video](#)

Click [here](#) for a pdf version of these videos.

References

1. Stevens J, Truesdale KP, McClain JE, Cai J. The definition of weight maintenance. *International Journal of Obesity* (2005). 2006;30(3):391-399.
2. Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Circulation*. 2014;129(25 Suppl 2):S102-138.
3. Wing RR, Phelan S. Long-term weight loss maintenance. *Am J Clin Nutr*. 2005;82(1 Suppl):222S-225S.
4. Wing RR, Hill JO. Successful weight loss maintenance. *Ann Rev Nutr*. 2001;21:323-341.
5. Thomas JG, Bond DS, Phelan S, Hill JO, Wing RR. Weight-loss maintenance for 10 years in the National Weight Control Registry. *Am J Prev Med*. 2014;46(1):17-23.
6. Purcell K, Sumithran P, Prendergast LA, Bouniu CJ, Delbridge E, Proietto J. The effect of rate of weight loss on long-term weight management: a randomised controlled trial. *Lancet Diabetes & Endocrinology*. 2014;2(12):954-962.
7. Wing RR, Tate DF, Gorin AA, Raynor HA, Fava JL. A self-regulation program for maintenance of weight loss. *N Engl J Med*. 2006;355(15):1563-1571.
8. Svetkey LP, Stevens VJ, Brantley PJ, et al. Comparison of strategies for sustaining weight loss: the weight loss maintenance randomized controlled trial. *JAMA*. 2008;299(10):1139-1148.

You can also download the reference list [here](#).

Weight Maintenance Loss Module

Learning Activity #2

This next segment dives deeply on the topic of energy balance as it applies to weight loss maintenance. There are four videos in which I present concepts and show you practical ways to apply the concepts in your work with weight management patients/clients.

[Learning Activity 2, Part A Video](#)

Please note that the end of the next video ends abruptly but the third video picks up where I drop off.

[Learning Activity 2, Part B Video](#)

[Learning Activity 2, Part C Video](#)

This last video finishes the exploration of energy balance and computational models. It's a little longer (about 40 minutes) but chock full of useful information and tools that will have great utility in your efforts to help patients/client deal with plateaus and get back on track in their weight loss and maintenance of weight loss. I think you'll be especially interested in my recommendations around keeping food records.

[Learning Activity 2, Part D Video](#)

Click [here](#) for a pdf version of the above videos.

References

There are quite a few wonderful references for this learning activity. You can download the reference list [here](#).

Weight Maintenance Loss Module Summary

In this last video, I put a bow on the content I've provided in this module by highlighting the key ways I think the information can help you help your patients/clients.

[Summary and Feedback Video](#)

Click [here](#) for a pdf version of this video.

I covered a lot of material and you have the links to go back and review information as needed. I encourage you to try new approaches and keep up with the field as it progresses.

I wish you all the best with your important work in helping patients/clients understand and successfully manage their weight loss for the long term.

Putting it into Practice - Weight Maintenance Loss - Fall 2018

1. How do I want to apply this information to my practice?



2. What more do I want to learn about this topic?

Weight Loss Maintenance Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

Weight Loss Maintenance Domain - Fall 2018

I spent _____ hours completing this module.

Healthcare Systems Module

Healthcare Systems Module

Introduction

Welcome to the Health Care Systems Module. Health care systems and payment models are rapidly changing and it is important for RDNs to understand the different initiatives and payment models. This module will describe initiatives that are changing how health care is delivered, such as the Patient-Centered Medical Home (PCMH), the Comprehensive Primary Care Initiative (CPC and CPC+), Accountable Care Organizations (ACOs), Advanced Payment models, and value-based payments.

Module Orientation

This module has four Learning Activities to enhance your understanding of health care systems and how these impact weight management, and how to apply to your patients and clients. In this module, you will:

- Listen to a series of three PowerPoint slide presentations.
- Read and review the key points for *RDNs in the New Primary Care: A Toolkit for Successful Integration*.
- Answer “knowledge check” questions.
- Reflect on the key concepts of this module and how you can apply to working with your patients and clients.

Learning Objectives:

1. Describe the key features of health care system transformation.
2. Discuss health care initiatives such as the Patient-Centered Medical Home (PCMH), Accountable Care Organizations (ACOs) and the Comprehensive Primary Care Initiative (CPC and CPC+).

Essential Practice Competencies

- 1.2 Works within personal and professional limitations and abilities.
- 2.2 Collaborates with others to achieve common goals and to optimize delivery of services.
- 4.2 Reflects, integrates and evaluates using critical thinking when faced with problems, issues and challenges.
- 8.3 Demonstrates a commitment to maintaining and enhancing knowledge.

Learning Needs Codes

- 1070 Leadership, critical and strategic thinking
- 7190 Institution/regulatory policies and procedures, CMS, OBRA, Joint Commission, NCQA, OSHA, USDA
- 7170 Reimbursement, coverage

Healthcare Systems Module

Learning Activities

Please watch the next three videos which discuss the key components of health system transformation and new payment models. Each video is presented by Bonnie Jortberg, PhD, RDN, CDE, an Assistant Professor in the Department of Family Medicine at the University of Colorado School of Medicine.

Learning Activity #1: [Healthcare Systems - Part 1](#)

Click [here](#) for a pdf version of the video.

In this first video, Bonnie provides an overview of the key features of healthcare system transformation, including the PCMH and the CPC Initiative.

Learning Activity #2: [Healthcare Systems - Part 2](#)

Click [here](#) for a pdf version of the video.

In this video, Bonnie describes how RDNs can become involved in alternative payment models and the Academy resources available for RDNs.

Learning Activity #3: [Healthcare Systems - Part 3](#)

Click [here](#) for a pdf version of the video.

In this final video, Bonnie discusses the answers to the questions from Learning Activity #2.

Healthcare Systems Module

Learning Activity #4: [RDNs in the New Primary Care: A Toolkit for Successful Integration](#)

Key Points Summary:

Are you confused about the changes going on in health care reimbursement and new models of care? This toolkit, developed by the Academy of Nutrition and Dietetics, is designed to provide RDNs and NDTRs with knowledge and resources for becoming an integrated part of emerging health care delivery and payment models. The toolkit is divided into five sections:

Section I: Introduction to Health Care Delivery Models in Primary Care: this section provides an overview of the Patient-Centered Medical Home (PCMH), Accountable Care Organizations (ACOs), Meaningful Use, and other initiatives, such as the Comprehensive Primary Care Initiative. This section also describes how these new models align with opportunities for the RDN.

Key opportunities for RDNs in emerging health care delivery models include:

- Care management: many of the emerging health care delivery models integrate care managers, with their role to collaboratively assess, plan, facilitate, and evaluate patient's health care and psychosocial needs to promote quality and cost-effective outcomes. RDNs are uniquely trained and qualified to perform care management responsibilities within primary care practices.
- Enhanced access: RDNs may be able to assist practices with enhanced access by offering care management and/or nutrition services via same day appointments, telephone, email, or other asynchronous methods.
- Planned care for chronic conditions and preventive care: RDNs have strong skill sets for providing care for chronic disease management and preventive care.
- Shared medical appointments: A shared medical appointment, also known as a group visit, occurs when multiple patients are seen as a group for follow-up care or management of chronic conditions.
- Group nutrition visits: MNT, nutrition education, and nutrition counseling can be provided in a group setting.
- Patient engagement and proactive patient planning: RDNs have demonstrated the ability to engage patients in their care, develop shared care plans, and proactively plan patients' care.
- Care coordination across the medical neighborhood: RDNs are competent in team-based care and in working with health care providers across all disciplines.

Optional Activity

1. Are you providing any of the services described above? If not, how can you change your practice to provide these services?



Healthcare Systems Module

Section II: Aligning Yourself with Emerging Health Care Delivery: this section provides hands-on tools for RDNs to align with primary care practices, including effective marketing and contractual strategies.

Specific tools provided in this section include:

- RDN Primary Care Marketing Checklist
- Menu of Services RDNs Can Provide to Primary Care Practices
- “RDNs and PCPs: A Healthy Partnership” Handout
- RDN Talking Points
- Sample Cover Letter
- Contact List Worksheet

Optional Activity

1. How can you use any of the tools described above to help you expand the nutrition services you provide? _____

Healthcare Systems Module

Section III: Team Approach to Primary Care: this section describes the importance of team-based care in a PCMH and the opportunities for RDNs to become fully integrated care team members in primary care practices.

Health care reform emphasizes the importance of team-based care, as effective team-based patient care has been shown to improve patient outcomes, improve office efficiency, and decrease health care costs. The Canadian health care system recognized the benefits of team-based patient care in the report *Teamwork in Healthcare: Promoting Effective Teamwork in Healthcare in Canada*. Main messages from the report include:

- A health care system that supports effective teamwork can improve the quality of patient care, enhance patient safety, and reduce workload issues that cause burnout among health care professionals.
- Successful teams recognize the professional and personal contributions of all members; promote individual development and team interdependence; recognize the benefits of working together; and see accountability as a collective responsibility.
- The makeup and functioning of teams vary depending on the needs of the patient. Patients and their families are important team members with important roles in decision making.

These key messages highlight the importance of the RDN as part of a well-functioning health care team, particularly for collaboration between the health care team and the patient.

Elements of Teamwork and Being a Team Member

The Essential T-E-A-M concept provides a framework for how effective teams operate. Essential

T-E-A-M elements include:

	Trust
	Empathy
The right	Attitude
	Mutual respect

Trust: Trust allows team members to be honest about their strengths and weaknesses.

Empathy: Empathy is the ability to imagine yourself in another person's situation. It means being aware of and appreciating another person's experiences and feelings. Health care workers are empathy experts. Extending this level of consideration to coworkers helps strengthen the team.

Attitude: Attitude is a manner, disposition, feeling, or position about a person or thing. Teams function best if all team members leave their personal problems at home, expect the best from one another, and recognize and resolve small conflicts.

Mutual Respect: Mutual respect means recognizing and attempting to uphold the rights and dignity of another person.

Reflection Question 3 - Healthcare Systems - Fall 2018

Optional Activity

1. How do you know if you are being a good team member? Please use the "Team Member Assessment" at the end of Section III in the Toolkit.
-

Healthcare Systems Module

Section IV: Population Health, Panel Management, Quality Measures, and

Measuring Effectiveness: this section gives an overview of the quality measures and the role of the RDN in collecting and reporting quality measures – which are key parts of new models of health care.

Definition of Clinical Quality Measures

What exactly are quality measures? The Institute of Medicine (IOM) defines clinical quality measures as “measures of processes, experiences, and/or outcomes of patient care, observations or treatment that relate to one or more of the IOM domains of health care quality (e.g., effective, safe, efficient, patient-centered, equitable and timely).”¹

Medicare defines quality as “the degree to which health services increase the likelihood of desired health outcomes.”² Why is there an emphasis on gathering and reporting on quality measures? Data is a powerful tool for driving change!

- You can't manage what you can't measure.
- You can't improve what you can't measure.
- Measurement and analysis add to the understanding of the system you are trying to improve and your insight about what changes might work to improve the process
- It is important to note that all that can be measured is not important and all that is important cannot be measured.

Population Management, Quality Measures, and the Role of the RDN

RDNs have the ability to measure and report the patient outcomes associated with care provided by RDNs as well as to perform this role on a larger scale within medical practices or large organizations. Outcomes management systems and software tools are available to evaluate the effectiveness and efficiency of the Nutrition Care Process (NCP). Following are ways in which RDNs can also assist primary care practices for population management and reporting on quality measures:

- RDNs are uniquely qualified to provide medical nutrition therapy (MNT) and lifestyle counseling for several MACRA and MIPS required quality measures. (e.g. controlling high blood pressure and preventive care screenings) and
 - In addition, dietitians are also well-versed in preventive care and can consider providing smoking cessation counseling.
- Care managers are increasingly hired by primary care practices to work with patients with multiple chronic diseases. Having the ability to enter data into the EHR and manage patient registries within the practice will be of great benefit to the practice.
 - If the RDN does not have experience working with an EHR (there are a variety of EHR products on the market and they all operate differently), the RDN should be proactive and ask the practice for training on use of the EHR. Please see Section V of the toolkit for resources for EHRs and Informatics.

- Becoming an RDN requires analytical skills. These competencies can be used in managing registries and creating reports for the practice. RDNs are “naturals” for this type of work.
- The emphasis for new healthcare delivery models will be reporting to CMS and other payers about the progress of the practice toward meeting goals. However, an important part of the RDN’s involvement is reporting on the effectiveness of the RDN!

Reflection Question 4 - Healthcare Systems - Fall 2018

Optional Activity

1. Are you required to report on any patient outcomes or quality measures? If yes, which ones are you reporting? If no, are there patient outcomes you could report that may help you increase your reimbursement for providing MNT or nutrition services?

Healthcare Systems Module

Section V: Nutrition Resources and Tools for Emerging Health Care Delivery

Models: this section provides key resources and tools for emerging health care delivery models of care.

Module Summary

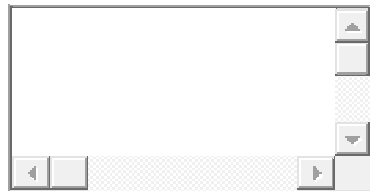
Healthcare delivery is rapidly changing in order to deliver better quality care at a lower cost. Initiatives such as the PCMH, CPC and CPC+ aim to improve patient care and engagement and offer unique opportunities for RDNs.

Putting it into Practice - Healthcare Systems - Fall 2018

1. How do I want to apply this information to my practice?



2. What more do I want to learn about this topic?



Save

Healthcare Systems Module Evaluation

Please click [here](#) to access a short evaluation to provide your feedback on this module.

End of Pre-Work Evaluation - Fall 2018

Rating from 1-5 with 1 being Strongly Disagree, 3 is Neutral and 5 being Strongly Agree

1. The self-study module was informative.

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
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2. The length of the pre-work was appropriate for the amount of material covered.

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
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3. The recommendations for additional learning (readings, links) are useful.

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
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How Was Your Experience?

4. What is your estimate of the total time it took you to complete the pre-work? _____ hours

5. How could we improve this pre-work learning experience?

Submit

Assessment Test Introduction - Fall 2018

Congratulations on completing the pre-work modules. Take a moment to review your previous self-assessment of the adult weight management SOP/SOPP practice/performance indicators.

1. Do you feel more competent now in any of the ones you indicated you wanted to add or improve? _____



2. Would you modify your list of 5 priority practice/performance indicators in any way? _____



3. Do you feel there are additional knowledge or skill areas that would like to develop? _____



Save