MWM New Patient Welcome Packet
May 2026

Medical Weight Management (MWM)

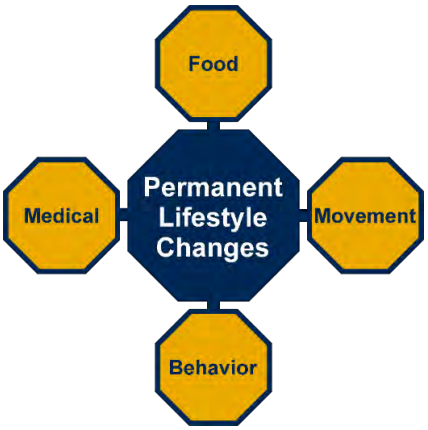
Clinical Mission:

Medical Weight Management uses science and patient-centered care delivered by a team of experts to empower individuals and families to improve their health and make permanent lifestyle changes.

Program Vision:

Medical Weight Management's vision is to promote wellness in West Virginia and the populations served through obesity clinical care, outreach, advocacy, education, and research.

1



MWM Website

Medical Weight Management website

MWM support group

MWM Facebook support group

Peds med wt mgmt website

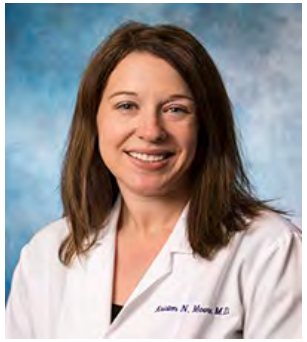
Pediatric weight management website

Table of Contents

Medical Weight Management

Laura Davisson, MD

Treah Haggerty, MD



Kristen Moore, MD

Tara Rickard, MD

Caroline Rosenberger, RN

Cathy Shaw, RD

Jessica Arvon, MD

Robin Elkins, APP

Amber Shaffer, APP

Lyn DeChristopher, APP

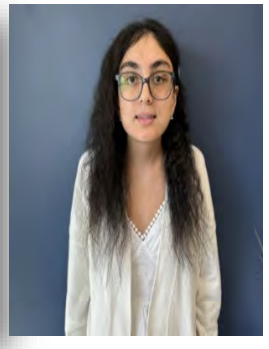
Judy Siebart, RD

Kerry Polizzi, MD

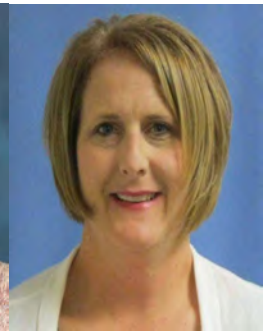
WVUMedicine

Medical Weight Management


Lauren Davis, PN


Karina Patel, RD

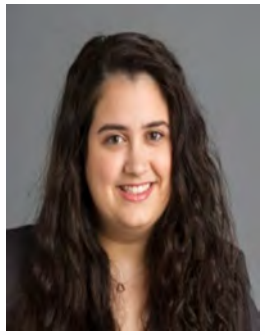

Emily Murphy, Health Coach


Michelle Ritchie, APP


Amberly Osbourn, APP


Madelyn Harvey, PharmD

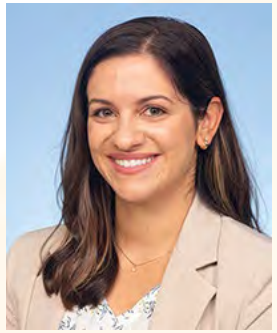

Stephanie Thompson, RD


Isabela Negrin, MD


Jacob Rumer, Health Coach


Patricia Galanti, MD


Jennifer Ludrosky, PhD


Camille Leon, MD


Kaila Kutz, PsyD

- Laura Davisson, MD, MPH, FACP

Dr. Davisson is a Professor in the Department of Internal Medicine at West Virginia University (WVU). She received her undergraduate degree from Northwestern University and earned her medical degree and MPH from WVU. Dr. Davisson completed an internal medicine residency at WVU and served as Chief Resident. She is board certified by the American Board of Internal Medicine and the American Board of Obesity Medicine.

Dr. Davisson founded and directs WVU Medicine's Medical Weight Management program, which works in collaboration with Bariatric surgery to comprise the WVU Medicine Medical and Surgical Weight Loss Center. Dr. Davisson aims to create a workforce to treat obesity in WV and the surrounding region by educating primary care clinicians, students, residents, and now, fellows. Medical Weight Management is the main training site for the WVU Nutrition and Metabolic Diseases Fellowship. Dr. Davisson is the Program Director for this fellowship, which is the first program in WV to train fellows in obesity medicine. She is also the Nutrition Thread Director for the WVU School of Medicine.

Dr. Davisson serves on committees for the Obesity Medicine Association (OMA) and American Board of Obesity Medicine. She has been a contributing author for the OMA's Obesity Algorithm. Dr. Davisson enjoys participating in outreach activities, such as speaking and writing on various health topics and advocating for the prevention and treatment of obesity and related illnesses.

- Treah Haggerty, MD, MS

Dr. Treah Haggerty is a family medicine physician and a diplomat of the American Board of Obesity Medicine. She is an associate professor in the West Virginia University Department of Family Medicine and director of Pediatric, Family-based Medical Weight Management at WVU Medicine. Dr. Haggerty completed her MD at the WVU School of Medicine in 2007. She completed her residency in Family Medicine in 2010. Dr. Haggerty is co-director of the WVU Dept of Family Medicine Rural Scholars Program and co-director of the WVU School of Medicine Rural Track. She is Associate Program Director for the WVU Nutrition and Metabolic Diseases Fellowship to train physicians in obesity medicine. Her research interests involved improving health in rural West Virginia residents with a focus on obesity treatment.

- Jennifer Ludrosky, PhD

Dr. Jennifer Ludrosky is a pediatric psychologist. She is an assistant professor at West Virginia University Department of Behavioral Medicine and psychiatry, where she is the Director of Child and Pediatric Psychology and the Program Director of the Clinical Psychology pre-doctoral internship. Dr. Ludrosky earned her PhD in Clinical Psychology at Miami University in 2006. She completed her internship and postdoctoral fellowship at Golisano Children's Hospital at the University of Rochester School of Medicine and Dentistry. Dr. Ludrosky's clinical and research work focuses on the unique needs of rural populations in pediatric settings.

- Amber Shaffer, MSN, APRN, FNP-BC

Amber Shaffer received her undergraduate degree in nursing from West Liberty University and earned a Master of Science in Nursing degree from the University of Cincinnati. Amber obtained a Family Nurse Practitioner (FNP-BC) through the American Nurse's Credentialing Center. She is a member of the Obesity Medicine Association (OMA) and has completed a Certificate of Advanced Education in Obesity through the OMA as well as the Lifestyle Therapeutics in Obesity Medicine Coaching Certificate Program. She has also completed the APA Obesity Management in Primary Care Training and Certificate Program. She is currently working on certifications in Personal Training and Nutrition Coaching through the National Academy of Sports Medicine (NASM). Amber is a native of West Virginia. She is proud to be part of the WVU Medicine Medical and Surgical Weight Loss Center and help patients in her home state and the surrounding communities live a healthier life.

- Robin Elkins, MSN, APRN, FNP- C

Robin Elkins received her Bachelor's of Science degree in nursing from Alderson-Broaddus College in Philippi WV in 2002 and earned a Master of Science in Nursing degree from the Wheeling Jesuit University in 2012. She also received a post master's Certification in Nursing Education from Wheeling Jesuit University in 2020. Robin is certified with the American Academy of Nurse Practitioners (FNP-C). She is also working towards a Certificate of Advanced Education in Obesity Medicine through the Obesity Medicine Association.

Robin has practiced as an RN for the past 20 years. During this time, she has worked in Cardiology, Neurology, Research, and as a clinical nursing instructor. She has worked as a Nurse Practitioner for the past 10 years in Cardiology, Neurology, and Medical Weight Management. She is a member of the Sigma Theta Tau International Honor Society of

Nursing, the American Academy of Nurse Practitioners, and Obesity Medical Association.

Robin grew up in Grafton, WV and continues to live there today. She likes to garden, bowl, and recently got 12 chickens. She is looking forward to working with the community.

- Lyn DeChristopher, MS, PA-C

Lynette obtained her BS and MS in Exercise physiology at West Virginia University. She was then afforded the opportunity to be a graduate assistant and teach not only the exercise physiology students but also the physical therapy students and occupational therapy students.

In 2000, she decided to return to school in Physician Assistant studies. She graduated from Alderson Broaddus University with a master's degree in physician assistant studies and started her career at Monongalia General Hospital in the Department of Cardiology and private practice. She spent 18 years there until making the jump to West Virginia University in Medicine in the department of medical weight management. She has now been a contributing APP to that department for years. She has also been lucky enough to have the opportunity to be an adjunct professor at West Liberty University and West Virginia University in their physician assistant studies department where she enjoys educating future PA-C's. Lynette is a member of the Obesity Medicine Association and has obtained a certificate of advanced education in obesity treatment and lifestyle therapeutics and obesity medicine coaching certificate. Lynette is also a certified personal trainer and a member of the APP wellness committee at West Virginia University.

Throughout her life, she has always been active and interested in fitness. She played basketball for WVU in the 90's and when obtaining her PA degree from AB she was afforded the opportunity to be an assistant coach/strength coach for their softball and basketball teams. She was able to use her exercise physiology background to guide and teach younger athletes the importance of fitness and healthy lifestyles to be the best they

could be. She has always tried to elevate and encourage her patients, family, and friends to reach their goals of fitness, health, and weight loss and is so excited and honored to be a part of this Medical Weight Management team where she can help and guide so many more patients.

- Patricia Galanti, MD

Dr. Tricia Galanti is an Assistant Professor in the Medical Weight Management department of West Virginia University. She completed her MD at Indiana University in 2002 and graduated from the St Francis Family Medicine Residency in 2005. After graduation she worked for 3 years in private practice just north of Indianapolis, Indiana practicing inpatient and outpatient care as well as obstetrics. She then moved overseas to New Zealand for 2 years to provide care in a medically underserved area, working as an ER physician and hospitalist in a rural hospital. After returning to the states, she worked for Community Hospital for 14 years in Family Medicine before transitioning to Obesity Medicine and joining the WVU staff. She has always enjoyed focusing on preventative care to avoid chronic disease and Obesity Medicine is a natural extension of that interest. Her primary focus is the WVU employee weight management program and will also continue to serve by training medical students, residents, and fellows in obesity medicine.

- Caroline Rosenberger, RN

Caroline Rosenberger is a Registered Nurse with Medical Weight Management. She currently acts as the Clinical Coordinator for the Medical Weight Management team. She graduated from Davis and Elkins College in 2004 and has been with WVU Medicine since 2003. She started as a nurse extern in Med Surg and Pediatrics. Caroline worked in pediatrics for 14 years in inpatient and outpatient care. She also worked at Hope and healing for 6 Months.

Caroline enjoys walking, gardening and spending time with her dogs Willow and Max. Caroline also enjoys driving her Mini Cooper S and is a member of the Mini Girls USA.

- Susann Faverio, RN

Sue Faverio is a Registered Nurse with Medical Weight Management. She currently acts as the Clinical Nurse Coordinator for the Medical Weight Management team. She has worked in healthcare for over 30 years in various roles and has been a registered nurse for 13 years. Most recently she worked as Clinical Nurse Manager for Mon Health Heart & Vascular in the Morgantown office.

- Judy Siebart, MS, RD, CDCES, NCTTP, CSOWM

Judy has been a dietitian for over 30 years. She received her undergraduate in Nutritional Science from Penn State University and her Master's in Community Health from West Virgina University. She did her dietetic internship at Ruby Memorial Hospital. She has additional certification in diabetes, tobacco, and weight management. Judy recently formed a non-profit, Tobacco Free me, to help people quit tobacco for good. She has consulted at a local Head Start programs for over 25 years and enjoys working with all people, especially kids.

- Rachel Wattick, RD

Rachel received her Bachelor's in Human Nutrition and Foods, Master's in Nutrition and Food Sciences, and PhD in Animal and Food Sciences at West Virginia University. While completing her PhD, she did her dietetic internship through WVU and became a Registered Dietitian in 2022. Her research focused on nutrition and mental health, and culinary medicine. Rachel also serves as an adjunct professor at WVU while working in our clinic. She is passionate about the physical, mental, and social benefits of cooking and eating well, exercise, and strength training and is excited to share this with patients.

- Cathy Shaw, RD, CSOWM, LD

Cathy Shaw is a Registered and Licensed Dietitian with 29+ years of experience as a clinical dietitian and counselor in a wide variety of practice areas including hospital, long term care, outpatient and community settings. She received her Bachelor of Science Degree from West Virginia Wesleyan College and went on to complete her Dietetic Internship at West Virginia University Hospitals, Inc. She is a Certified Specialist in Obesity and Weight Management and has been providing weight management counseling services in health care centers, private practice, and community programs to both children and adults since 2008. She has served as a nutrition consultant and educator/coach for various community-based wellness programs and has been involved in many statewide initiatives in WV, aiming to address the obesity crisis from a population health perspective.

As a truly patient centered dietitian, she takes pride in bringing her clients real life, evidence based, practical approaches to improving their health, combating chronic disease, and managing their weight. She is dedicated to helping them navigate their way through the ups and downs of everyday life and developing a positive relationship with food and the world around them.

- Michelle Ritchie, MSN, APRN, FNP-BC

Michelle Ritchie is a Family Nurse Practitioner who recently joined the Medical Weight Management team at WVU Medicine. She was born in Parkersburg, WV and grew up in Ravenswood, WV.

Attended Ravenswood High School. Michelle received her undergraduate education from WVU-Parkersburg and West Virginia University with an Associate and Bachelor's Degree in Nursing. She also attended Fairmont State College and earned a school nurse certification. In 2010, Michelle graduated with a Master's Degree in Nursing Education from Marshall University. In 2014, she completed a post master's certificate as a Family Nurse Practitioner from West Virginia University. Credentialing was earned through ANCC and she began practicing as a FNP at The Morad -Hughes Health Center of Jackson General Hospital in Ripley, WV. In 2016, Michelle relocated to Morgantown, WV with her family and joined WVU Medicine in the Department of Otolaryngology where she worked for over 7 years. She was certified and served as the Inspire Patient Navigator for the past 3 years. She has been a member of ENT for the PA, ANA, WVNA, Obesity Action Coalition and most recently joined the Obesity Medicine Association.

Michelle was an RN for 25 years prior to becoming a Nurse Practitioner. She has worked with medical surgical, surgical ICU, and Oncology patients with and the majority of her career treating cardiac surgery patients. She is

dedicated to health promotion and is an advocate for patients seeking to improve their health and seeks to promote healthy lifestyles. Her past interests have been with Special Olympics, American Cancer Society, American Heart Association and the Red Cross. Michelle is a member of Sigma Theta Tau International, Sigma Theta Tau Alpha Rho Chapter of WVU and she is also Chair and Member of APP Education Committee.

- Amberly Osbourn, PA-C

Amberly graduated from Alderson Broaddus College in 2011 with a Masters in Physician Assistant Studies. Her first job was in Harrisonburg, VA working in Nephrology for about 2 ½ years. She moved back home to WV in 2014. At that time, she started with Cardiology at Mon Health, and worked there for almost 10 years before joining the Medical Weight Management team. She is currently working towards a Certificate of Advanced Education in Obesity Medicine through the Obesity Medicine Association.

Amberly was born and raised in WV, and is excited to be a part of this amazing team with WVU Medicine - Medical Weight Management.

- Lauren Davis, PN

Lauren Davis is a Patient Navigator with the Medical Weight Management team. She received her Bachelor of Public Health from West Virginia University. She is currently pursuing her Master's in Business Administration from West Virginia University. She coordinates outreach activities, tracks QI data, and manages providers' calendars. Lauren enjoys spending time outdoors with her family and animals. She grew up on a farm in Core, WV where she has two horses that she enjoys riding and barrel racing on the weekends.

- Camille Leon, MD

Camille Leon, MD is a board-certified Psychiatrist with Medical Weight Management and an assistant professor at Healthy Minds, Chestnut Ridge. Dr. Leon completed her bachelor's degree in biology at West Virginia University. She then went on to complete her Doctor of Medicine degree and her Psychiatric Residency at West Virginia University, where she served as chief resident during her final year. During her residency, she focused on nutrition and lifestyle factors and how they affect mental health. In her free time, Dr. Leon enjoys cooking, gardening, and spending time with family.

- Jacob Rumer, M.Ed.

Jacob Rumer is a Health Coach with Medical Weight Management. He graduated from West Virginia Wesleyan College in 2012 with a Bachelor of Science degree in Exercise Science and then from Fairmont State University in 2014 with a Master of Education degree in Exercise Science. He began working with the Medical Weight Management team in May of 2024.

Jacob enjoys the outdoors, whether that is hiking, camping, kayaking, or snowboarding, exercising in the gym as well as running, and coaching lacrosse at the high school level. If he isn't found in the great outdoors, look for him to be cooking, hanging out with his cat, or playing board games with his girlfriend.

- Madalyn Harvey, PharmD, MBA, CTTS, CSP

Maddie Harvey is a clinical pharmacist specializing in medical weight management, where she has been serving patients since 2024. Originally from Morgantown, West Virginia, Maddie earned both her Doctor of Pharmacy and Master of Business Administration degrees from West Virginia University in 2020. She is a Certified Tobacco Treatment Specialist and a Certified Specialty Pharmacist with a strong passion for chronic disease management, particularly in the areas of diabetes and obesity. Maddie is deeply committed to patient education and advocacy to the West Virginia community. She extends her impact beyond the clinic by volunteering with diabetes camps and support groups. She currently serves as President of the Board of Directors for Camp Kno-Koma, West Virginia's diabetes camp, helping to support children and families navigating life with type 1 diabetes. She also organizes events for WV T1D Adults, a group of adults living with type 1 diabetes. In addition to her clinical and volunteer work, Maddie is actively involved in pharmacy education. She teaches and precepts pharmacy students and residents both in the classroom and during clinical rotations.

Hello,

Welcome to WVU Medical Weight Management. This non-surgical program helps you make permanent changes to improve your health and lose weight using scientific, patient-centered care. The first step is watching our orientation video and completing our intake questionnaire from our website: wvumedicine.org/weightmgmt. Several of the program's options are explained in the video.

You will have the option of face-to-face or video visits unless an in-person visit is required medically. After your first medical appointment, you will be scheduled with a dietitian. We recommend frequent follow-up visits for support and to provide the greatest opportunity for success. We practice team-based care so you may be seen at times by a physician, advanced practice provider, dietitian, nurse, or other health professional. The team members communicate regularly to provide coordinated care, so we will all be aware of your goals and plan. Our nurse coordinators respond to most phone and MyChart portal messages. You can feel comfortable knowing that our staff treat people of all sizes with respect so you will never face any negative judgment about your weight in our program.

We look forward to seeing you and starting this life-changing journey with you! If you have any questions, you can also reach someone from the team at: medicalweightmanagement@hsc.wvu.edu or call the clinic with help getting scheduled at 304-598-4855. We also offer additional support through a private Facebook group that you can join at any time: Https://www.facebook.com/groups/wvumedweightloss/.

Thank you,

The WVU Medical Weight Management Team

Frequently Asked Questions

What is the WVU Medicine Medical Weight Management program all about? What can I expect to get from this experience? What are some of the goals of this program?

The WVU Medicine Medical Weight Management program tackles topics of nutrition, exercise, behavior modification, and medical intervention. All of the information detailing the aims and goals of our program are currently featured in our online orientation video, which you can access here. To expedite your enrollment process, you can also find a link to necessary patient intake forms available on that page.

Do I need a referral to participate in this program?

Yes, the program has recently implemented a referral requirement. The referring clinician must attest that you meet the minimum BMI requirements. This requirement may change depending on the program's ability to meet demand, but as of 5/18/2026, was a BMI of 30 kg/m2.

What is the cost of participation in this program? Does my insurance offer any coverage?

The Medical Weight Management program does not only treat obesity; rather, we address patient health as a whole. As such, appointments with our program are billed to individual insurance providers under "primary care specialties." Co-pays and costs vary from insurance to insurance, so we encourage each patient to contact their providers to learn more about how much the program will be billed to them.

What is a Shared Medical Appointment?

Shared Medical Appointments (SMAs) are small group sessions wherein patients can check in with a provider and their peers about their goals and progress. An SMA may have a particular theme—such as "sleep" or "cravings"—and it's a great opportunity to support and be supported by other patients on a similar path to a healthier lifestyle. Currently, SMAs are being offered by the Registered Dietitians in a program called "Eat Well, Live Well."

What platforms does the Medical Weight Management program use for telemedicine?

Telemedicine visits are easily accessible via Haiku or Canto for patients located in WV. Ask about this if you need more specific direction about when your appointments are scheduled.

Can I participate in this program if I am pregnant or breastfeeding?

Weight loss is generally discouraged while pregnant and anti-obesity medications are contraindicated. However, we are happy to see you in clinic visits to provide support if you feel that would help you.

I'm considering bariatric surgery. Where can I get more information about that process?

While the Medical Weight Management program isn't a surgical program, we do have a bariatric surgery group here at WVU Medicine. To learn more, click here. You can also ask us at your appointment about bariatric endoscopy options that are now available.

How often will I have appointments in this program?

Your first visit will be a medical visit and your individualized plan will be determined at that visit. Generally, most people will have a medical visit every 4-6 weeks. You will also have 1-2 appointments with the registered dietitian and the option to join group visits for additional support.

Will you be able to get my insurance cover anti-obesity medications?

Insurance coverage is variable and we cannot guarantee we will be able to get these medications covered for you. We have a separate handout about how to assess if you have insurance coverage.

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Morgantown

Medical & Surgical
Weight Loss Center

Laura Davisson, MD
Chief, Obesity Medicine

Lawrence Tabone, MD
Chief, Bariatric Surgery

Medical Weight Management

Helps you improve health and make permanent lifestyle changes using scientific, patient-centered, team-based care.

Laura Davisson, MD

Cathy Shaw, RD

Caroline Rosenberger, RN Coordinator

Robin Elkins, APP

Amber Shaffer, APP

Treah Haggerty, MD

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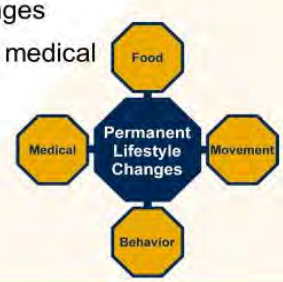
Medical Weight Management

- Non-surgical program
- Foundation of medical approach is lifestyle changes
- Evidence-based food, movement, behavior, and medical interventions
- Medical visits are billed to insurance.



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Food

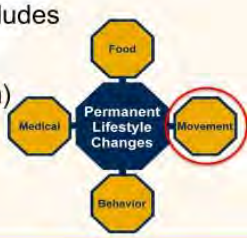
- Not just one prescribed diet, multiple approaches work!
- Eat vegetables, protein, and healthy fats from real, high quality, whole foods; Drink mostly water
- Goal: individualized, satisfying eating pattern for life.
- Also offer Fresh Steps meal replacement program

fresh steps MEAL SYSTEM
A Fresh Perspective on Weight Loss

WVUMedicine https://www.freshstepsmeals.com

Movement

- Physical activity very important for overall health
- Most important for weight *maintenance*, not *loss*
- Partner with WVU Exercise Physiology Human Performance Lab (HPL): participation for low fee, includes
  - Body composition (Bod Pod) & initial fitness test
  - Individualized exercise prescription (home vs. gym)
  - Periodic repeat fitness testing to document improvement.



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Behavior-4 S's

- **S**elf-monitor food, movement, sleep, weight: paper or app
- **S**et goals (for lifestyle changes)
- **S**upport (we help you stay on track by close follow-up at least monthly)
- **S**timulus control (food environment)--hard to make good choices if surrounded by food that makes you want more

The choices people make depend on the choices available. Make the healthy choice the easy choice.

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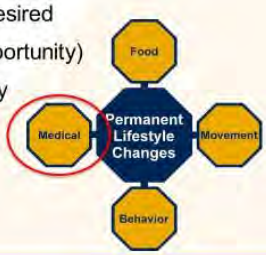
Medical

- Comprehensive history, exam, diagnostic testing for individualization
- Optimize chronic meds to enhance not hinder loss
- Psychological factors—screen all, refer when needed or desired
- Sleep patterns evaluated & optimized (7-9 hours sleep opportunity)
- Optional test for rare genetic disorders if obesity before 10y
- Medications or surgery considered if needed.



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Medical: Medications

- May be discussed as part of overall plan
- Do not substitute for behavior changes
- Not guaranteed
- Not always prescribed on first visit or if not following the plan
- Refills only at clinic visit (no telephone refills).

Some of the medications prescribed:
Phentermine/topiramate
Bupropion/naltrexone
Liraglutide
Semaglutide
Also chronic med adjustments

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What to expect at appointments

- First appointments all start with comprehensive medical evaluation
- Follow-ups typically monthly, shorter than initial visit, less than 1 hour
  - Review lab results, food logs, progress on goals
  - Set new goals
  - Adjust plan based on results—there are other strategies if needed
  - May utilize phone calls or nurse weigh-ins between face-to-face visits
- In maintenance, return visit schedule customized, around every 3 months.

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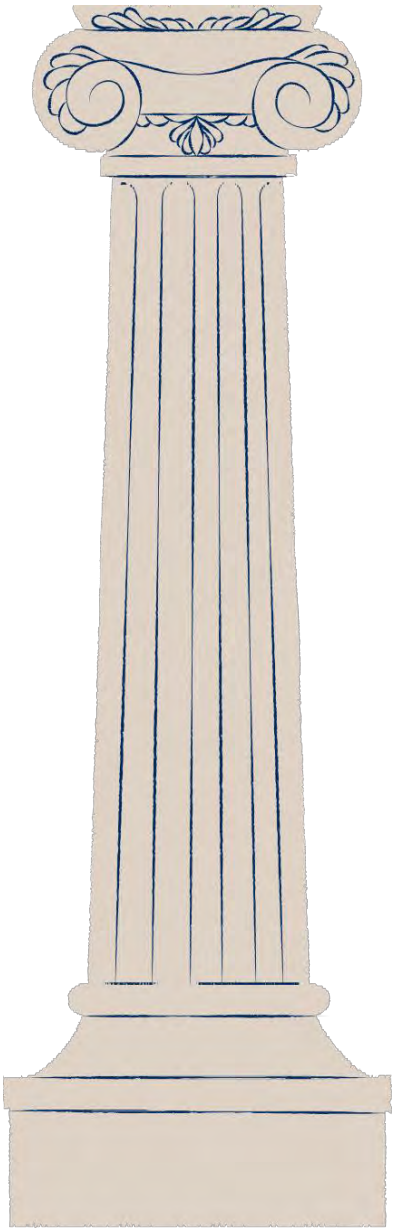
Medical & Surgical
Weight Loss Center

Food

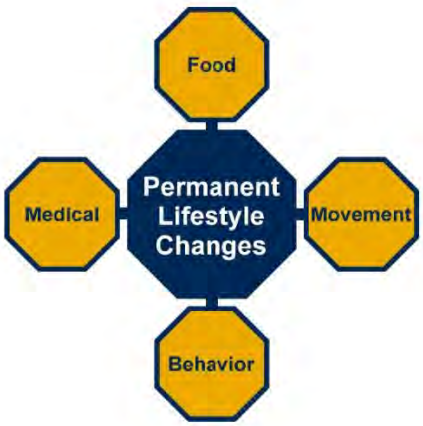


Welcome to the WVU Medicine Medical Weight Management Program!

As you well know, there are many hard decisions to make when you choose to lead a healthy lifestyle, and making choices about what and how much to eat are among the most difficult. Finding a balance between what we eat and how we move is an important step. We are here to offer you some helpful resources.

By providing you with nutrition counseling from Registered and Licensed Dietitians, you have direct access to the foremost food and nutrition experts. You will meet with your registered dietitian soon after your initial visit with your medical provider. Expect to spend time discussing your medical, weight, and dieting history, current habits, questions, and concerns. You may follow up with your dietitian during as needed to help you stay on track with your personal nutrition goals.

Diet is a key component to your weight loss journey. As one of the four pillars of health, diet plays a crucial role in your success.



Here are some basic guidelines to get you started with making healthy choices until you meet with your dietitian:

1. **Track what you eat.** Research shows that people who track their food intake are *more successful* with weight management than those who do not. Keeping track creates awareness of what you are eating/drinking and can help you see where to make changes.

Here are some recommended on line trackers:	
My Fitness Pal	www.myfitnesspal.com
Lose It	www.loseit.com
My Plate App	https://www.myplate.gov/resources/tools/startsimple-myplate-app
Cronometer	www.cronometer.com
FitBit App	https://www.fitbit.com/gb/app

Some of these have great mobile apps that you can use anywhere on your mobile device. Not fond of the web or apps? *Paper and pencil work too!*

2. **Get to know your plate**. If you have not seen it yet, be sure to check out "*My Plate*" at https://www.choosemyplate.gov/ to see how your plate stacks up. This is a great way to plan meals and practice portion control by simply using your plate. Start by filling half your plate with vegetables and fruit. Take a peek here to see how to *Start Simply with My Plate* https://www.eatright.org/health .

3. **Get to know your habits when it comes to calorie dense, low nutrient foods (empty calories).** Solid fats and added sugars taste good, but they also can add a lot of extra calories. Be aware of **how often** and **how much you eat**, and consider ways to cut back.

Here are some of the biggest culprits:

- *Sweet treats* such as: cakes, cookies, pastries, ice cream, doughnuts and candy
- *Sweetened beverages* such as: sodas, energy drinks/sport drinks, fruit drinks and sweet tea
- *Full fat* cheese, pizza, and *high fat* meats such as sausage, hot dogs, bacon, and ribs
- *Deli meats like*: bologna, pepperoni, salami, etc.

4. **Eat out less and cook more.** We are not suggesting you become a gourmet cook! Simple meal prep and cooking skills are great! Those who prepare foods at home are going to have more control over what they eat, simply because they prepare it themselves. You can control the ingredients and the preparation methods to create healthy, delicious dishes that are good for you and your family. And yes, *you CAN make time.* **Ask your registered dietitian to help you with great tips on how.** You can also check out cooking tips and trends from the ***Academy of Nutrition and Dietetics*** at https://www.eatright.org/search-results?keyword=cooking+tips. Check out great recipe apps from *Spark People*, *Eating Well* and *Cooking Light* as well.

5. **Start looking at your food as fuel and nourishment for your body.** The human body is a very complex machine. It needs the proper fuel to function at its best. The food we eat provides essential nutrients that our bodies need such as carbohydrate, protein, fat, vitamins/minerals/antioxidants and other compounds, as well as water. All of these nutrients have a specific purpose. So start off by fueling up with a healthy breakfast and give your body nourishing food that it **NEEDS** during the day. Ask yourself, "*Is what I am choosing fuel or fluff?*" If it's mostly fluff, try making a better choice.

Remember, your registered dietitian will help you personalize your plan based on your nutritional needs, but starting to take a look at these things prior to your appointment can help them, help you. It's a tough road ahead. Our environment does not make it easy to make healthy choices, but **remember why you have chosen to commit to a healthier lifestyle**. No matter what the reason, *we are here to help you on your journey.*

Let's get started!

Nutrition Counseling with Your Registered Dietitian: It may be different than you expect!

What do you think of when you hear the term Registered Dietitian? Do you automatically think of the "food police", or someone who will demonize all of the foods you hold dear, and leave you crying in your last bowl of ice cream? We sure hope not. Registered Dietitians are, after all, human. We enjoy food as much as everyone else. We just happen to be experts in the science of food and nutrition, and how what we eat/drink affect the very complex processes of the human body. But we also understand that food is not all about specific nutrients or "dos and don'ts". Food and eating are also about choice, taste, friendship, family, love, tradition, spirituality, comfort, and even accessibility, sustainability, and safety. As RDs, we take *all* of these factors into consideration when we help YOU make the best choices for YOU. All of these things matter when guiding people to make behavior changes that will help maintain a healthy weight, or prevent and treat chronic disease.

So, what should you expect from your RD?

- **Expect evidence based information.** The recommendations that we make are based on extensive evidence stemming from quality research. The latest diet fads and marketing schemes don't exactly fit this bill, but we will be happy to honestly answer questions about them, and explore pros and cons.

- **Expect personally tailored advice**. Nutrition is not "one size fits all". Expect to talk about your history, habits, schedule, food preferences, meal planning, cooking, and cultural influences. This way we can help you prioritize how to fit healthy eating into your personal life.

- **Expect realistic, practical approaches to behavior change**. Doing a complete overhaul of everything you do and eat is not realistic or sustainable. Expect to collaborate with your RD in discussing small changes that are manageable and achievable in your life, *right now.*

- **Do not expect a strict diet with lots of menus**. Intensive, restrictive diets are difficult to follow and are unsustainable for the long haul. Unless you have a specific medical condition that requires a strict diet, don't come looking for one.

- **Don't expect us to forbid or eliminate foods from your diet unless you have a serious medical condition that warrants it** (such as gluten with celiac disease). Would we like you to stop drinking soda? Yes. Can we expect that you will *never* have one again? No. It's about making wise choices, and finding balance.

- **Don't expect us to recommend the latest nutritional supplement or weight loss product**. With the exception of using supplements to treat deficiencies or specific medical conditions, they are expensive and likely unnecessary. **Expect us to talk to you about *real food***.

- **Don't expect us to tell you to go out and buy the latest "super food" or pricy ingredients**. You can certainly eat healthfully without being "fancy" and breaking your budget. If budget is a concern, expect us to help you choose and prepare healthy foods that fit your bottom line.

Remember, we are here to help you find your own path to success! We want you to eat well, live well, and enjoy life!

For more information on what a Registered Dietitian can do for you, go to:
http://www.eatright.org/Public/landing.aspx?TaxID=6442452104

Food

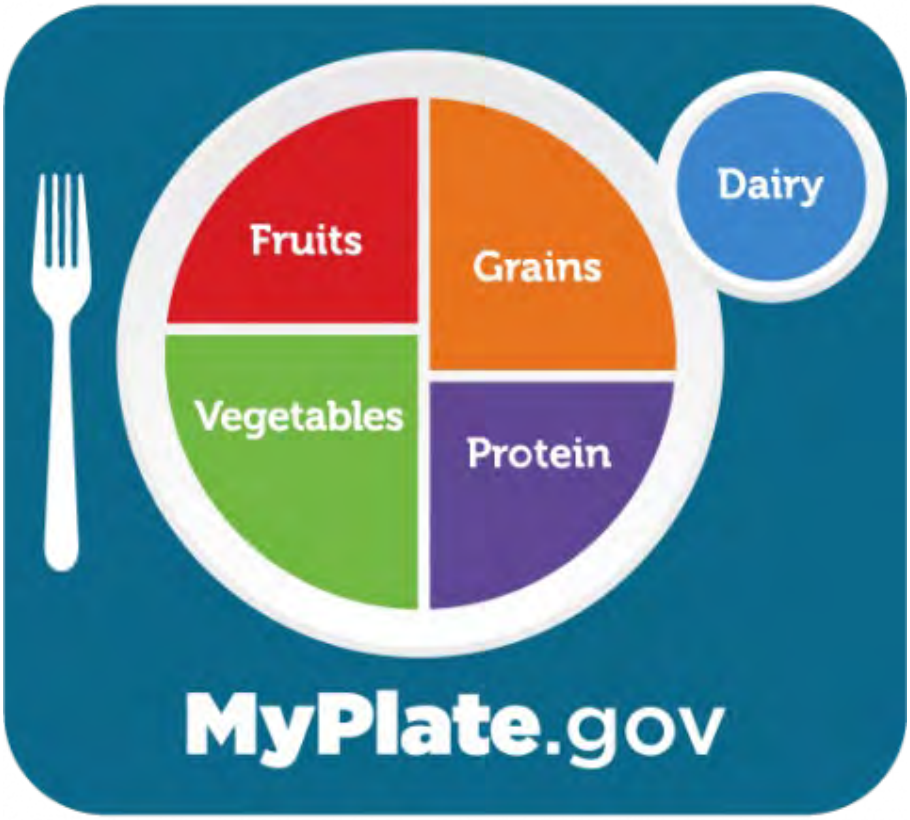
Our weight is influenced by multiple factors, one of which is the food we eat. There is not one healthy eating pattern that works for every individual, so our program focuses on individualizing recommendations for each patient. The key to sustainable weight loss and healthy eating is to find a way to eat that creates satiety and satisfaction. When people make changes to their eating habits, these need to be changes that they feel they can make in the long term.

Evidence shows that in order to achieve weight loss, one must be in an energy deficit to make progress. While counting calories can be helpful, it is not appealing or even appropriate for everyone, depending on their history and/or lifestyle. Luckily, an energy deficit can be achieved in multiple ways by choosing nutrient rich foods, altering portions, changing meal timing, among others. We do not make a practice out of providing menus and strict meal plans as part of the goal is to help patients learn a new way of eating and make their own healthy choices. We do focus on behavior change surrounding foods and help patients understand their energy needs and how the foods they eat influence their energy balance.

Basic principles that all healthy eating patterns share include eating an abundance of produce, choosing lean proteins, varying amounts of carbohydrates, and healthy fats from real, high quality, whole foods, and drinking mostly water. Intake of added sugars, saturated (solid) fats, and ultra processed food is encouraged to be kept to a minimum as foods that fit these descriptions are often low in nutrients but high in calories, thus not the best choices for our weight and our health.

The fact is that multiple dietary approaches work, so our program offers several options. Participants may follow a flexible healthy eating plan that follows the principles above or choose a more structured dietary approach, including Mediterranean, DASH, low carbohydrate, plant based, or even partial meal replacements. The goal is finding an individualized, satisfying way of eating for life, because the factor most associated with successful weight loss is not the details of the plan, but adherence to it.

For those who may desire more structure, we have descriptions of several options that follow.



You should be familiar with the My Plate teaching tool from the USDA. This is a simple and very visual way of helping patients understand the components of a healthy diet. Using the plate method can help people increase the nutrient rich foods they consume and can also help create balance and variety in the foods they eat. Most Americans do not meet the recommended servings for vegetable and fruit intake and only consume about ½ of the daily fiber recommendations for the day. Using the My Plate tool can help patients:

1. Increase fruit and vegetable intake by encouraging them to fill ½ their plate with produce. This can help them meet the 5 a day recommendation, improve their nutrient intake, and help them get adequate fiber and fluids in their day. Think about varying the types of fruits and vegetables that are consumed based on color, texture, and taste!
2. Opt for whole grains and complex carbohydrates to help meet needs for fiber and to provide healthy sources of energy. You will notice that this is only ¼ of the plate, so this may be a significant decrease in consumption of these foods for many people. Additionally, it is common for vegetables choices of the meal to be starchy, such as

potatoes and corn, and this can be surprising for people to know they need to limit these foods combined to a ¼ of the plate.

3. Get adequate protein and vary their sources. Protein is essential for muscle maintenance and repair, can increase the thermogenic effect of food (it takes more energy to digest!), and is a great way to increase satiety. Protein can be lean animal or plant-based sources and we encourage a variety of both due to the health benefits that each bring to the table. Patients who are trying to lose weight are recommended to have more protein in their dietary patterns again. A higher protein diet has been shown to help reduce the amount of lean mass loss typically experienced with energy deficit and it also helps people feel full and satisfied...it's a win-win.
4. Opt for fats that have been shown to be beneficial for heart health. Choosing monounsaturated and polyunsaturated sources of fat such as plant-based oils (like olive, canola, avocado, grapeseed oil, etc), nuts, seeds, avocados, and fatty fish, can help reduce risk of heart disease and improve cholesterol levels. Reducing intake of saturated fats such as butter, fats coming from animal sources, and tropical oils (coconut/palm/palm kernel oil) and using unsaturated sources instead is desirable.
5. Get enough calcium by opting for dairy and dairy alternatives that contain or are fortified with calcium and vitamin D. Dairy milk is one of the best sources of calcium in our diets, and if this is not tolerated due to intolerance or allergy, we do have an array of fortified plant based alternatives (of which soy is the most equivalent) to help people meet their needs.

Choosing to move toward a healthier plate can be as simple as shifting portions and opting for more nutrient rich foods. This ultimately can help people reduce energy intake and increase the nutrient value of their diet.

MyPlate | U.S. Department of Agriculture

Sample menu:

Breakfast: ¾ cup zero sugar vanilla greek yogurt topped with berries, 1 slice whole wheat toast with an egg

Lunch: whole wheat wrap with turkey, cheese, spinach, tomatoes, and Italian dressing, ½ cup cottage cheese, celery sticks and peanut butter

Dinner: garlic lemon grilled chicken, roasted cauliflower and sweet potatoes

Snacks: pure protein bar, banana

MyPlate.gov

Small Changes Matter.

Start Simple

With MyPlate Today.

Healthy eating is important at every stage of life.

Make half your plate fruits & vegetables.

Focus on whole fruits.

Vary your veggies.

Fruits

Grains

Vegetables

Protein

Make half your grains whole grains.

Vary your protein routine.

Move to low-fat or fat-free dairy milk or yogurt (or lactose-free dairy or fortified soy versions).

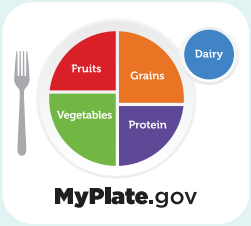
Dairy

Limit

Choose foods and beverages with less added sugars, saturated fat, and sodium.

The benefits add up over time, bite by bite.

Make every bite count



Take a look at your current eating routine. Pick one or two ways that you can switch to choices today that are rich in nutrition.

A healthy eating routine can help boost your health now and in the years to come. Think about how your food choices come together over the course of your day or week to help you create a healthy eating routine.

It's important to eat a variety of fruits, vegetables, grains, protein foods, and dairy or fortified soy alternatives. Choose options for meals, beverages, and snacks that have limited added sugars, saturated fat, and sodium.

Choose from these simple tips to help you...

Fruits

Focus on whole fruits

- Start your day with **fruit at breakfast**. Top cereal with your favorite seasonal fruit, add bananas or chopped apples to pancakes, or mix a spoonful or two of raisins into hot oatmeal.
- Keep **ready-to-eat fruits** in the refrigerator for a quick snack.
- For dinner, chop up a combination of seasonal, frozen, or canned fruits to make a **quick fruit salsa** to top fish or chicken. Add fruit such as orange sections, apple wedges, or grapes to a **salad**.

Vegetables

Vary your veggies

- Add shredded carrots to the lettuce and tomato **in your sandwich**, make **soup** from the veggies in your vegetable drawer, and **snack on raw vegetables**.
- Try a **stir-fry** with fresh or frozen vegetables for a quick meal or easy side dish.
- Pick out a vegetable that the family has not tried and **get a new recipe** from a cookbook, website, supermarket, or friend.

Grains

Make half your grains whole grains

- For breakfast, enjoy a whole-grain-based **hot or cold cereal**. Consider trying whole-grain puffs or flakes that are new to you—you might discover a new favorite!
- Instead of sandwich bread, try a **whole-grain pita, tortillas, naan or other whole-grain flatbread, sliced breads, or rolls**.
- Create your own trail mix with whole-grain cereal or enjoy whole-grain crackers with turkey, hummus, or avocado for a **healthy whole-grain snack**.

Protein

Vary your protein routine

- **Broil lean beef cuts** like sirloin, top round, or flank steak. **Roast lean types of pork tenderloin or loin chops** and slice into strips for dinner, salads, and sandwiches.
- **Have fish or seafood twice a week**. Make a lunchtime sandwich or salad with canned tuna, grill fresh or frozen tilapia or salmon for dinner, or enjoy fish tacos.
- **Meatless meals** are tasty and budget friendly. Try bean-based vegetarian chili or lentil soup, grilled or braised tofu with vegetables, or adding nuts to salads.

Dairy

Move to low-fat or fat-free dairy milk or yogurt (or lactose-free dairy or fortified soy versions)

- **Add low-fat or fat-free dairy** to oatmeal or pureed vegetable soups instead of water, and to smoothies or scrambled eggs.
- The nutrients in dairy are **important at every stage of life**. Include foods like low-fat or fat-free dairy milk or yogurt. Need an alternative? Try lactose-free dairy milk or yogurt that's low-fat or fat-free or fortified soy versions.
- Looking for a beverage? Grab a **glass of low-fat or fat-free milk or fortified soy milk** (soy beverage). Choose the unsweetened option.

Limit

Choose foods and beverages with less added sugars, saturated fat, and sodium

Tips for Less Added Sugars

- Choose **packaged foods that have less or no added sugars**, such as canned fruit packed in 100% juice for an easy snack, plain yogurt (you can add your own fruit), and unsweetened applesauce.
- Try chilled, **plain water or sparkling water with a squeeze of fruit** for a splash of flavor. Limit sugary beverages such as soda, lemonade, sports drinks, or fruit drinks.

Tips for Less Saturated Fat

- In place of foods higher in saturated fat, **look for foods like nuts, seeds, and fatty fish** like tuna, salmon, trout, and mackerel, which are high in unsaturated fats and a healthier choice.
- Choose **canola oil, olive oil, or other vegetable oils** for cooking.

Tips for Less Salt and Sodium

- Start simple by choosing foods with less sodium. **Check the Nutrition Facts label and choose foods with a lower percent (%) Daily Value (DV) for sodium** on the label, especially if a family member has high blood pressure, diabetes, or kidney disease.
- **Cook at home!** Preparing your own food puts you in control of how much sodium goes into your meals. Add flavor to foods with herbs, spices, lemon, lime, and vinegar instead of salt or seasonings high in sodium.

The Dietary Guidelines for Americans

Developed jointly by the U.S Department of Agriculture and U.S. Department of Health and Human Services, the *Dietary Guidelines for Americans* are the Nation's science-based guidance on how to eat for good health. The Guidelines encourage all Americans to start and maintain a healthy eating routine. Along with physical activity, improving what you eat can help you reduce your risk of chronic diseases, such as diabetes, heart disease, some cancers, and obesity. Taking the steps in this brochure will help you follow the *Dietary Guidelines*.

For more information:

MyPlate.gov

DietaryGuidelines.gov

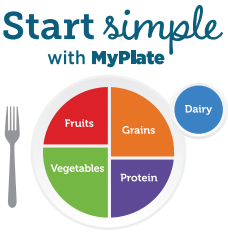
USDA

Food and Nutrition Service

USDA Publication number:
USDA-FNS-2020-2025-DGA-CP

December 2020

DietaryGuidelines.gov



Meal Planning

Healthy eating is important at every age. Eat a variety of fruits, vegetables, grains, protein foods, and dairy or fortified soy alternatives. When planning meals, choose options that are full of nutrients and limited in added sugars, saturated fat, and sodium. Start with these tips:

See what you have

Plan meals that use foods you already have. Look in your freezer, cabinets, and refrigerator, and be sure to check expiration dates.

Map out your meals

Write out the meals you plan to eat for the week and use it as a guide. Be sure to list beverages and snacks, too.

Find balance

Plan your meals so you eat from all five food groups—fruits, vegetables, grains, protein foods, and dairy or fortified soy products—every day. When planning, be aware of added sugars, saturated fat, and sodium by reading the Nutrition Facts label.

Think about your schedule

Prepare meals and sides—including whole grains, vegetables, and beans—on the weekends when you may have more time. This will help during busy weekdays.

Make a grocery list

Start by listing ingredients for the meals you plan to make and then cross off items you already have. Buying for the week can help you make fewer shopping trip.

Love your leftovers

Prepare enough of a dish to eat multiple times during the week or freeze some to enjoy later. Making leftovers part of your plan can save you time and money.

DGA Dietary Guidelines for Americans

Go to **MyPlate**.gov for more information.
USDA is an equal opportunity provider, employer, and lender.

The benefits of healthy eating add up over time, bite by bite.

FNS-905-24
March 2022

The Mediterranean Diet

The Mediterranean Diet: a Powerhouse of Health Benefits | Virginia Family Nutrition Program (eatsmartmovemoreva.org)

While the traditional Mediterranean diet centers around foods that can be found in countries that are located along the Mediterranean Sea, this dietary pattern can be adapted to be eaten anywhere and has been shown through research to be one of the healthiest eating patterns for overall health and wellness.

This diet's foundation includes an abundance of plant foods such as fruits and vegetables, whole grains, nuts and seeds, preferably minimally processed. Olive oil is used as the principal source of fat in the diet. Red meat is eaten rarely, and poultry and fish are the main sources of animal-based proteins, eaten several times a week. Fish can be an excellent source of healthy fats and is encouraged to be eaten twice a week. Nuts, seeds, beans, and legumes are usually eaten daily. Cheese and yogurt are also a staple eaten daily in low to moderate amounts. You may see that fresh fruit is often consumed for dessert and added sugars are consumed in small amounts, maybe a few times a week.

This diet is a little higher in fat than we would typically expect because of the use of nuts, seeds, fatty fish and olive oil. When using this diet for weight loss, we need to be mindful of energy consumption and portion management to help facilitate an energy deficit.

https://pubmed.ncbi.nlm.nih.gov/34423871/

https://www.health.harvard.edu/blog/a-practical-guide-to-the-mediterranean-diet-2019032116194

Mediterranean Living - Mediterranean Diet Meal Plan, Recipes, Cook Book

Sample menu:

Breakfast: whole grain bread topped with ricotta cheese, spinach, and tomatoes drizzled with olive oil and some salt

Lunch: chickpea salad with tomatoes, cucumbers, peppers, feta, parsley, olive oil, balsamic, and topped with chicken for more protein

Dinner: roasted pesto salmon, farro, and broccolini cooked in olive oil and topped with Parmigiano Reggiano cheese

Snacks: pita or veggies with hummus

The Mediterranean Diet

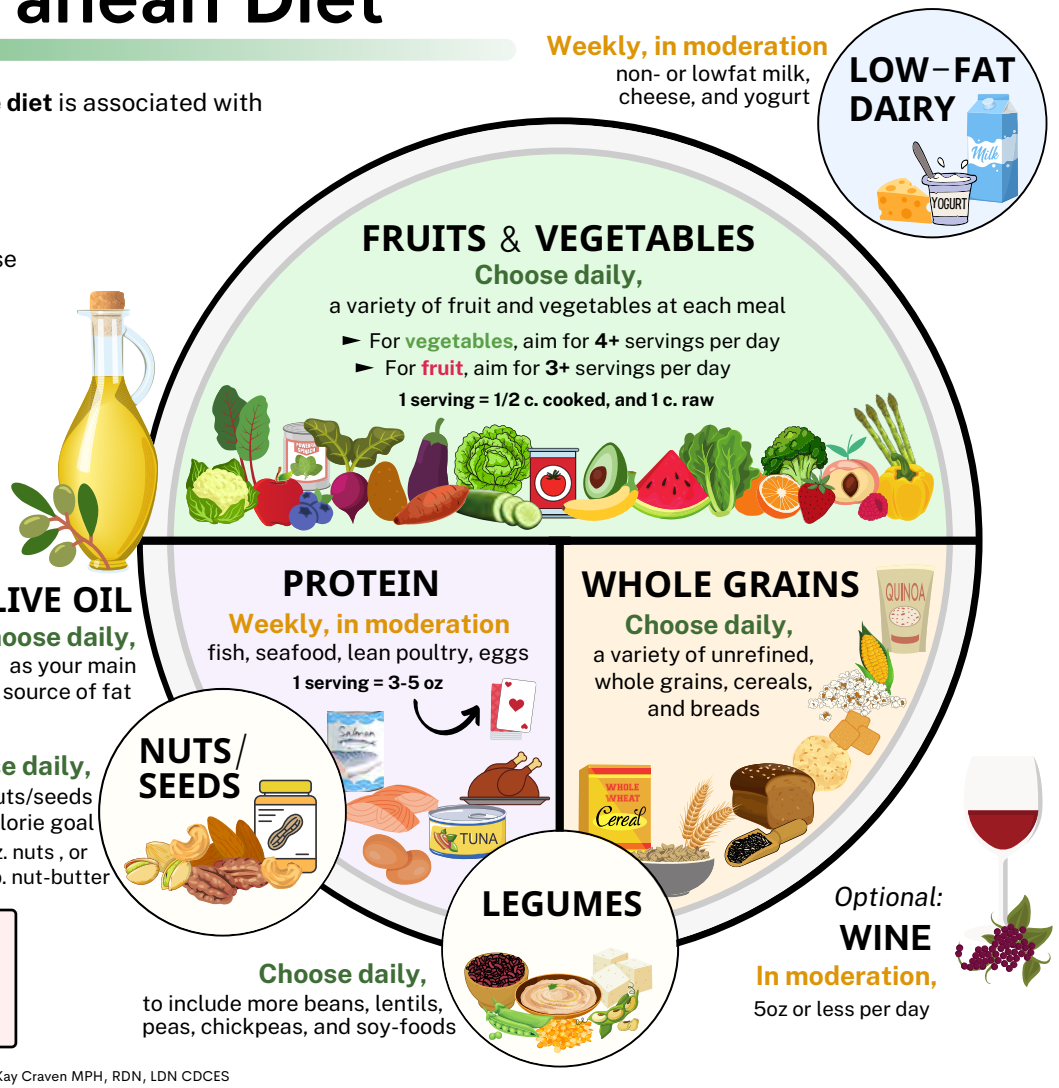
Following a **Mediterranean-style diet** is associated with reduced risk of...

- Heart disease and stroke
- Type 2 diabetes
- Non-alcoholic fatty liver disease
- Dementia and Alzheimer's disease
- Parkinson's Disease
- Arthritis

Building a MED-style Plate

1. **Build your meal** around vegetables, legumes, or whole grains
2. **Add protein.** Focus on more plant protein like legumes and nuts. Include fish, seafood, lean poultry and eggs a few times each week.
3. **Use olive oil** when cooking
4. **Have fruit** for dessert

Limit
- Red/processed meat
- Sweets
- Sugar-Sweetened Beverages



Developed by Brittany Smith MS, RDN, LDN; Kathryn Kolasa PhD, RDN; Kay Craven MPH, RDN, LDN CDCES
Department of Family Medicine, East Carolina University; January, 2022

6 Tips to Make Your Eating Pattern More Mediterranean

1. Eat more vegetables

- Choose vegetables often. They are low in calories and rich in fiber and antioxidants that reduce inflammation, support heart health, and promote a healthy weight.
- Get creative. **Can you include an extra veggie at every meal?**
  - Bulk up a soup, stew, or casserole with extra diced veggies
  - Add more vegetables in your sandwiches or wraps
  - Toss extra spinach in your eggs or soups
  - Try vegetable slices with hummus or nut-butters

- **Make the smart choice the easy choice** by keeping frozen, canned, or washed fresh vegetables on hand.
  - Save *money* on fresh by buying whole and prepping yourself
  - Save *time* on fresh by buying pre-washed, sliced, and packaged

2. Use fruit to satisfy a sweet tooth

- Choose fresh, frozen, canned in 100% juice or water, or dried fruits
  - Try a fruit cobbler with an oat/nut crumble. Top with a small amount of low-fat, vanilla yogurt!
  - Use frozen fruit to make a blended treat.
  - Use fruit to sweeten oatmeal, cereal, or yogurt.

- Save sweet treats for special occasions

3. Focus on fiber

- Include more high-fiber foods that promote satiety, support heart and gut health, improve glucose control, and support weight loss.
- Aim to make more of your grains whole. Look for...
  - Packages that say **"100% Whole Grain,"** or have "Whole Wheat" listed ***first*** in the ingredient list.
  - Grain products with **more than 3 grams of fiber** per serving. The goal for most people is *28 - 38 grams per day*.
  - Grain products with **less than 10g added sugars**

- Include a variety of whole grains.
  - Oats, quinoa, brown rice, corn, popcorn, farro, barley, whole gain pasta, 100% whole grain breads, crackers, cereals

4. Snack on nuts and seads

- Good source of unsaturated fats and fiber, which promote satiety, and support glucose control and heart health

- Include daily in amounts within your calorie budget
  - 1 serving is 1/2 to 1 oz per day and is about 100-200 calories
  - Choose nut butters with fewer added ingredients and avoid items that have been candied, honey-roasted, fried, or heavily-salted
- Pair with other nutritious foods. Add to salads, low-fat yogurt, cereals, soups/stews, vegetables or fruit.

5. Swap out your fats

- **Unsaturated fats** are anti-inflammatory and help improve insulin sensitivity and lower cholesterol, while **saturated-** and **trans-**fats promote inflammation, heart disease, and type 2 diabetes
  - **Choose more**: olive, canola, or peanut oil and fatty fish
  - **Choose less** butter, lard, margarine and animal fats

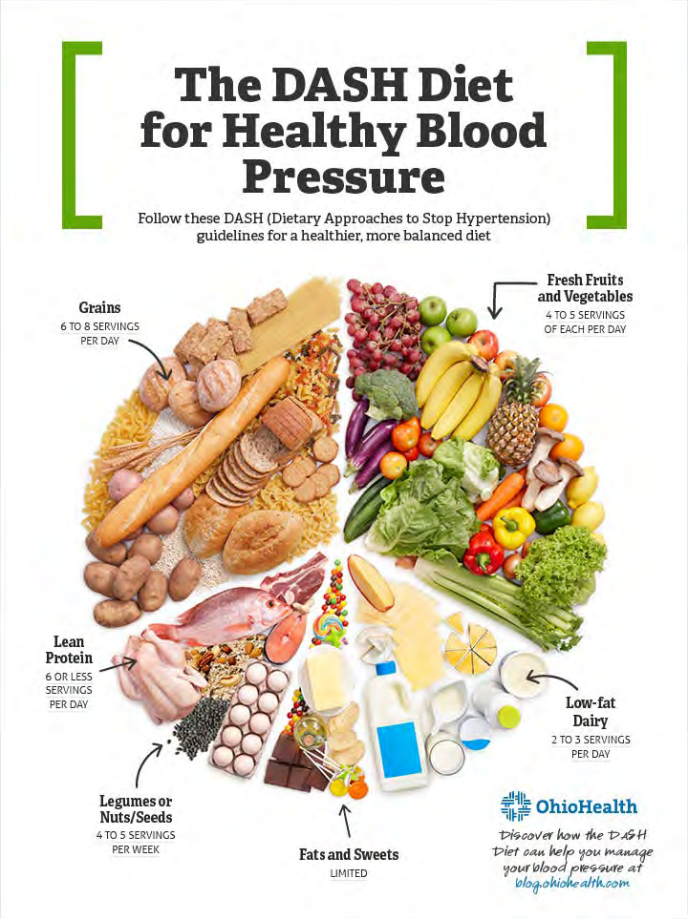
- Purchase more 'nonfat,' 'skim,' or 'low-fat' milks, yogurts, and cheeses
  - Use the Nutrition Facts label to guide food choices

6. Mix-up your protein

- Eat more **plant-based protein**.
  - Lentils, peas, beans, soy products, nuts, and seeds
  - Bulk up soups, stews, and salads with extra beans or peas
  - Use lentils in place of ground beef in tacos, burgers, or spaghetti
  - Try roasted chickpeas, edamame, hummus, or a bean dip
- *Weekly*, include fatty fish, seafood, lean poultry, and eggs

  - Limit portion size to 3-4 oz of fish or poultry per meal
  - Choose fresh, frozen or low-sodium canned/pouched fish such as tuna, salmon, sardines, mackerel, herring, or cod.
  - Bake, broil, grill, saute, steam, boil, cook in an Instant Pot/Multicooker, or use an air-fryer (hot-air, oil-free appliance). Limit frying.
- Include red and processed meat less often.

Developed by Brittany Smith MS, RDN, LDN; Kathryn Kolasa PhD, RDN; Kay Craven MPH, RDN, LDN CDCES
Department of Family Medicine, East Carolina University; January, 2022



Nearly half of the US population has high blood pressure. The DASH diet is an eating pattern that has been specifically researched and developed to help reduce blood pressure. This is a very heart healthy eating pattern that emphasizes intake of vegetables, fruits, and whole grains, and includes fish, poultry, beans, nuts, and healthy oils. It limits sources of saturated fats (such as fatty meat, full fat dairy, and tropical oils), added sugars and refined carbohydrates. This diet is also lower in sodium than the typical American diet (approx 2300mg per day or less). The foods emphasized by this dietary pattern have particular nutrients that have been shown to have an influence on heart health and blood pressure management such as potassium, phosphorus, calcium, and magnesium as well as fiber. For those patients who are at risk for HTN and heart disease, this can be a great fit. When using this diet as an option for weight loss, we need to be mindful of energy consumption and portion management to help facilitate an energy deficit.

Sample menu:

Breakfast: oats made with lowfat or fat free milk, with Tbsp of peanut butter and a banana

Lunch: chicken breast on whole grain wrap with spinach and tomato and lite mayo, cucumbers and carrots with hummus, and a cup of cantaloupe

Dinner: whole wheat pasta with tomato sauce, lean ground turkey, mixed greens salad with strawberries and oil and balsamic vinegar dressing

Snacks: almonds, greek yogurt (plain or zero sugar), raw veggies and greek yogurt dip

DASH EATING PLAN

Making the Move to DASH

HEALTHY EATING, PROVEN RESULTS

Moving to heart healthy eating may seem difficult, but it doesn't have to be. Here are some tips to make DASH work for you.

peas

bell pepper

squash

shrimp

chickpeas

Change gradually.

- If you now eat one or two servings of vegetables a day, add a serving at lunch and another at dinner.
- If you don't eat fruit now or have juice only at breakfast, add a serving of fruit to your meals or have it as a snack.
- Gradually increase your use of milk, yogurt, and cheese to three servings a day. For example, drink milk with lunch or dinner, instead of soda, sugar-sweetened tea, or alcohol.
- Choose fat-free or low-fat (1 percent) milk, yogurt, and reduced-fat cheese to reduce your intake of saturated fat, cholesterol, and calories and to increase your calcium.
- Read the Nutrition Facts label on frozen and prepared meals, pizza, and desserts to choose those lowest in saturated fat and *trans* fat.

Vary your proteins.

- Choose lean cuts of meat and remove skin from poultry.
- Check the labels on ground meats and poultry and select those with lower saturated fat.
- Serve fish instead of meat or poultry once or twice each week.
- Include two or more vegetarian (meatless) meals each week.
- Aim to fill ½ your plate with vegetables and fruits, ¼ with whole grains, and ¼ with fish, lean meat, poultry, or beans.
- Add extra vegetables to casseroles, pasta, and stir-fry dishes.

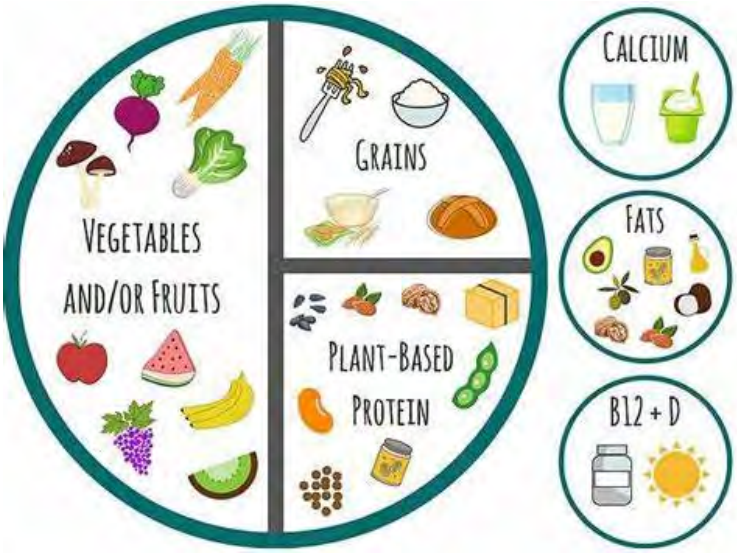
Select nutritious, tasty snacks.

- Fruits offer great taste and variety. Use fruits canned in their own juice or packed in water. Fresh fruits are fast and easy and dried fruits are a good choice to carry with you or to have in the car.
- Try these snack ideas: unsalted rice cakes; nuts mixed with raisins; graham crackers; fat-free and low-fat yogurt; popcorn with no salt or butter added; raw vegetables.

Make healthy substitutions.

- Choose whole grain foods for most grain servings to get more nutrients, such as minerals and fiber. For example, choose whole wheat bread or whole grain cereals.
- If you have trouble digesting milk and milk products, try taking lactase enzyme pills with the milk products. Or, buy lactose-free milk.
- If you are allergic to nuts, use beans or seeds (such as sunflower, flax, or sesame seeds).

Plant Based/Vegetarian/Vegan Eating Patterns



It is well established in literature that plants are extremely important to our overall health. Plant based diets can be implemented in many ways and are known to benefit our cardiovascular and digestive health and can also help reduce the risk of many different diseases. While the benefits of plant-based eating are well known, the food choices one makes on this eating pattern matter. We encourage emphasis on vegetables, fruits, beans, legumes, nuts, and whole grains (whole wheat, brown rice, quinoa, wild rice, etc) as well as plant-based heart healthy fats coming from things like olive oil, canola oil, nuts, seeds, avocados, etc. We encourage people to focus on whole, minimally processed food sources. This diet can look a little different for every person. This can be mostly plants with the addition of small amounts of animal products such as eggs, dairy, fish or meat (ie: The Flexitarian Diet). This can also be a "vegan" diet which does not include any animal products. To be sure patients are getting adequate nutrition from a vegan eating plan, it is recommended they see a registered dietitian as there are specific nutrients that are difficult to get from a vegan eating pattern. When using this diet as an option for weight loss, we again need to be mindful of energy consumption and portion management to help facilitate an energy deficit.

A Look at Plant-Based Diets - PMC (nih.gov)

Building a Healthy Vegetarian Diet: Myths and Facts (eatright.org)

What is the flexitarian diet, and should you do it? (medicalnewstoday.com)

Sample menu:

Breakfast: oats made with soy milk, berries, chopped pecans and 1 tsp honey

Lunch: lentil vegetable soup, whole grain crackers, mixed green salad with strawberries with feta cheese and oil and vinegar dressing

Dinner: grilled seasoned tofu with greek yogurt dill sauce, roasted broccoli, cauliflower and sweet potatoes, orange slices

Snack examples: cottage cheese and tomatoes, 1/4c cashews, apple with peanut butter, 2 hard boiled eggs

A vegan diet includes grains, vegetables, fruit, legumes (dried beans, peas and lentils), seeds and nuts. It excludes meat, fish, poultry, dairy and eggs and products containing these foods.

A healthy vegan diet has many health benefits including lower rates of obesity, heart disease, high blood pressure, high blood cholesterol, type 2 diabetes and certain types of cancer.

It may take planning to get enough protein, iron, zinc, calcium, vitamins D and B12 and omega-3 fats from foods or supplements. A healthy vegan diet can meet all your nutrient needs at any stage of life including when you are pregnant, breastfeeding or for older adults.

Steps You Can Take

Follow Canada's Food Guide to plan your meals and snacks. This will help make sure that your diet is healthy, well balanced and includes all the following nutrients:

Protein

Protein is important for building and keeping muscles and red blood cells healthy. It supports growth all through the life cycle. Sources of protein include:

- soy and soy products like tofu, tempeh and fortified soy beverages
- meat alternatives like textured vegetable protein (TVP) and veggie burgers
- dried beans (kidney, black and white beans), peas (chickpeas and black-eyed peas) and lentils (red, brown and green lentils)
- grains (quinoa, brown rice, bulgur and oatmeal)
- nuts, nut butters (hazelnuts and almond butter) and seeds (sesame and sunflower)
- peanuts and peanut butter.

Iron

Iron helps carry oxygen to different parts of the body. Vegans need about twice as much dietary iron as non-vegetarians because the iron from plant foods (non-heme iron) isn't as well absorbed as the iron from animal foods (heme iron). To meet these needs, vegans should choose iron-rich foods daily. Good sources of non-heme iron include:

- soy and soy products like firm or extra firm tofu, tempeh and fortified soy beverages
- meat alternatives like textured vegetable protein (TVP) and veggie burgers
- dried beans, peas and lentils like kidney, pinto and adzuki beans, chickpeas and black-eyed peas, and red, brown and green lentils
- fortified grain products (breads, cereals, and pasta)
- some nuts and seeds like cashews, almonds, pumpkin and sesame seeds
- prune juice and dried apricots
- vegetables like cooked spinach, kale and potatoes with their skins
- black strap molasses.

Iron from vegetarian sources is better absorbed when eaten with vitamin-C rich foods. Examples of vitamin C-rich foods include oranges and grapefruit and their juices, lemons, limes, kiwis, mangos, cantaloupe, potatoes, sweet peppers, broccoli, snow peas and some green leafy vegetables.

Vitamin B12

Vitamin B12 is important for making red blood cells and helping the body use fats. Good sources of vitamin B12 include:

- Red Star nutritional yeast
- fortified soy beverages and other fortified non-dairy beverages like rice and almond beverage
- fortified meat alternatives like TVP, veggie burgers and meatless chicken, fish and meatballs.

Vitamin D

Vitamin D helps the body to absorb and use calcium and phosphorus for strong bones and teeth. Good sources of vitamin D include:

- fortified soy beverages and other fortified non-dairy beverages like rice and almond beverage
- non-hydrogenated margarines.

Calcium

Calcium helps bones to grow and stay healthy. It also helps muscles to contract, including making the heart beat. Good sources of calcium include:

- soy yogurt, fortified soy beverages and other fortified non-dairy beverages like rice and almond beverage

- soybeans, navy beans, white beans and tofu prepared with calcium sulfate
- almonds
- sesame butter (tahini)
- blackstrap molasses
- some vegetables, such as bok choy, okra, collard greens and turnip greens
- some fruit, like figs and fortified orange juice.

Zinc

Zinc is needed for growth and development. It also helps strengthen the immune system and heal wounds. Good sources of zinc include:

- soy and soy products like tofu, tempeh and fortified soy beverages
- dried beans, peas and lentils
- some nuts like pecans and cashews and their butters like cashew butter
- peanuts and peanut butter
- pumpkin seeds and sesame seed butter (tahini)
- whole grains and fortified cereals.

Linolenic acid (omega-3 fat)

Omega-3 fats are important for eye, nerve and brain development and are helpful in preventing heart disease. Good sources of omega-3 fats include:

- oils like canola, flaxseed, walnut and soybean
- ground flaxseed
- soybeans, tofu and walnuts.

Special Considerations

Pregnant and breastfeeding women

Pregnant (including those planning to become pregnant) and breastfeeding women should follow Canada's Food Guide, with special attention to the nutrients above. If you are concerned that you are not getting enough of any nutrient, speak with your doctor or a dietitian.

All pregnant women should take a prenatal supplement that contains 400 micrograms (mcg) folate and 16-20 milligrams (mg) of iron. The supplement should also contain vitamin B12.

Older adults

If you are over the age of 50, it is important to get enough vitamin D, vitamin B12 and calcium. As you get older, your body absorbs vitamin D and vitamin B12 less effectively. For this reason, Canada's Food Guide states that you should take a vitamin D supplement of 400 IU each day. You should also get vitamin B12 from fortified foods (fortified soy products) or a supplement. Include three servings of milk alternatives each day to help meet your calcium needs. A daily multivitamin-mineral supplement will help meet these needs.

Low or Modified Carbohydrate

Limiting certain macronutrients can also help with reducing usual energy intake. In the case of modifying carbohydrate intake, we are also able to focus on the intake of lean protein and healthy fat in the diet which are highly satiating. This type of eating pattern can also be beneficial to help manage some disease states such as prediabetes, diabetes, and MAFLD. There are many variations of carbohydrate modification from the ketogenic diet (keeping carbs at about 20g per day), to a more liberal “low carb” lifestyle that allows for 50-100g of carbs, or a moderate carbohydrate diet that may provide up to 44% of calories from carbohydrate per day. For reference, a typical diet contains 45-65% of daily calories from carbs, which is between 225g and 325g of carbohydrates per day on a 2000 calorie diet.

When limiting carbohydrate intake, it is important that people understand that there are sources of carbohydrates that are healthy sources of energy. These are what they should focus on choosing with the allowance of carbohydrates they have. Examples would be whole grains, beans and legumes, nuts and seeds, fruit, and dairy products.

Low-Carbohydrate Diet - StatPearls - NCBI Bookshelf (nih.gov)

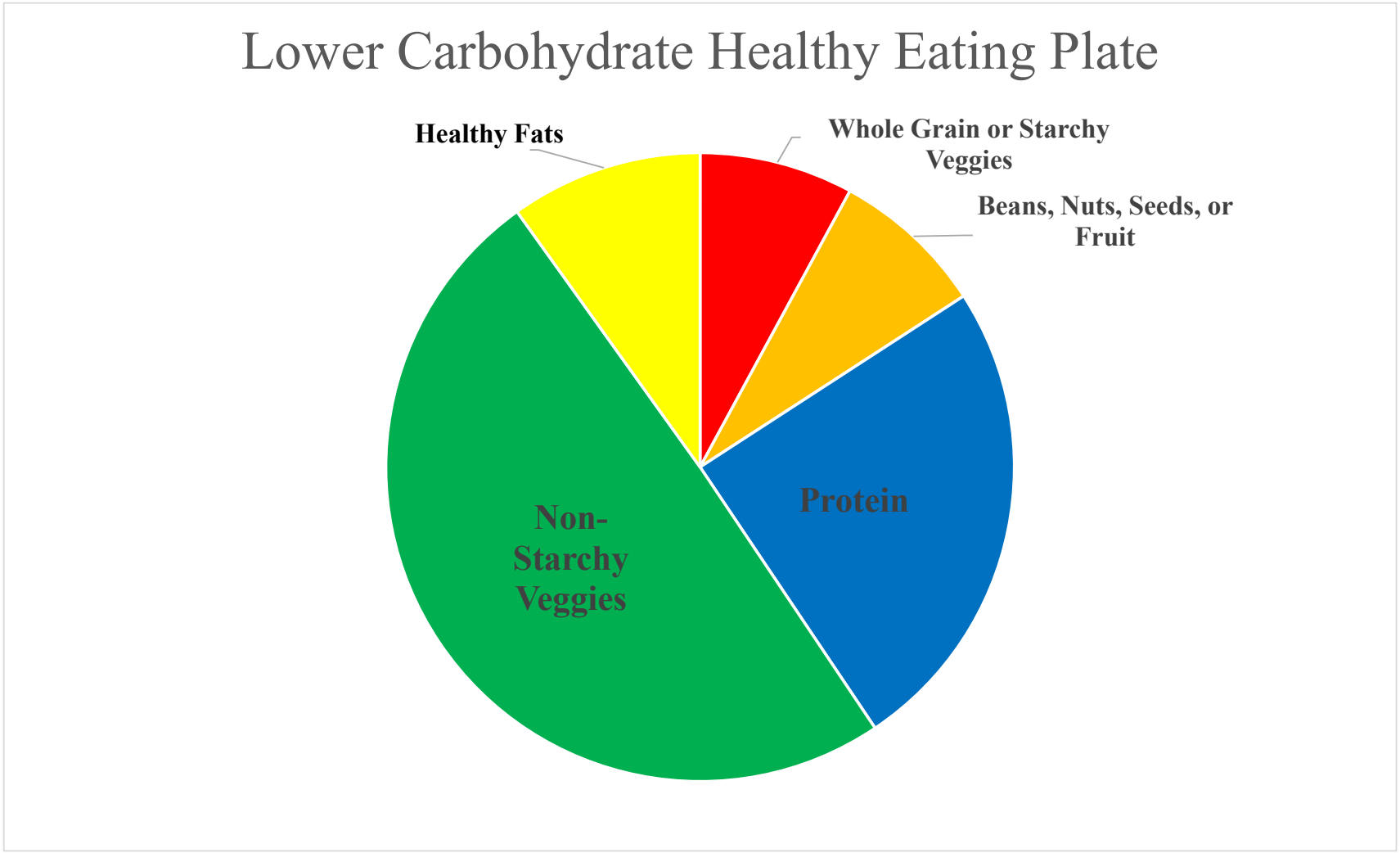
Sample Menu

Breakfast: 2 egg omelet with part skim mozzarella, peppers, onions, mushrooms, spinach cooked in olive oil

Lunch: 4-6oz grilled chicken salad with tomato, cucumbers, 1 avocado, feta and olive oil and vinegar dressing, 1c berries

Dinner: 4-6oz salmon, roasted broccoli with pine nuts, 1/3c wild rice

Snacks: turkey jerky, Greek yogurt or cottage cheese, caprese skewers, boiled egg



Are you trying to manage your diabetes more effectively or want a lower carbohydrate approach to weight management? Try meal planning with a lower carbohydrate healthy eating plate as your guide. This plate emphasizes intake of lean proteins, non-starchy vegetables, and healthy fats, with smaller amounts of high carbohydrate foods such as whole grains, starchy vegetables, and fruits. This could help keep your blood glucose under better control, may help with weight loss, and can also help improve your lipid levels.

Get your veggies! Make 1/2 of your plate non-starchy vegetables. These are high in nutrients and low in carbohydrates and calories. Generally, intake of these is not limited….you can't go wrong with these choices:

1 cup raw vegetables: carrots, celery, broccoli, cauliflower, tomatoes, snap peas, cucumbers, peppers, etc.

2 cups salad greens (the greener, the better!): spinach, romaine, kale, iceberg lettuce, butter lettuce, spring mix, etc.

1 cup cooked vegetables: green beans, broccoli, cauliflower, carrots, zucchini, yellow squash, asparagus, eggplant, spaghetti squash, bok choy, kale, spinach, radishes, onions, brussel sprouts, cabbage, mushrooms, etc.

Go Lean With Protein: Spread your protein throughout the day between meals and snacks. Try getting a variety of these high protein foods: (A serving size for a meal is about <u>3oz</u> or the size of a deck of cards or may be more depending on your needs; ¼ of your plate)

1oz lean meat (beef, pork, venison)

1oz skinless poultry (chicken, turkey)

1oz fish or seafood

1 egg or 1/4c egg beaters

¼ c nuts or seeds

1 Tbsp natural peanut butter

¼ c low fat cottage cheese **dairy foods contain some carbs but are good protein sources*

1oz of natural cheese

3oz light or plain Greek yogurt

1c unsweetened almond/cashew milk **with pea protein**

1c unsweetened soy milk

Watch your carbohydrates and choose healthy sources! Get a variety of fruit, whole grains, and starchy vegetables. Each serving has about 15g of carbohydrate. Stick to 1-2 servings total for a meal (and add 1 for a snack if it is in your plan)

Grains:

1 slice 100% whole grain bread

1/3 c brown rice or whole grain pasta

1/3 c cooked quinoa

½ c hot cereal (oats, cream of wheat, grits)

1 c cold cereal (<6g added sugar)

4-6 whole grain crackers

Starchy vegetables:

½ c potato, sweet potato, corn, peas, butternut squash, acorn squash, lima beans

½ c cooked beans or lentils (black beans, navy beans, great northern beans, black eyed peas, lentils/red lentils, etc.)

Fruit:

Small piece of fruit (size of a baseball): apple, orange, plum, nectarine, peach

½ c unsweetened canned fruit or frozen fruit

1 c berries or melon	½ cup cherries or fresh pineapple chunks
½ banana	15 grapes
2 clementines	½ a mango

Top it off with healthy fats! Fats add flavor to your food and essential nutrients that your body needs. *Mono and poly-unsaturated fats have the added bonus of being good for heart health! Think plant based fats like olive, canola, avocado, and other vegetable oils. Remember that tropical oils like coconut oil, palm oil, and palm kernel oil are plant based, but are *saturated* fats by nature.

1 tsp olive oil, canola oil, or other vegetable oils.

1 tsp margarine or butter; or blends of butter and olive or canola oil

1 Tbsp light margarine or butter or blends

1 Tbsp regular salad dressing

2 Tbsp reduced fat/calorie salad dressing

2 Tbsp avocado

1 Tbsp light mayo

Keys to Success:

Limit empty calories as much as possible (ie: excess added sugars and solid fats)

Watch sodium intake. Read package labels and choose those lower in sodium.

Aim to eat mostly whole foods if you can: fruits, vegetables, whole grains, lean animal protein or plant based protein sources, dairy (*without added sugars*), heart healthy monounsaturated or polyunsaturated oils, and good food sources of those oils (like nuts/olives/avocado)

Try to have a source of protein with each meal and snack.

Limit processed foods as much as possible (like processed "meats" such as pepperoni, sausage, bacon, bologna, hot dogs, etc., and packaged snack food items like cookies, potato chips, ritz crackers, bakery items, etc.) If you do buy packaged foods, try to make it something simple with whole food ingredients. Remember that frozen and canned fruits and veggies are *minimally* processed, and great sources of nutrients…just look for ones with no added sugars and salt in the ingredients.

When eating out, look for simple dishes and smaller portions. Many places already have menu labeling in place, so use that information to your advantage.

Eat regularly! Your body needs fuel to run. Above all, nourish your body first. You will have more energy to deal with your day if you put great fuel in the tank.

Summary of How the Dietary Patterns Differ

	Healthy	Diet			Low or Modified
	whole wheat toast with 2 eggs, 3/4 cup greek yogurt with berries	wheat toast with feta, spinach, and tomato scrambled eggs	whole wheat toast with scrambled egg whites, half of a grapefruit	whole wheat toast with avocado, cottage cheese, tomatoes	wheat toast and 2 egg omelet with part skim mozzarella, peppers, onions, mushrooms,
	salad with spinach, tomatoes, peppers, mozzarella cheese, croutons, white beans, and balsamic	with tomatoes, cucumbers, peppers, feta, parsley, olive oil, balsamic, and topped with chicken for more protein	chicken salad with strawberries, mixed greens, pecans, lite balsamic dressing	quinoa salad with tomatoes, snap peas, radishes, avocado, and red wine vinaigrette	salad with mixed greens, peppers, avocadoes, tomatoes, and balsamic dressing
	seared salmon with greek yogurt dill sauce, roasted cauliflower, 1 cup pasta salad	salmon, 1 cup farro salad, and broccolini cooked in olive oil and topped with Parmigiano Reggiano cheese	salmon seasoned with sodium-free lemon pepper seasoning, topped with fat free greek yogurt dill	seasoned tofu with greek yogurt dill sauce, roasted cauliflower, 1 cup pasta salad	seared salmon with greek yogurt dill sauce, roasted cauliflower, ½ cup pasta salad
			roasted cauliflower, fruit salad		
Snacks	pure protein bar, banana	pita or veggies with hummus, mini mozzarella cheese balls	almonds, greek yogurt (plain or zero sugar), raw veggies and greek yogurt dip	cottage cheese and tomatoes, 1/4c cashews, apple with peanut butter, 2 hard boiled eggs	turkey jerky, Greek yogurt or cottage cheese, caprese skewers, boiled egg

Meal Replacements

Meal replacement plans have been used for many years to help people facilitate weight loss. They come in many different forms and products and are an evidence-based approach that is noted to be very effective due to their convenience and simplicity.

A meal replacement diet involves replacing one or more meals with pre-packaged specially formulated food or drink products. You may associate these plans mainly with shakes or bars, but the fact is that any complete meal that is designed to be easy prep and portion controlled with specific nutrient compositions can be considered meal replacements. So, while we may think of products like Slim Fast, Shakeology, Ensure, and Boost, we should also be considering meals like Healthy Choice, Atkins, Factor, Tempo, Nutrisystem, Jennie Craig, and many others. Meal replacements can also be found in the form of treats we may usually think of as “occasional” foods such as cookies, bars, brownies, gummies, etc.

The biggest benefit to these products is that they provide consistency, structure, and are portion and calorie controlled. There is no real meal planning or prep. They can be used effectively to help patients limit caloric intake to create the energy deficit needed for weight loss without much

thought. Patients who need to lose weight quickly for a procedure or need a jump start with weight loss may benefit from this approach.

Meal replacement plans do have some drawbacks. They do not teach lifestyle skills and they are often more processed than we prefer. They are not a sustainable way of eating long term, and there should be a maintenance plan in place for reintroduction of grocery-based meals as weight goals are met. If embarking on a very low calorie diet (VLCD) of meal replacements (approx 800 Kcal/d), there needs to be close medical monitoring and regular team-based support.

We currently have available a highly fortified meal replacement shake product from Cornerstone for our patients. They receive a discount on purchases with our discount code.

We also have information available on multiple commercial shakes and powders and have a list of ready-made frozen meals that can be utilized as meal replacements. We find that most people want to use some of these products to replace one or two meals a day rather than doing a full plan. This is more flexible and allows them to have family meals and enjoy social engagements while controlling overall intake. Our dietitians can help patients design a plan that is right for them. Here are a few meal options, among the many that can be used. Attached we also have a list of protein shakes and powders that can also be part of a meal replacement plan.

The Effect of Meal Replacement on Weight Loss According to Calorie-Restriction Type and Proportion of Energy Intake: A Systematic Review and Meta-Analysis of Randomized Controlled Trials - Journal of the Academy of Nutrition and Dietetics (jandonline.org)

Cornerstone Wellness MD

Prepared Meal Delivery | Factor (factor75.com)

Try Tempo (tempomeals.com)

Power Bowls | Healthy Choice

Balanced Meals - Simply Steamers | Healthy Choice

MEAL REPLACEMENT COMPARISON

MEAL REPLACEMENT	PROTEIN SOURCE	CAL	PROTEIN GRAM	CARB GRAM	PROT CARB	ARTIFICIAL INGRED.	% RDA VITAMINS	VIT D3 IU	TRACE MINERALS	MCT	COST GRAM/PROT	COST MEAL	PHYSICIAN ONLY
CORNERSTONE	WHEY PEA	150	23 (31)	7.8	3	NO	50-400%	800	YES	YES	0.10	$2.20	YES
OPTIFAST	CASEIN	160	14	20	0.7	YES (SOYBEAN OIL)	20-30%	50	NO	NO	0.21	$3.00	YES
MEDIFAST	SOY MILK SOLIDS	90	11	13	0.9	YES (HFCS)	20-35%	60	NO	NO	0.19	$2.07	NO
METAGENICS ULTRA MEAL PLUS 360	SOY	160	15	24	0.6	NO	50-400%	40	NO	NO	0.22	$3.36	NO
HMR 500	MILK SOLIDS EGG	120	10	16	0.6	YES (SACHARIN)	30-35%	40	NO	NO	0.22	$2.43	NO
NUTRIMED (ROBARD)	CASEIN SOY	100	15	8	2.1	YES (TRANS FAT)	20-30%	40	NO	NO	0.16	$2.40	YES
HERBALIFE	SOY WHEY	90	9	13	0.7	YES	25%	40	NO	YES	0.13	$1.20	NO
SLIMFAST	MILK SOLIDS	110	10	18	0.6	YES	25-35%	90	NO	NO	0.17	$1.65	NO

SUPERIOR INFERIOR

WVU MEDICINE
MEDICAL WEIGHT
MANAGEMENT CLINIC

Medical & Surgical
Weight Loss Center

Protein Shake Considerations

- If consumed as a **meal replacement**:
  - Aim for 200-300 Kcal, 20-30g protein, </=7g added sugar, mostly unsaturated fats, and 20% DV of most vitamins and minerals
- If consumed as a **snack**:
  - Aim for 100-200 Kcal, 15-30g protein, </=7g added sugar, and mostly unsaturated fats, if possible
- Include the nutrition facts of protein powder mix ins
- Also consider cost, taste, and tolerance

	**Premier Protein,** Ready-to-Drink, 11 oz Carton 30g protein/160Kcal/1g sugar Variety of flavors. Contains lactose. Gluten free.
	**Premier Protein,** Powder, 41g/2 Scoops 30g protein/150Kcal/1g sugar Variety of flavors. Contains lactose. Gluten free.
	**Pure Protein**, Ready-to-Drink, 11 oz Carton 30g protein/140-160Kcal/<1g sugar Variety of flavors. Contains lactose.
	**Pure Protein,** Powder, 41.2g/1 Scoop 25g protein/160Kcal/2g sugar Variety of flavors. Contains lactose.

WVU-MWM DOES NOT ENDORSE OR RECOMMEND PRODUCTS. NUTRITIONAL LABELS MAY VARY. READ BEFORE CONSUMING PRODUCTS. "COOKIES & CREAM" FLAVORED PRODUCTS ARE NOT GLUTEN FREE.

	**Quest**, Ready-to-Drink, 11 oz Carton 30g protein/160-170Kcal/1g sugar Variety of flavors. Contains lactose. Gluten free.
	**Quest Protein**, Powder, 31g/1 Scoop 24g protein/110Kcal/1g sugar Variety of flavors. Contains lactose. Gluten free.
	**Ensure Max Protein**, Ready-to-Drink, 11 oz Carton 30g protein/150Kcal/1g sugar Variety of flavors. Lactose free. Gluten free.
	**Fairlife Nutritional Plan**, Ready-to-Drink, 11.5 oz Bottle 30g protein/150Kcal/2g sugar Variety of flavors. Lactose free. Gluten free.
	**Fairlife Core Power**, Ready-to-Drink, 11.5-14 oz Bottle 26-42g protein/170-230Kcal/5-8g sugar Variety of flavors. Lactose free. Gluten free.
	**Muscle Milk Zero Sugar**, Ready-to-Drink, 14 oz Bottle 26g protein/160Kcal/0g sugar Variety of flavors. Lactose free. Gluten free. Soy free.
	**Elevation Whey Protein Blend**, Powder, 49g/1 Scoop 30g protein/170Kcal/2g sugar Vanilla. Contains lactose. Gluten free.

WVU-MWM DOES NOT ENDORSE OR RECOMMEND PRODUCTS. NUTRITIONAL LABELS MAY VARY. READ BEFORE CONSUMING PRODUCTS. "COOKIES & CREAM" FLAVORS ARE NOT GLUTEN FREE.

	**Isopure Zero Carb**, Powder, 31g/1 Scoop 25g protein/110Kcal/0g sugar Variety of flavors. Contains lactose. Gluten free.
	**Equate High Performance**, Ready-to-Drink, 11 oz Carton 30g protein/160Kcal/1g sugar Variety of flavors. Contains lactose. Gluten free.
	**OWYN Elite Pro**, Ready-to-Drink, 11.15 oz Carton 32g protein/200Kcal/0g sugar Variety of flavors. **Vegan**. Lactose free. Gluten free.
	**Ripple**, Ready-to-Drink, 12 oz Carton 20g protein/200Kcal/9g sugar Variety of flavors. **Vegan**. Lactose free. Gluten free.
	**Orgain**, Ready-to-Drink, 11 oz Carton 20g protein/140Kcal/0g sugar Variety of flavors. **Vegan**. Lactose free. Gluten free. Soy free.
	**Isopure Infusions**, Powder, 25g/1 Scoop 20g protein/90Kcal/1g sugar Variety of flavors. Add to water for refreshingly light fruit flavor. Gluten free.

*A note about sweeteners: Stevia, monk fruit, cane sugar, and agave are natural sweeteners. Most protein drinks are sweetened by a combination of artificial sweeteners, sucralose, and sugar alcohols (usually ends in “ol”). Some sugar alcohols can cause gastrointestinal (GI) upset. Erythritol is naturally found and generally does not cause GI issues.

WVU-MWM DOES NOT ENDORSE OR RECOMMEND PRODUCTS. NUTRITIONAL LABELS MAY VARY. READ BEFORE CONSUMING PRODUCTS. “COOKIES & CREAM” FLAVORS ARE NOT GLUTEN FREE.

Meal Timing

While the timing of meals has not been shown to facilitate significant weight loss, it has been shown to help people manage their hunger and appetite more effectively. Eating more calories earlier in the day at regular intervals helps fuel the body and manage hunger. Many people tend to skip meals during the day which sets them up for overeating at night. Once severe hunger kicks in, it is very difficult to make mindful healthy choices. Eating late in the evening can also lead to issues with reflux and can interfere with sleep. Encouraging patients to fuel their daily activity rather than fuel their sleep can be an effective way to help them make healthy choices.

Intermittent fasting is another form of meal timing that can be helpful to some people. While IF has not been shown to be more effective for weight loss than caloric restriction, it can help people manage their meal and snack timing to avoid excessive intake at certain times of day. This can also be a good option for those who find it difficult to adhere to calorie restriction. By avoiding intake during certain hours of the day, most will end up eating less and weight loss can

result. It is also a good way to set boundaries for people who have difficulty with night time snacking. Fasting protocols can vary. Here are examples:

Time restricted feeding (eating within a certain window of time). This timing can vary

16:8 is allowing for 16 hours of fasting and an 8 hour eating window (eating 11am-7pm)

12:12 is allowing for 12 hours of fasting and a 12 hour eating window (eating 8am-8pm)

Alternate day fasting: eating freely one day and alternating with a fasting day of <500 calories

5:2 fasting: Eating freely 5 days a week and fasting 2 days a week (<500 calories)

A scoping review of intermittent fasting, chronobiology, and metabolism - The American Journal of Clinical Nutrition

Nutrient rich food intake should be encouraged. We also need to be very aware of patients who may have a history of disordered eating behaviors (such as bingeing and restricting) as this eating pattern could trigger these patterns to return or continue.

For alternate day or 5:2 fasting:

Fasting day:

Goal of 500 cal per day

Beverages: clack coffee, tea, water, clear broth. No alcohol

No added sugar or substitutes

Light exercise

Aim for 8h sleep

Sample 500 cal day:

breakfast and lunch: coffee or tea, broth

snack: (100 calories) nuts, celery and peanut butter, or boiled egg

meal: (400 calories): salmon, asparagus spears, tomatoes

Non fasting days:

No calorie counting

General healthy eating plate guidelines, limiting added sugars, solid fats and focusing on whole foods; limit alcohol

Can do structured exercise

Protein and Weight Loss

Our patient population has often been through multiple successful weight loss attempts that have resulted in eventual weight regain. When body mass is lost in weight reduction, both lean mass and fat mass are lost ("lean mass" is the sum of skeletal muscle, water, bones, organs, and other body tissues). With repeated cycles of weight loss and regain, there can be changes in body composition which could put metabolic health at risk, especially if weight regained is made up mostly of adipose tissue. At particular risk are our older patients that may already be experiencing age related loss of muscle mass and strength in addition to their obesity resulting in sarcopenic obesity which is strongly associated with cardiometabolic dysfunctions and physical disability.

Not only does protein help keep us full and satisfied, but it is important to help lose fat while retaining lean mass. A higher lean mass can help maintain metabolic rate while losing weight, increasing the chances of continual weight loss and long-term weight management. A high protein diet has been shown to help mitigate loss of lean mass better than traditional diets alone and our dietitians can help our patients set individualized goals for protein intake (as this is based on a variety of factors such as body size and medical diagnoses). A very general rule of thumb is for most patients to aim for 25-30g of protein per meal 3x/day and possibly additional sources in healthy snacks. A healthy combination of plant and lean animal based sources can be utilized; all foods contain some protein except for fat and fruit! In addition to a high protein diet, we also encourage incorporation of strength training activities. It is important to note that there is not a one size fits all approach to strength training, and our patients may have different limitations for activity. Recommendations are tailored to their abilities and access. Please see the "Movement Pillar" for detailed information about physical activity.

Dietary Protein and Muscle Mass: Translating Science to Application and Health Benefit - PMC (nih.gov)

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PROTEIN CONTENT OF COMMON FOODS

	Portion Size	Grams of Protein
Meats, Poultry, and Fish		
Beef/Turkey Jerky	1 oz dried	10-15
Beef, Chicken, Turkey, Pork, Lamb	1 oz	7
Fish, Tuna Fish	1 oz	7
Imitation Crab Meat	1 oz	3
Seafood (Crabmeat, Shrimp, Lobster)	1 oz	6
Egg	1	6
Soy and Vegetable Protein		
Soy milk	8 oz	7
Edamame, fresh or frozen	½ cup	8
Edamame, dry roasted	1 oz	13
Tofu	1 oz	3
Legumes and Nuts		
Lentils	½ cup	9
Lima beans	½ cup	7
Kidney, Black, Navy, Cannellini beans	½ cup	8
Refried beans	½ cup	6
Hummus	⅓ cup	7
Chili with beans, drained	½ cup	10
Peanut butter	2 Tbsp	7
Nuts	1 oz (¼ cup)	4-6
Sunflower seeds	1 oz	5
Almond milk	8 oz	1
Milk and Dairy		
Milk, skim or 1%	8 oz	8
High protein ultra-filtered milk, fat free or 1%	8 oz	13
Yogurt, fat free, light	6 oz	5
Greek yogurt, plain, nonfat, light	5 oz	12-18
Cheese, hard (low fat)	1 oz	7
American cheese (low fat)	1 slice (0.7oz)	5
Cottage cheese, Ricotta (part skim)	½ cup	14
Sugar free pudding, made with milk	½ cup	4

	Portion Size	Grams of Protein
Grains		
Bread	1 oz slice	3
Cereal	½ cup hot ¾ cup cold	3
High protein cereals	¾-1⅓ cup	7-15
Rice, Pasta	⅓ cup	3
Quinoa	⅓ cup	6
Vegetables		
Fresh, frozen, canned	½ cup, 1 cup raw leafy greens	2
Fruit		
Fresh or canned fruit in 100% juice	1 small, ½ cup	0

The amount of protein in each food listed above is an average. Protein content of foods may vary slightly depending on manufacturer.

In general, 2 Tablespoons (Tbsp) or a portion of poultry, beef, pork or fish the size of 1/3 of a deck of cards would equal 1 ounce (oz) and provide about 7 grams of protein. A whole deck of cards would equal 3 ounces and provide about 21 grams of protein.

Visit the Johns Hopkins Center for Bariatric Surgery website for an electronic version of this handout and others.
https://www.hopkinsmedicine.org/bariatrics/nutrition-resources.html

For more information, please contact your Nutrition Department:
Johns Hopkins Bayview Medical Center Clinical Nutrition Department at 410-550-0311
Sibley Center for Weight Loss Surgery Outpatient Nutrition at 202-243-2349

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Clinical Nutrition


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once weekly

The American Journal of CLINICAL NUTRITION

journal homepage: https://ajcn.nutrition.org/

From the Society

Nutritional priorities to support GLP-1 therapy for obesity: a joint Advisory from the American College of Lifestyle Medicine, the American Society for Nutrition, the Obesity Medicine Association, and The Obesity Society

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A B S T R A C T

Background: Glucagon-like peptide 1 receptor agonists and combination medications (hereafter collectively referred to as GLP-1s) are shifting the treatment landscape for obesity. However, real-world challenges and limited clinician and public knowledge on nutritional and lifestyle interventions can limit GLP-1 efficacy, equitable results, and cost-effectiveness.

Objectives: We aimed to identify pragmatic priorities for nutrition and other lifestyle interventions relevant to GLP-1 treatment of obesity for the practicing clinician.

Methods: An expert group comprising multiple clinical and research disciplines appraised the scientific literature, informed by expert knowledge and clinical experience, to identify and summarize relevant topics, priorities, and emerging directions.

Results: GLP-1s reduce body weight by 5% to 18% in trials, with modestly lower effects in real-world analyses, and multiple demonstrated clinical benefits. Challenges include side effects, especially gastrointestinal; nutritional deficiencies due to calorie reduction; muscle and bone loss; low long-term adherence with subsequent weight regain; and high costs with resulting low cost-effectiveness. Numerous practice guidelines recommend multicomponent, evidence-based nutritional and behavioral therapy for adults with obesity, but use of such therapies with GLP-1s is not widespread. Priorities to address this include: (a) patient-centered initiation of GLP-1s, including goals for weight reduction and health; (b) baseline screening, including usual dietary habits, emotional triggers, disordered eating, and relevant medical conditions; (c) comprehensive exam including muscle strength, function, and body composition assessment; (d) social determinants of health screening; (e) and lifestyle assessment including aerobic activity, strength training, sleep,

Abbreviations: BIA, bioelectrical impedance analysis; BMI, body mass index; DXA, dual-energy X-ray absorptiometry; FDA, Food and Drug Administration; FIM, Food is Medicine; GI, gastrointestinal; GLP-1s, glucagon-like peptide 1 receptor agonists; GMV, group medical visits; MNT, medical nutrition therapy; RDN, registered dietitian nutritionist.

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mental stress, substance use, and social connections. During GLP-1 use, nutritional and medical management of gastrointestinal side effects is critical, as is navigating altered dietary preferences and intakes, preventing nutrient deficiencies, preserving muscle and bone mass through resistance training and appropriate diet, and complementary lifestyle interventions. Supportive strategies include group-based visits, registered dietitian nutritionist counseling, telehealth and digital platforms, and Food is Medicine interventions. Drug access, food and nutrition insecurity, and nutrition and culinary knowledge influence equitable obesity management with GLP-1s. Emerging areas for more study include dietary modulation of endogenous GLP-1, strategies to improve compliance, nutritional priorities for weight maintenance post-cessation, combination or staged intensive lifestyle management, and diagnostic criteria for clinical obesity.

Conclusions: Evidence-based nutritional and lifestyle strategies play a pivotal role to address key challenges around GLP-1 treatment of obesity, making clinicians more effective in advancing their patients' health.

Keywords: obesity, glucagon-like peptide 1 receptor agonists, nutrition, lifestyle, clinical care

Introduction

With high and rising rates of adiposity and related morbidity, mortality, and healthcare expenditures, recently approved glucagon-like peptide 1 receptor agonists and related combination obesity medications are shifting the treatment landscape (we collectively refer to these as "GLP-1s" given this common practical usage by clinicians, policymakers, and the public; we acknowledge the lack of any widely accepted terminology to describe this new class of obesity medications. In randomized trials, GLP-1s produce placebo-adjusted weight reduction of 5% to 18% among individuals with obesity or overweight and weight-related complications. This efficacy has generated enormous attention and utilization [1]. In 2024, 6% of United States (US) adults report current GLP-1 use, and 12% report current or past use—rising to 22% among individuals told by a clinician that they have overweight or obesity [2].

Despite the efficacy and growing utilization of these medications, real-world challenges are increasingly evident [3]. These include gastrointestinal (GI) side effects; risk of inadequate nutrient intake from reduced food intake combined with insufficient nutritional counseling; potential loss of significant muscle mass and bone density [4]; high discontinuation rates (e.g., 50%–67% at 1 y and 85% at 2 y [5–8]) that may relate to side effects, costs, variable individual efficacy, or patient preferences [5,9]; and limited public and clinician knowledge on the importance and implementation of complementary nutritional and lifestyle changes.

All these challenges may be partially mitigated by an evidence-based, structured lifestyle program, particularly around food, when prescribing GLP-1s for obesity. However, practical guidance for clinicians to implement such an approach is limited. This Advisory combines expertise across clinical and research societies focused on obesity, lifestyle, and nutrition to provide such guidance. It addresses current topics of interest among patients and clinicians, summarizes uncertainties, and highlights future research directions. Although the general focus is on the US context, the recommendations have implications for use of GLP-1s for obesity management globally.

Overview of Efficacy, Side Effects, and Key Challenges

GLP-1 receptor agonists such as semaglutide and liraglutide, as well as combination agents like tirzepatide (which adds glucose-dependent insulinotropic polypeptide receptor agonism)—all hereafter referred to as GLP-1s for brevity—are effective new agents for obesity treatment which demonstrate weight reduction, weight maintenance, and reduced morbidity and mortality. These medications are approved by the Food and Drug Administration (FDA) for the treatment of obesity or overweight with weight-related comorbidities. Semaglutide and liraglutide are indicated for adults or youth aged ≥12 y and tirzepatide for adults aged ≥18 y [10–12]. GLP-1s for obesity have additional FDA-approved indications for cardiovascular disease risk reduction (semaglutide) and obstructive sleep apnea (tirzepatide). GLP-1s are separately approved for type 2 diabetes and chronic kidney disease, which are not the focus of this Advisory.

Efficacy

In the original phase 3 randomized trials for obesity, average weight reduction compared to placebo has ranged from 5.3% to 17.8% after 56 to 72 wk (Table 1), with improvements in several obesity-related risks and complications [13–15]. In real-world practice, the efficacy for weight reduction is often lower, for example, about 8% for individuals with diabetes and 11% for individuals without diabetes at 60 wk with semaglutide 2.4 mg/d [4]. Generally, weight reduction is more rapid during the first 6 mo and slows thereafter, with relative plateauing at 18 mo [13–15]. When GLP-1 use is continued, weight reduction is sustained for at least 4 y in controlled and observational studies [16,17].

When GLP-1s are discontinued, weight regain is common—with up to two-thirds of the lost weight regained within 1 y [18–20]. Notably, this has been observed even with accompanying use of conventional nutritional counseling and/or behavioral therapy [18,19]. The potential for more robust, structured nutrition and lifestyle therapy to mitigate weight gain after GLP-1 cessation has not been studied in controlled trials.

Although these findings describe the average response, individual responses can vary widely, highlighting the complexity of obesity as a disease. Some people experience minimal weight reduction with GLP-1s, whereas others have robust weight reductions of ≥30%. In multivariate analyses, factors predicting larger responses with tirzepatide include female sex (2.4 higher odds of achieving a 20% weight reduction), lower baseline hemoglobin A1c (1.62 higher odds), no diagnosed hypertension (1.35 higher odds), and lower ALT (1.17 higher odds) [21]; and in univariate (crude) analyses with semaglutide, female sex (48% greater weight loss in kilograms), younger age (24% greater for age <55 vs. ≥75 y), and higher baseline BMI (23% greater for ≥40 vs. <30 kg/m^2) [16].

Demonstrated clinical benefits of GLP-1s include improved cardiometabolic risks, fewer major adverse cardiovascular events [22], decreased mortality in heart failure [23–27], and improvements in obstructive sleep apnea [11,28], prediabetes [29,30], chronic kidney disease [31], knee osteoarthritis [32], substance use disorders [33], and metabolic-associated steatotic liver disease [34]. Trials have been conducted for other outcomes, such as breast cancer and neurodegenerative disorders [35–37]. Although many of these benefits are weight-dependent, others appear at least partly weight-independent. For example, hemoglobin A1c reduction can occur without weight change, and reduced risk of cardiovascular events appears to emerge before substantial weight reduction [38,39].

TABLE 1
Efficacy and outcomes at 52 wk of GLP-1 therapy[1] in the landmark industry-sponsored randomized controlled trials.

Medication	Mean intervention weight reduction	Mean placebo weight reduction	Mean placebo-adjusted GLP-1 effect	Metabolic risk and health outcomes improved	Key exclusion criteria
Liraglutide 3.0 mg/wk[2]	7.9%	2.6%	5.3%	Glycemic control (glycated hemoglobin, fasting glucose, fasting insulin), systolic and diastolic blood pressure, cholesterol (total, LDL, HDL, VLDL, non-HDL), triglycerides, free fatty acids, health-related quality of life	Type 1 or 2 diabetes Use of medications that cause clinically significant weight gain or loss Previous bariatric surgery Personal history of pancreatitis; major depressive or other severe psychiatric disorders Personal or family history of multiple endocrine neoplasia type 2 or familial medullary thyroid carcinoma
Semaglutide 2.4 mg/wk [3]	14.9%	2.4%	12.4%	Waist circumference, systolic blood pressure, physical functioning scores	History of type 1 or type 2 diabetes mellitus Glycated hemoglobin ≥6.5% Personal history of chronic pancreatitis, acute pancreatitis within 180 d before enrollment Previous surgical treatment for obesity Treatment with a medication that promotes weight loss within 90 d before enrollment
Tirzepatide 5 mg/wk [4]	15.0%	3.1%	11.9%	Waist circumference, systolic and diastolic blood pressure, physical functioning scores, triglycerides, cholesterol (total, LDL, VLDL, HDL, non-HDL), free fatty acids, fasting insulin	History of type 1 or type 2 diabetes mellitus Change in body weight >5 kg within 90 d before screening Previous or planned surgical treatment for obesity Treatment with a medication that promotes weight loss within 90 d before screening
Tirzepatide 10 mg/wk [4]	19.5%	3.1%	16.4%	As above	As above
Tirzepatide 15 mg/wk [4]	20.9%	3.1%	17.8%	As above	As above

[1] Includes tirzepatide, which combines GLP-1 agonism with glucose-dependent insulinotropic polypeptide receptor agonism.
[2] Data from reference [13], primary outcomes at 56 wk.
[3] Data from reference [14], primary outcomes at 68 wk.
[4] Data from reference [15], primary outcomes at 72 wk.

Side effects

Side effects are relatively common but usually not severe. These are more likely to occur within the first weeks of initiation of therapy and with dose escalation. Side effects tend to decrease in frequency and severity with continuation of a stable dose [40]. GI side effects are most frequent and include nausea (25%–44%), diarrhea (19%–30%), vomiting (8%–24%), constipation (17%–24%), and abdominal pain (9%–20%) [41–46]. Although certain side effects have been reported more commonly with semaglutide than with tirzepatide, trial data suggest that such differences may be a reflection of variation in background (i.e., placebo group) rates in the enrolled trial populations, with the proportional increase in many side effects when compared to placebo being similar for the 2 agents (Table 2). Emerging therapies, such as dual and triple receptor agonists targeting GLP-1, glucose-dependent insulinotropic polypeptide (GIP), and glucagon pathways, aim to improve efficacy while reducing GI side effects [44]. Real-world experience has largely mirrored these trial data, with GI issues (nausea, diarrhea, vomiting, constipation) being the most frequently reported side effects [47,48].

In the trials, GI symptoms rarely led to discontinuation, with <10% of participants stopping therapy due to GI issues [49]. Fewer data are available on the impact of GI side effects on adherence in clinical practice. Combining GLP-1s with metformin does not appear to worsen GI side effects, despite metformin's association with similar symptoms [50].

Underlying causes of these GI symptoms appear varied. GLP-1s delay gastric emptying, leading to bloating, fullness, and nausea [43]. GLP-1s activate several brain regions responsible for weight regulation, appetite, and nausea [51]. Occasionally, GLP-1s affect intestinal motility or secretions, contributing to diarrhea [46]. Higher doses are more likely to provoke these adverse symptoms, indicating a dose-dependent relationship [40].

Less common side effects included dyspepsia, fatigue, headache, eructation (belching), hair loss, gastroesophageal reflux, dizziness, and gastritis (Table 2). Hypoglycemia can occur in individuals with type 2 diabetes, especially when they are consuming insulin or insulin secretagogues such as sulfonylureas [12,41]. Rare side effects include gallbladder disease, pancreatitis, acute kidney injury (typically related to hypovolemia), hypersensitivity reactions, and gastroparesis [12,41]. Ophthalmic complications have been rarely reported, which could relate to direct toxicity or rapid GLP-1-correction of hyperglycemia [52]. Rare cases of suicidality have been reported, although preliminary evaluation using the FDA Adverse Reporting System, post hoc analysis of the STEP clinical trials, and 1 large cohort study have not confirmed any definitive link; the FDA and European Agencies are monitoring potential risk [53–55].

Nutritional deficiencies

Individuals using GLP-1s to treat obesity experience significant reductions in appetite and energy intake, with observed caloric reductions of 16%–39% [56]. This large, rapid reduction can lead to insufficient intakes of essential vitamins and minerals, especially at energy intakes <1200 kcal/d for females and <1800 kcal/d for males [57]. Examples nutrients of concern include iron, calcium, magnesium,

TABLE 2
Common side effects reported in semaglutide and tirzepatide trials for obesity[1].

Side effect	Semaglutide 2.4 mg group (%)	Placebo group (%)	Tirzepatide 15 mg group (%)	Placebo group (%)
Nausea	44	16	28	8
Diarrhea	30	16	23	8
Vomiting	24	6	13	2
Constipation	24	11	11	5
Abdominal pain	20	10	10	5
Headache	14	10	-	-
Fatigue	11	5	7	3
Dyspepsia	9	3	10	4
Dizziness	8	4	4	2
Abdominal distension	7	5	4	2
Eructation	7	<1	5	1
Hypoglycemia[2]	6	2	-	-
Flatulence	6	4	4	2
Gastroenteritis	6	4	-	-
Gastroesophageal reflux	5	3	5	2
Gastritis	4	1	-	-
Hair loss	3	1	5	1

[1] Data from references [42] and [43], based on follow-up periods of up to 68 wk (semaglutide) or 72 wk (tirzepatide).
[2] Among individuals with type 2 diabetes.

zinc, and vitamins A, D, E, K, B1, B12, and C [58]. Signs of frank nutrient deficiency include fatigue beyond expected levels, excessive hair loss, skin flakiness or itching, muscle weakness, poor wound healing, and unusual bruising [59]. GI side effects may further compromise nutrient absorption and exacerbate preceding or new risk of nutrient insufficiency.

Individuals with obesity are also more likely to have suboptimal dietary patterns at baseline that predispose them to nutrient deficiencies prior to starting therapy, e.g., due to high ultraprocessed food consumption or highly restrictive diets [60]. Obesity itself can also increase risk of nutrient deficiencies at baseline due to alterations in nutrient absorption, distribution, metabolism, or excretion [61]. All these issues highlight the importance of proactively managing dietary composition and quality to maximize nutrient intake within a lower calorie intake [58].

Muscle and bone loss

Rapid weight reduction from (but not limited to) GLP-1 use frequently leads to loss of both fat and muscle mass [62,63]. In the STEP 1 trial, of the average 13.6-kg–weight reduction, 8.3 kg (62%) was fat mass and 5.3 kg (38%) was lean body mass (including muscle and other nonfat tissues) [14]. Because muscle mass is about half of lean body mass, this corresponds to ~20% of total weight reduction being muscle loss. In the SURMOUNT 1 trial (pooling doses), total lean mass was reduced by 8.5 absolute percentage points [15]. Modeling data suggest that loss of muscle mass varies by sex, representing 10%–15% of total weight reduction in females and 20%–25% of total weight reduction in males, in the absence of structured strength training [64].

These reductions in fat mass, lean body mass, and muscle mass correlate with the degree of body weight reduction and are similar to those documented with other obesity therapies that achieve large weight reductions, such as bariatric surgery and very low-calorie restricted diets [65]. However, lean mass reduction is also affected by the degree of calorie restriction, overall rapidity of weight reduction, and presence or absence of strength training exercises [66]. Low protein consumption due to reduced appetite may also contribute to muscle loss and increased risk for sarcopenia, particularly among those with older age, perimenopausal or menopausal status, lower testosterone, sedentary behavior, or lack of resistance/strength training [67–70].

Rapid weight reduction with GLP-1s or other therapies can also affect bone density. Weight reduction that is substantial (≥14%) and rapid (over 3–4 mo) is associated with significant bone loss [71], whereas more moderate and slower weight reduction may better preserve bone mass [72]. Bone loss is influenced by initial body weight, age, sex, physical activity, extent of energy restriction and protein intake, and rate of weight reduction, with older individuals and females experiencing greater bone loss [71]. In the absence of structured nutrition and exercise efforts, loss of muscle and bone may be exacerbated by intermittent use of GLP-1s and weight regain or "weight cycling," increasing risk of sarcopenic obesity.

Adherence and costs

In manufacturer-sponsored trials of GLP-1s for obesity, reported adherence (sustained use) has ranged from 83% to 88% at 66–68 wk [15,73]. Adherence is much lower in practice: about 33%–50% at 1 y and 15% at 2 y [5–8]. Discontinuation is associated with older age (≥65 y), poor weight response, and moderate or severe GI side effects [74]. The relative influences of other factors on discontinuation are unclear, including changes in insurance coverage, high out-of-pocket costs, medication shortages [75], or "false cessation" due to switching to compounded (pharmacy prepared) GLP-1s. Low adherence may also relate to lower public and clinician awareness of the need for long-term use after a weight goal, health goal, or plateau is reached.

The current US list price for GLP-1s for obesity ranges from ~$12,000 to $16,000 per year [2]. Full costs may be incurred by those who self-pay, due to either off-label use or no payer coverage. With manufacturer coupons and discounts, costs can be lowered to ~$7000 to $8000 per year [76–78]. Coverage and costs for Medicaid programs vary by state, as each state determines coverage decisions and negotiates prices with the drug manufacturers. Some states have dropped coverage for GLP-1s due to high costs and unsuccessful pricing negotiations [79]. Medicare does not currently cover GLP-1s for obesity, but recently announced that they will be among the drug classes which the federal government will aim to negotiate in 2025; average price reductions in prior negotiations for other drug classes have ranged from 38% to 79% from the original list price [80]. Coverage by private insurers is highly variable, with some providing coverage, others providing coverage but with clinical restrictions or lifetime caps, and others not providing coverage. Local and regional compounding pharmacies also directly manufacture GLP-1s, with gray literature prices from ~$1800 to $3000 per year [81]. However, this is not regulated by the FDA for safety or efficacy; and recent FDA guidance has aimed to eliminate this production.

Several studies have estimated the cost-effectiveness of GLP-1s for obesity from a healthcare perspective, considering costs for screening and treatment against savings from improved weight and health outcomes and corresponding long-term reductions in healthcare utilization, including downstream accumulated health benefits. All have found that GLP-1 treatment costs exceed healthcare savings. In one analysis, individuals with obesity treated with GLP-1s incurred significantly higher annual healthcare costs than individuals with obesity without GLP-1 use (~$7000 higher in the first year, and $4200 higher in the second year) [6,82]. Considering cost-effectiveness, i.e., health gained per dollar spent, most studies find that GLP-1s, even at

currently discounted prices, do not meet accepted thresholds for cost-effective therapy (e.g., <$150,000 per quality-adjusted life year gained). In nonindustry-sponsored analyses, net costs per quality-adjusted life year have ranged from $237,000 to $483,000 [83], with low cost-effectiveness related to plateauing of weight benefits but continued high costs of treatment, as well as weight regain following any cessation of use. These high costs, lower adherence in practice, and frequent weight regain after discontinuation, each highlight the importance of complementary nutritional and lifestyle counseling to help maximize overall efficacy and cost-effectiveness [84].

Guidelines and Practice for Nutrition and Lifestyle Counseling for Obesity

The high and rising prevalence of obesity globally is often attributed to poor dietary patterns and insufficient physical activity, which are often related to behaviors learned early in life and developed over time as well as structural barriers to good lifestyle [85]. Serial studies from the US and Europe suggest that energy expenditure from physical activity increased between 1981 and 2017, during the onset of the obesity epidemic, while basal metabolic expenditure declined, implicating other factors such as dietary composition that impact metabolic rate [86]. Beyond obvious effects on energy balance, dietary quality can also influence obesity risk through changes in metabolic adaptation due to a high refined carbohydrate diet, in resting energy expenditure (such as through brown or beige adipose tissue thermogenesis), in microbiome calorie utilization (with corresponding greater or lesser utilization by the host tissues), and in epigenetic or trans-generational risk of obesity [87,88]. Thus, dietary composition, beyond calories alone, is relevant to obesity risk.

Although individual risk can be modified by genetic influences, population risk and trends in obesity over time are predominantly driven by lifestyle trends related to cultural, community, and environmental factors. Obesity can also be exacerbated by iatrogenic causes, resulting from poor diet quality or low physical activity due to medical conditions or obesogenic medications [89,90]. Although all causes and contributors of obesity are not within an individual's control, structured lifestyle modification programs can be effective and feasible to help achieve a 5%–10% weight reduction and maintain a healthy body weight for many people [91–93].

Current guidelines

The United States Preventive Services Task Force (USPSTF) has published several recommendations for multicomponent lifestyle and behavioral therapy for adults with obesity, cardiovascular disease risk factors, and prediabetes, and clinical societies have identified several evidence-based recommendations for lifestyle modification for obesity (Table 3) [94–100]. According to the USPSTF, the evidence supports referring all adults with obesity to intensive, multicomponent behavioral interventions for both weight reduction and weight maintenance. Intervention components should include nutrition, physical activity, self-monitoring, identifying barriers, problem solving, peer support, and relapse prevention—each further discussed in this Advisory.

TABLE 3
Key guidelines for lifestyle modification therapies for individuals with obesity[1].

Organization	Recommendations
American Heart Association/ American College of Cardiology/ The Obesity Society (2013[2])	Counsel overweight and obese adults with CVD risk factors (hypertension, hyperlipidemia, hyperglycemia) that lifestyle changes that produce even modest, sustained weight reduction of 3-5% produce clinically meaningful health benefits, and greater weight reduction produces greater benefits (Grade I-A) Prescribe a diet to achieve reduced calorie intake for weight reduction (Grade I-A) Advise/prescribe participation in a comprehensive lifestyle intervention for 6 or more months (including at least 14 sessions over 6 months) (Grade I-A).
United States Preventive Services Task Force (2018[3])	Offer or refer adults with obesity to intensive, multicomponent behavioral interventions. This includes weight reduction and weight reduction maintenance interventions with components that focus on nutrition, physical activity, self-monitoring, identifying barriers, problem solving, peer support, and relapse prevention (B recommendation).
United States Preventive Services Task Force (2020[4])	Offer or refer adults with CVD risk factors (hypertension, dyslipidemia, metabolic syndrome, or estimated 10-year CVD risk >7.5%) to behavioral counseling interventions to promote a healthy diet and physical activity (B recommendation).
Canadian Medical Association (2020[5])	Adults living with obesity should receive individualized care plans that address their root causes of obesity and that provide support for behavioral change (e.g., nutrition, physical activity). Adults living with obesity should receive individualized medical nutrition therapy provided by a registered dietitian (when available) to improve weight outcomes (body weight, BMI), waist circumference, glycemic control, established lipid, and blood pressure targets. (Level 1a, Grade A) Adults living with obesity can consider any of multiple medical nutrition therapies to improve health-related outcomes, choosing the dietary patterns and food-based approaches that support their best long-term adherence.
United States Preventive Services Task Force (2021[6])	Screen adults aged 35 to 70 y who have overweight or obesity for prediabetes and diabetes; and offer or refer patients with prediabetes to effective preventive interventions, such as lifestyle interventions that focus on diet, physical activity, or both (e.g., the Diabetes Prevention Program) (B recommendation[1]).
European Association for the Study of Obesity (2024[7])	Provide behavioral modifications for all persons with obesity, including nutritional therapy, physical activity, stress reduction, and sleep improvement.

[1] This table presents key examples, not necessarily a complete compendium, of major lifestyle recommendations from these reports.
[2] Data from reference [94]. Grade I-A is an indicator of the recommendation and its level of evidence, here denoting that the procedure or treatment should be performed/administered and has strong evidence that it is useful/effective.
[3] Data from reference [95]. B recommendation is an indicator that the USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. Suggestions for practice: Offer or provide this service.
[4] Data from reference [96]. An update for this topic was in progress during this manuscript's development [100]).
[5] Data from reference [98].
[6] Data from reference [97].
[7] Data from reference [99]).

Although specifics of lifestyle programming for weight reduction and maintenance vary across guidelines, common foundations include a nutrient-dense, reduced-calorie diet; a structured program of physical activity; and behavioral strategies to support lifestyle change [94]. Various dietary patterns have been used with success, with adherence to counseling visits and the selected diet often being the important factors in determining outcomes [101]. Specific nutrient goals can vary by age, sex, and life stage (e.g., infancy, childhood, adolescence, pregnancy, lactation, older adulthood) [102] as well as comorbidities or clinical conditions.

Based on existing guidelines and evidence, all individuals who would benefit from obesity treatment, including those prescribed GLP-1s, should be offered or referred for intensive, multicomponent behavioral interventions for both weight reduction and weight maintenance [103]. The specific parameters can be based on patient-centered shared decision-making, considering each person's stage and severity of disease, risk of progression, and comorbidities; and centered on the individual's values and goals, stage of change, and access to therapies.

Current practice

Although authoritative health and medical entities recommend comprehensive lifestyle modification as part of the treatment plan for obesity, the use of such therapies before or to support GLP-1 use is not widespread in practice. Visits with primary care physicians and non-obesity medicine specialists who care for individuals with obesity are usually short and centered on acute illness or needs, screening discussions, and medication management [104]. In addition, access is limited to lifestyle medicine approaches for obesity and its comorbidities. For example, the Diabetes Prevention Program is known to reduce the risk of progression to diabetes and is covered by major payers, but has not been meaningfully scaled due to regulatory and implementation barriers [105,106]. In addition, although health coaching is theoretically reimbursable by some private insurers, employee wellness benefits, Medicare Advantage plans, and state Medicaid programs, the lack of approval of category I Current Procedural Terminology codes for health coaching by the American Medical Association remains a barrier to reimbursement [107,108]. Intensive behavioral therapy can be billed only by primary care providers [109,110]. As discussed later in this Advisory, private and public payer coverage for medical nutrition therapy (MNT) for obesity remains limited, preventing broad utilization in practice. These pressures, alongside a frequent lack of practitioner education about integrating lifestyle management in medicine, have created a dearth of implemented behavioral and lifestyle counseling, accessible and effective referral programs, and integration into existing care delivery systems.

As GLP-1s are becoming more commonly prescribed for obesity and other health conditions by providers across multiple disciplines, there is growing concern for the continued lack of formal medical training in nutrition and obesity and the paucity of basic knowledge and competencies to provide nutrition counseling [111,112]. For example, one study found that 90% of cardiologists receive minimal or no nutrition education during fellowship [113]—despite the critical role of diet in cardiovascular health. Academic experts, the US House of Representatives, and clinical societies have called for reform to support and facilitate more robust nutrition education and training in US undergraduate and graduate medical education [114–118]. In this writing group's experience, we observe that many individuals prescribed GLP-1s have not received meaningful nutrition or other lifestyle guidance preceding, accompanying, or (if the drug is stopped) after the therapy. The absence of such behavioral counseling can impede understanding and expectations around medication use and side effects, efficient clinical follow-up, overall efficacy, and long-term weight maintenance.

Nutritional Priorities to Support GLP-1 Therapy

A pragmatic approach to nutrition and lifestyle counseling and support is recommended to maximize benefits, minimize potential risks, and increase efficiency of GLP-1 therapy for weight reduction. The key elements are summarized in Figure 1.

Initiation of GLP-1 use with a patient-centered approach

The approach to initiating pharmacologic therapy for obesity should be individualized, with a focus on overall physical health, mental health, and well-being rather than body weight alone. Because many individuals request GLP-1s due to a focus on body weight, other key components in the obesity management journey must be considered and discussed before initiating these therapies. A patient-centered discussion on starting GLP-1s should consider the individual's circumstances, preferences, values, and medical conditions. Decisions about how quickly or slowly to titrate therapy or restrict calories should be guided by an individual's needs. Some people may need to lose weight more quickly, for example those who need to qualify for surgery for a debilitating condition. Others may benefit from a slower titration schedule of medication. Screening for social determinants of health is relevant to assess potential barriers to drug access and adherence as well as lifestyle change. The 5As Framework (assess, advise, agree, assist, and arrange) is useful to guide the patient–clinician interaction to create foundation for long-term adherence to behavior change. Table 4 summarizes the components of the original 5As framework applied to obesity care using GLP-1 treatment.

Completion of baseline nutritional assessment and screening

Prior to GLP-1 initiation, all individuals should undergo medical and nutritional assessment and screening (Table 5) [89]. A comprehensive medical history should include details of weight history and goals and conditions that may influence nutritional needs or intake [69,70,119]. This includes, for example, any GI symptoms or disorders, sarcopenia, osteopenia, or osteoporosis. Individuals with a history of nephrolithiasis should be counseled to avoid high-oxalate foods, highly processed foods, and animal-source proteins [120–122]. Postmarket reports—which may overestimate side effects—have noted renal impairment upon initiation and dose escalation of GLP-1s, which appears due to volume depletion resulting from dehydration caused by nausea and vomiting [123]. Persons with or at risk for renal impairment should be counseled on strategies to prevent dehydration and monitored for changes in renal function.

Current dietary habits should be assessed, including *1)* intake of healthful foods such as fruits, vegetables, nuts, beans, whole grains, yogurt, and seafood; and *2)* frequency of fast foods, frozen meals, takeout foods, sweet and savory snacks, processed meats, and sugar-sweetened beverages. Food allergies and intolerances, and cultural and household food preferences, are helpful to understand. A validated short screener can be useful, such as the Diet History Questionnaire [124], Mini-EAT [125], Plant-based dietary score [126], or Diet Risk

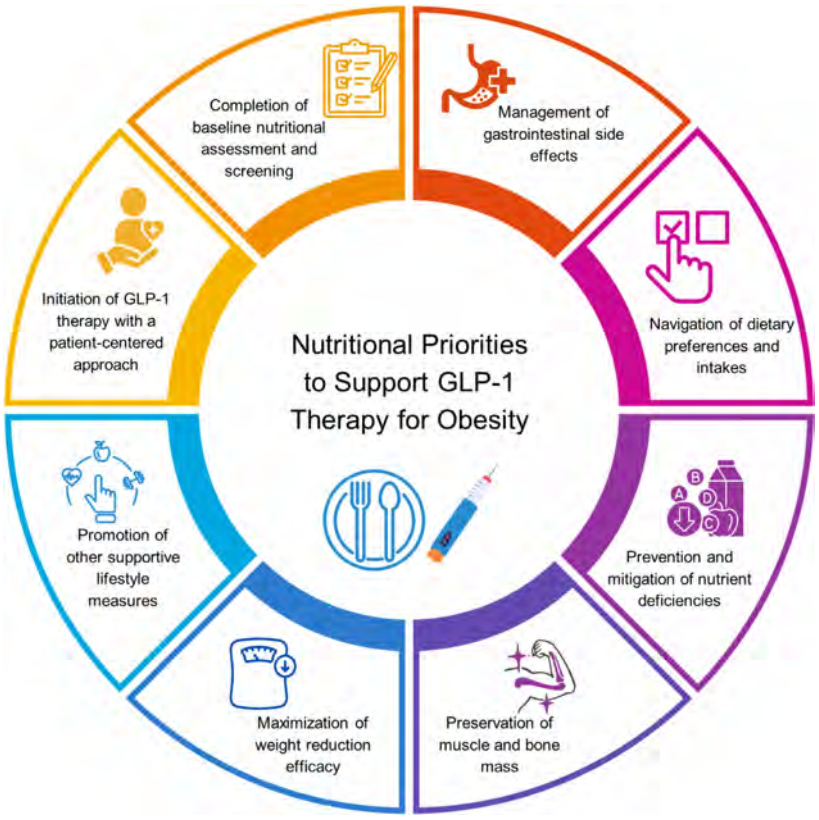

FIGURE 1. Key elements of nutritional priorities to support GLP-1 therapy for obesity.

TABLE 4
The 5As framework[1] applied to support nutrition and lifestyle for obesity care using GLP-1 therapy.

Step	Key components	Examples of topics to address
Assess	• Life stage • Medical history and diagnoses • Physical exam, laboratory tests • Food and nutrition security; dietary history and assessment • Social determinants of health • Psychosocial factors, e.g., mental stress, factors related to eating such as cultural and familial preferences • Other potential barriers to change, e.g., food allergies or intolerances	• Age of onset of problems with excess weight • Periods of rapid weight gain and triggers for such exacerbations • Previously attempted weight interventions (e.g., formal or informal diet or lifestyle programs, meal replacement approaches, medically monitored programs, very low-calorie diet programs, medications, weight reduction supplements, or metabolic procedures including devices and surgeries
Advise	• Benefits and risks of GLP-1 assessment • Essential complementary role of long-term nutrition and lifestyle change • Role of nutrition and lifestyle as foundations of health, with benefits beyond weight alone, with GLP-1 as the adjunctive therapy (a re-setting of the drug-focused medical paradigm)	• Nutritional and physical activity recommendations • GLP-1 side effects • Compliance with dosing schedule
Agree	• Shared plan of care to increase likelihood that both weight reduction and general health goals are understood and expectations are appropriate	• Shared decision making on target body weight, and plan for continuity of care including making appropriate follow up appointments. • Culturally tailored meal plan, exercise plan, etc. Including creating S.M.A.R.T. prescriptions (Specific, Measurable, Actionable, Realistic, Time-sensitive) for eating and activity goals.
Assist	• Address challenges and barriers such as food access, transportation, and need for financial resources	• Eligibility assessment and enrollment support (if eligible) for federal food assistance programs such as SNAP • Help find local physical activity resources such as parks, recreation centers
Arrange	• Refer as needed to other specialists	• Registered dietitian nutritionist • Behavioral therapist • Social worker • Case manager

[1] This framework can be further adapted for obesity care to begin with Ask, i.e., asking permission to discuss topics such as weight and eating patterns.

TABLE 5
Components and topics for medical and nutritional screening and assessment.

✓ Medical history and diagnoses
• Age of onset of problems with excess weight
• Periods of rapid weight gain and triggers for such exacerbations
• Goals for weight reduction and general health
• Patient-centered approach to consider the person's circumstances, preferences, values, and medical conditions (see Table 4)
✓ Screening/assessment for conditions relevant to GLP-1 use
• Gastrointestinal symptoms or disorders
• Affective disorders/mood disorders, suicidal thoughts
• Binge eating disorder, anorexia nervosa, bulimia nervosa, and night eating disorder[1]
• Sarcopenia, osteopenia
• Nephrolithiasis or renal impairment
✓ Physical exam
• Comprehensive clinical exam
• Muscle strength and function (e.g., sit-to-stand, stair climb, timed-up-and-go; consider consultation with an exercise physiologist or strength trainer)
• Consider measurement of muscle mass (e.g., bioelectrical impedance analysis, air displacement plethysmography, dual-energy X-ray absorptiometry)
✓ Social determinants of health
• Food insecurity, nutrition insecurity
• Housing or transportation challenges
• Other barriers to healthcare access
✓ Diet history and related assessments (could be conducted by a registered dietitian nutritionist)
• Current dietary habits (e.g., meal/snack patterns, intake of food groups, fast foods and processed foods, cultural and household preferences)
• Emotional triggers for off-plan, loss of control, or late-night eating
• Food allergies, intolerances, sensitivities
• Conditions that may influence nutrition needs (e.g., smoking, history of kidney stones, use of certain medications)
• Previously attempted weight interventions (e.g., diet or lifestyle approaches or interventions, medications, or metabolic procedures including devices and surgeries)[2]
✓ Lifestyle behaviors
• Physical activity including resistance training, with referral to exercise physiologist or physical therapy where appropriate
• Sleep habits, with referral to sleep specialist where appropriate
• Mental stress management, with referral for cognitive-behavioral therapy or mindfulness-based stress reduction where appropriate
• Substance use, with referral for cessation or counseling services where appropriate
• Social connections, consider group medical visits, shared medical appointments, weight management or peer support groups, and addressing barriers to social engagement

[1] Persons with history of eating disorder and considering GLP-1s for obesity should be referred to an obesity medicine specialist and an eating disorders specialist; restrictive eating disorder is a general contraindication to GLP-1 use.
[2] Indications that may warrant additional assessment and/or laboratory testing prior to therapy: Prior history of a very low-calorie diet, bariatric surgery, celiac disease, other inflammatory conditions predisposing to nutrient deficiency; history of previous nutrient deficiency.

Score questionnaire [127]. Additional assessment and/or laboratory testing may be indicated prior to therapy based on recent or current use of a very low-calorie diet, prior bariatric surgery, celiac disease, other inflammatory conditions predisposing to nutrient deficiency, or prior nutrient deficiency [57,128].

Clinicians should ask about positive and negative emotional triggers for off-plan, loss of control, or late-night eating, such as sadness, anger, boredom, or social events; and screen for affective disorders which can influence healthfulness of dietary choices and changes in calorie intake [129]. Individuals should be screened for signs of eating disorders (binge eating, anorexia nervosa, bulimia nervosa, night eating). Effects of GLP-1s on these disorders are not well established, and could theoretically reduce or exacerbate symptoms in different circumstances. Individuals who screen positive or have a history of eating disorders should be referred to an obesity medicine specialist and an eating disorders specialist prior to prescribing GLP-1s; restrictive eating disorder is a general contraindication [130–132].

Many people who reduce their weight on GLP-1s experience improved mood, including fewer depressive symptoms [130,132,133]. While risk and causation are not established, individuals should also be screened and monitored for worsening of mood disorders or suicidal thoughts, and GLP-1s should be discontinued if symptoms develop [134]. The role of GLP-1s in the setting of antidepressant medications, which could have both synergistic and opposing benefits and side effects [135], requires more study.

Individuals should be assessed for risk of sarcopenia and osteopenia, seen in individuals who are older, sedentary, chronically ill, malnourished, or with type 2 diabetes. Clinicians should inquire about baseline activity levels, including strength training. For more formal quantification, validated screeners include the Physical Activity as a Vital Sign questionnaire [136] and the International Physical Activity Questionnaire [137]. For time efficiency, brief questionnaires that assess multiple lifestyle behaviors include the Lifestyle Medicine Assessment [138] and Lifestyle Medicine Health Behavior Scale [139].

To achieve the screening necessary for appropriate patient care (Table 5), efficient implementation strategies are required. For example, screening tools can be incorporated into the electronic medical record, and many could be completed by the patient through digital portals prior to their clinical visit. Additional training of providers and team-based care are also important to ensure familiarity with these tools and their implications for care.

Management of GI side effects

Nausea, vomiting, constipation, and diarrhea pose challenges to compliance and optimal long-term outcomes. Because the health benefits of obesity treatment generally outweigh these temporary challenges, both proactive prevention strategies and effective support are crucial during periods of therapy adjustment. For example, gradual dose escalation helps the body adjust over time, minimizing the frequency and severity of GI symptoms [40]. During dose escalation in the clinical trials, subjects were allowed to remain at a GLP-1 dose for

up to 8 wk, as needed, to allow GI side effects to dissipate [14,15]. In the clinical experience of some authors of this Advisory, another approach is to maintain individuals at the lowest effective dose and escalate only as needed (i.e., when weight reduction ceases or efficacy wanes), although shortages or lack of insurance coverage of medications at lower doses may be a barrier.

Before initiating therapy, clinicians should present GI side effects in detail, advise individuals to contact them early if side effects develop and provide mitigation strategies should side effects occur. GI side effects are generally more likely to occur during GLP-1 initiation or dose escalation. Nausea is the most common GI side effect and often occurs in the morning or after longer periods without eating. Smaller, more frequent meals and avoiding fatty or high fiber foods during the first few days of treatment can help alleviate symptoms [45]. Some individuals get caught in a cycle of not eating due to nausea, which worsens the symptoms, which then further reduces the likelihood of eating. Individuals can be counseled to eat a small breakfast and then additional small meals every 3–4 h while drinking adequate fluids. Ginger or peppermint tea, as well as acupressure bands, can be beneficial. Anti-nausea medications can also provide relief while individuals adjust to therapy and during dose increases; agents such as prochlorperazine may be preferable to those targeting serotonergic receptors (e.g., ondansetron) that can worsen constipation. Vomiting is more likely to occur with large meals. Dehydration from severe nausea, vomiting, or diarrhea can cause acute kidney injury, with or without existing kidney disease [140], as well as heart palpitations, so efforts should be made to prevent dehydration.

Constipation is common with weight loss and should be managed proactively. Extended constipation can also lead to reactive diarrhea. Adequate fluids and fiber from foods should be encouraged, although additional strategies are often required. Foods with lower viscosity (i.e., that flow easily), fewer calories, lower glycemic index, and higher water content (e.g., certain fruits and vegetables and fruits) can facilitate faster gastric emptying [141]. Gradual increase in foods with soluble and insoluble fiber, such as prunes or other dried fruits, can be helpful. Foods high in protein or fat can further slow gastric emptying, which can promote weight reduction and metabolism but also worsen constipation, potentially requiring temporary limitation of these foods [141]. If dietary strategies are insufficient, other therapies include daily magnesium supplementation, titrated to keep bowel movements regular. Magnesium citrate is effective and well-tolerated, and powdered forms permit customized dosing. Fiber supplements or capsules and Polyethylene Glycol 3350 may also be beneficial. Stool softeners may also be helpful in avoiding straining.

Diarrhea can also occur. Avoidance of large or high-fat meals can be helpful. If significant diarrhea occurs, fiber capsules or powders provide bulk to the stool, and anti-diarrheal medications can provide acute relief. Alcohol use may also worsen nausea and gastroesophageal reflux with GLP-1 therapy and should be minimized [58].

Navigation of dietary preferences and intakes

GLP-1s meaningfully impact total energy intake and food preferences through multiple mechanisms—an active area of investigation—including peripherally in the gut, centrally in multiple brain regions, and through diet-microbiome–brain interactions [142]. GLP-1 receptors in the mesolimbic system are implicated in the modulation of reward behavior [143], whereas brain imaging studies document GLP-1-induced changes in brain regions related to appetite and reward, such as the insula, amygdala, putamen, and orbitofrontal cortex [144]. In experimental studies, obesity-related hypothalamic inflammation can cause uncoupling of energy intake compared with expenditure [145]; preclinical studies suggest that GLP-1 receptor activation may modulate inflammatory and immune responses that affect the brain [146]. Further studies are warranted to elucidate the effects of GLP-1s on brain reward circuits and psychological dimensions of appetite and eating.

GLP-1s reduce energy intake by 16%–39% compared with placebo, related to changes in cravings, hunger, and fullness [56,147,148]. Multiple studies demonstrate beneficial effects on food cravings and disordered eating. This includes reduced food preoccupation or "food noise", reduced emotional eating, less external eating (i.e., eating that responds to external triggers, irrespective of satiety), and fewer binge eating episodes [56,149]. Similar effects have been observed on eating control, sweet cravings, and symptoms of food addiction [147, 150–153].

In addition to lower energy intake, many individuals report changes (increases and decreases) in preferences for specific foods [56]. However, these influences are less rigorously documented, with varying study results. Different studies suggest reduced cravings for savory foods and high-fat foods [150,151]; sweet, savory, or dairy foods [144]; salty, spicy, starchy, or dairy foods [147]; and sweets, carbohydrates, starches, and fast-food fats [154]. The evidence supports a general preference shift away from sweet, savory, starchy, and high-fat foods. Anecdotal reports also suggest a reduction in taste enjoyment and cravings for ultraprocessed foods and an increase in preferences and cravings for minimally processed, nutrient-dense foods like fruits and vegetables [155]. Dietary counseling may modify these changes. For instance, in one observational study, a larger reduction in added sugars and a greater increase in dietary protein were seen among participants receiving GLP-1s plus dietary counseling compared to GLP-1s alone [156].

Authors in this writing group have observed in clinical practice the changes to food preferences and eating behaviors described here as follows: a substantial number of individuals are less interested in food; cravings for high-fat foods, sugary foods, and alcohol are diminished; and binge eating, loss-of-control eating, and food rumination are reduced. In contrast, GLP-1 side effects such as nausea may trigger cravings for comfort foods containing sugars or refined carbohydrates such as white flour and white rice. Some report food aversions, sometimes severe, typically at the initiation of treatment and with dose increases. A limited interest in food, reduced hunger, and increased fullness may cause individuals to go several hours without eating. For some individuals, this can cause inadequate nutrient intake; for others, it may contribute to rebound preferences for sugars and refined carbohydrates if they delay eating until they are overly hungry. At times, frustration or even a loss of quality of life from the reduced pleasure obtained from food (or other aspects of life) may result in changes in effect and potentially medication discontinuation [157]. In these situations, it is beneficial to discuss with individuals whether this is related to disordered thoughts about "food as love," affective changes induced by the medication, or a loss of interest in a food-related hobby such as cooking [157]. Referral to behavioral therapy may be warranted. Some individuals may benefit from a change in the dose, agent, or class of obesity management medication.

Prevention and mitigation of nutrient deficiencies

Dietary guidance for individuals using GLP-1s should focus on ensuring nutrient adequacy within an often substantially lower-calorie diet. To support this, clinicians should emphasize a diversity of

TABLE 6
Key dietary recommendations to support effective GLP-1 therapy[1].

Factors to encourage	Factors to minimize/avoid
Food groups	
Fruits (e.g., berries, apples, citrus fruits, banana, grapes, avocado)	Refined carbohydrates (processed grains, flours, added sugars)
Vegetables (e.g., broccoli, leafy greens, tomatoes, carrots, peas, squashes)	Sugar-sweetened beverages
Whole grains (e.g., oats, quinoa, brown rice, and whole-grain breads, cereals, and pastas)	Red and processed meats
Dairy (e.g., yogurt, milk, cheese)	Most fast foods
Lean proteins (e.g., poultry, fish/seafood) and eggs	Sweets and savory snacks
Nuts and seeds (e.g., almonds, peanuts, chia seeds, sesame seeds, hemp seeds)	
Plant fats/oils (e.g., olive, canola, avocado oils)	
Ginger or peppermint tea	
Eating habits[2]	
Regular, small meals at consistent times	Emotional, mindless, or nighttime eating
Flexibility with food choices	Long periods without meals (i.e., becoming overly hungry)
Enjoy portion-controlled treats	Consumption of large meals
Ensure adequate fluids	
Minimal alcohol intake	

[1] Nutritional recommendations and counseling are important to support weight reduction, prevent and mitigate gastrointestinal side effects, reduce muscle and bone loss, and support long-term weight maintenance.

[2] A registered dietitian nutritionist can help determine a dietary pattern that meets nutrition goals while accommodating an individual's dietary needs and preferences. Additional behaviors generally associated with long-term weight maintenance include regular physical activity (≥60 min/d); self-monitoring of body weight, food intake, and activity; limiting screen time (<10 h/wk); and use of coping strategies including social support, advance planning, and problem solving skills.

nutrient-dense, minimally processed foods such as fruits, vegetables, whole grains, legumes, lean proteins, nuts, and seeds. Individuals should be counseled to avoid refined carbohydrates (i.e., refined grains, flour, starches, sugars), sugar-sweetened beverages, red and processed meats, and most fast foods, ultraprocessed sweets, and savory snacks (Table 6). Dietary supplements can be proactively considered for at-risk nutrients, such as vitamin D, calcium, B12, or a multivitamin-mineral tablet, at appropriate doses and tailored to each person's needs.

Small, frequent meals may be effective when hunger and food interest are low [58]. Healthfully prepared smoothies and protein drinks with fruits, vegetables, and various unsweetened milks or yogurt; cottage cheese and soups can provide needed nutrients and are often more appealing to individuals than heavier foods such as red meats, cold cuts, or hard cheeses. If changes to food composition are not enough, setting an alarm or other reminder to eat can be helpful. Sufficient dietary protein should be a priority to help preserve muscle mass and bone density, particularly in combination with a structured strength training program (see below).

Ongoing monitoring and follow-up should include regular re-assessment of dietary intake and hydration, for example, using food logs and/or food photos, and re-assessment of nutrient levels, using clinically accepted methodologies, during therapy to identify and promptly address emerging deficiencies. Dietary recommendations should be adjusted based on the rate of weight reduction, nutrient status, individual tolerance, and treatment response.

Preservation of muscle and bone mass

The adverse effects of weight reduction on muscle and bone mass—particularly among individuals with insufficient physical activity or protein intake or at older ages [63,158]—have highlighted the interrelated priorities to preserve muscle mass, muscle quality, bone mass, and physical function. Decreased and/or low muscle and bone mass negatively impact health, including physical impairment or disability, falls and fractures, surgical complications, reduced quality of life, and decreased survival [159,160].

For the general adult population, the recommended daily allowance for protein is 0.8 g/kg/d [161]; this reference value is currently undergoing review for updating by the National Academies of Medicine. Higher targets, such as 1.2–1.6 g/kg/d, have also been proposed during active weight reduction [162,163]. For individuals with obesity, it is unclear whether these goals should be based on actual body weight, corrected (adjusted or ideal) body weight, or fat-free mass, as the use of actual weight can significantly overestimate protein requirements [164]. Protein intake in adults should not fall below 0.4–0.5 g/kg/d, as this can lead to muscle atrophy and functional impairments, whereas prolonged intake at or above 2 g/kg/d should be avoided due to potential adverse health effects [165]. Estimated fat-free mass may be best for determining protein needs, although there is still no consensus on the optimal approach. A protein intake of 1.5 g per kilogram of lean body mass (FFM) per day is considered more accurate but requires body composition data for precise calculation [166]. Alternatively, setting an absolute protein target of 80–120 g/d, or 16%–24% energy on a 2000 kcal/d diet, may enhance adherence while ensuring adequate intake.

For individuals on GLP-1s, adequate dietary protein may be difficult to achieve due to reduced appetite and/or taste aversions. Protein-rich foods can be consumed first in a meal to increase the likelihood of sufficient consumption. Among food sources, plant sources (e.g., beans, peas, lentils, whole grains), dairy, seafood, eggs, and lean poultry should generally be encouraged based on their links to general health, with red and processed meats considered in moderation or minimized given links to type 2 diabetes, cardiovascular disease, and colorectal cancer in general populations [60]. Practically, lower volume, nutrient-dense protein foods can be encouraged, such as fish, eggs, Greek yogurt, cottage cheese, and nuts/seeds, including their spreads, such as peanut or almond butter. Some individuals can meet protein targets by supplementing with high-protein shakes, bars, and other fortified products [159].

Importantly, clinicians should understand—and emphasize to individuals taking GLP-1s—that increased protein intake alone is likely inadequate to support the preservation of muscle mass in the absence of structured resistance/strength training. Excess dietary protein, above muscle needs for repair or growth, can be converted to fat by the liver and increase visceral adiposity [167]. Structured strength (resistance) training or mixed training (resistance plus aerobic) programs are well established to help preserve lean mass during weight reduction [62,168]. Aerobic activity alone has a smaller effect on preserving lean mass during rapid weight reduction [168]. Retrospective studies of GLP-1 therapy support the role of structured exercise programs, e.g., 360 minutes/week with an emphasis on strength exercises to preserve fat-free mass [169]. In a recent randomized trial, one year of combined GLP-1 therapy with exercise training preserved bone mineral density, while GLP-1 therapy alone decreased bone mineral density [170]. In that trial, GLP-1 therapy plus exercise also produced larger reductions in abdominal fat and systematic inflammation than GLP-1 therapy alone [171]. Aerobic and resistance training exercises also improve

insulin sensitivity, vascular function, and oxidative stress, critical for long-term cardiometabolic health [172].

Based on these findings, GLP-1s should be prescribed together with a structured exercise program, aiming for regular strength training at least 3 times weekly plus at least 150 min of moderate-intensity aerobic exercise weekly to preserve muscle and bone mass [62,67,158,173–175]. These plans should be customized to match the individual's fitness level and physical capacity to ensure adherence and effectiveness [174,175].

Several methods can monitor muscle mass for excessive reduction [176]. Bioelectrical impedance analysis (BIA) is pragmatic, easily implemented at point-of-care, and requires minimal staff training and clinic time. BIA allows for repeated measures at low cost, for instance, when weight reduction trajectories are high and muscle loss is more likely. Air displacement plethysmography can be used for individuals with pacemakers, implantable cardioverter defibrillators, or other electronic medical implants who cannot use a BIA machine—but require regular calibration, staff training, and use of close-fitting clothing, which may be uncomfortable for some individuals. Dual-energy X-ray absorptiometry (DXA) scanning with body composition programming is considered a gold standard, yet it is also more costly and less likely to be done frequently. For monitoring of individuals taking GLP-1s, DXA could be considered yearly or every 2 y, although such a timeline may impede the identification of early muscle loss and institution of appropriate interventions. Additionally, many imaging sites with DXA technology do not have or wish to use the additional body composition programming, given staff and time constraints. Newer technologies, such as visual-based capture using a smart phone, are being developed and validated and may be more widely used in the future [177].

All these technologies monitor muscle mass but not muscle health, quality, or function. Muscle strength can be monitored in several ways. Still, some are less sensitive to change (e.g., handgrip strength) or not feasible to conduct in a clinical setting (e.g., quadricep isometric strength). Sit-to-stand, stair climb, and timed-up-and-go measures can be helpful in older adults, but these measures may be less able to detect changes in younger individuals. While a one-repetition maximum is a classic measure of muscle strength, it is not recommended unless the individual is highly trained. Research is underway to examine how GLP-1 therapy affects muscle quality and physical function in younger populations, which should provide insights into appropriate imaging, functional testing, and lifestyle recommendations. Until then, consultation with an exercise physiologist or strength trainer may be beneficial for many individuals to establish general strength assessment, implement a resistance program (trainer, class, or self-directed), and monitor over time.

Maximization of weight reduction

A structured, comprehensive nutrition and lifestyle program could help augment the weight reduction efficacy of GLP-1s, although findings have been mixed. In the STEP 3 trial of semaglutide combined with intensive lifestyle intervention (30 counseling visits across 68 weeks, including nutrition, physical activity, and other behavioral strategies, plus 8 initial weeks of meal replacements with liquid shakes, meal bars, or portion-controlled meals), individuals experienced a 16% reduction from baseline in body weight (versus 5.7% with intensive lifestyle intervention alone) [178]. In comparison, the STEP 1 trial that included semaglutide with general nutrition and physical activity instructions demonstrated a 14.9% weight reduction from baseline (versus 2.4% with general nutrition and physical activity instructions alone) [14]. In the SURMOUNT 1 trial, tirzepatide 15 mg/wk with general nutritional instructions produced a 20.9% reduction in body weight from baseline (versus 3.1% with general nutrition instructions alone) [15], whereas in the SURMOUNT 3 trial, tirzepatide 10 or 15 mg/wk started after 12 weeks of intensive lifestyle intervention produced a 25% reduction from baseline (versus 4.8% with intensive lifestyle intervention alone) [178]. This 25% body weight reduction resulting from a staged approach with 12-week intensive lifestyle intervention followed by tirzepatide is the largest reduction seen in GLP-1 trials to-date. A challenge in interpreting the impact of the lifestyle strategies in these trials is lack of standardization on how "intensive" lifestyle intervention is defined or implemented. Such interventions can vary in many key components, including the frequencies of visits; individual or group settings; in-person, telehealth, or digital delivery; targets for food composition, calorie intake, physical activity, and other lifestyle habits; use of meal replacements; mechanisms for self-monitoring, feedback, and peer support; efforts to maximize adherence; and overall duration.

Effects of varying dietary patterns or specific food types on maximizing weight reduction with GLP-1s require further investigation. Based on the overall evidence around nutrition and obesity including potential impacts on metabolism, the microbiome, thermogenesis, and epigenetics, the authors of this Advisory recommend eating more minimally processed, nutrient-dense foods and fewer starch and sugar rich ultraprocessed foods for optimizing weight reduction while using GLP-1s (Table 6).

Other supportive lifestyle interventions

Other lifestyle interventions are essential to support individuals using GLP-1s as part of the recommended multicomponent lifestyle programs that are the foundation of obesity treatment [94,179,180]. These include improving sleep quality, managing mental stress, minimizing substance use, and nurturing positive social connections [181,182].

Poor sleep is associated with insulin resistance, increased hunger, and weight gain, which might reduce some benefits of GLP-1s [183]. Conversely, weight reduction achieved with GLP-1s can improve symptoms of obstructive sleep apnea, a common obesity-related condition [184]. Clinicians should assess GLP-1 candidates for sleep habits using validated questionnaires like STOP-BANG or the Pittsburgh Sleep Quality Index [185,186]; and inquire about hypnotic drug use and insomnia [187] and symptoms of restless legs syndrome [188]. Individuals with a positive screen should be referred to a sleep medicine specialist.

Mental stress should be addressed among individuals with obesity, as chronic stress may promote obesity development through the sympathetic nervous system and hypothalamic-pituitary-adrenal axis activation that elevates cortisol levels, interferes with insulin sensitivity, promotes energy storage, and creates food cravings for ultraprocessed "comfort foods" [189] GLP-1s may act both centrally and peripherally to reduce these downstream impacts of chronic stress and obesity and alter food reward pathways in positive ways [132]. Referral for cognitive-behavioral therapy or mindfulness-based stress reduction interventions may be considered for individuals receiving GLP-1s to assist with weight reduction maintenance, glucose control, and mental stress [190,191]. Enhanced mindfulness may also help individuals cope with GLP-1 side effects [192]. Individuals who report high levels of stress on a Perceived Stress Scale 10-item questionnaire [193] or a brief Patient Health Questionnaire for Depression and Anxiety [194] may particularly benefit from stress mitigation interventions.

Substance use, including tobacco, alcohol, opioid, and illicit drug use disorders, should be addressed to maximize GLP-1 benefits. Substance use and cessation have complex associations with obesity, with overlapping brain pathways with food reward and disordered eating [187,195]. Through these interrelated pathways, GLP-1s use may also help reduce alcohol and other substance use disorders [196]. In a recent phase 2 randomized trial, 9 wk of low-dose semaglutide in 48 outpatient participants with alcohol use disorder led to reductions in some but not all measures of alcohol use and craving. They led to reductions in tobacco use in the subgroup of current smokers [33]. Clinicians should educate individuals about the potential interactions between these substances and GLP-1s and routinely screen for substance use using validated short tools such as those proposed by the Institute of Medicine (now National Academy of Medicine) for Social and Behavioral Determinants of Health [197]. If screening is positive, referral to cessation programs or counseling services can provide additional support.

Strong social connections may enhance treatment outcomes and adherence to GLP-1s and lifestyle therapies. Robust social networks improve health outcomes by reducing stress, increasing motivation, and encouraging accountability [198,199]. Given the network effects of obesity and the added mortality impact of social isolation/loneliness among individuals with obesity, new interventions should be studied to promote social connectivity in conjunction with GLP-1 use [200,201]. Clinicians can support individuals by conducting GMV or shared medical appointments (see below), recommending in-person or virtual participation in weight management groups or peer support groups, and addressing barriers to social engagement, such as isolation or mobility challenges [202,203].

Implementing these strategies requires a person-centered approach, discussing these issues with each individual to understand their situation. Team-based care, including registered dietitian nutritionists (RDNs), exercise physiologists, and health coaches, can be very helpful [204] but is not always available to clinicians or individuals depending on health system circumstances and payer policies. Pharmacists can also play a role, as an accessible healthcare professional who is also dispensing the medication. Based on the human, societal, and financial burdens of obesity, as well as the costs and adherence challenges of GLP-1 therapy, more comprehensive weight management programs and research on their optimal use are needed in healthcare.

Behavior Change and Implementation Supports

Group-based visits

Group medical visits (GMVs) or shared medical appointments are an increasingly established, evidence-based modality to provide effective lifestyle therapy in a comprehensive, easy-to-access medium [205]. In both traditional fee-for-service and value-based health delivery models, GMVs can increase access to healthcare professionals, promote in-depth, unrushed medical visits, promote social connection and support, and improve individual engagement and outcomes [206].

Compared to conventional visits, GMVs have demonstrated improved dietary habits, improved sleep, greater patient satisfaction, better glycemic and blood pressure control among individuals with diabetes mellitus, modest but significant weight reduction improvement, particularly in females and older adults, and reduced healthcare costs [207–210]. One retrospective study identified higher likelihood of prescribing obesity management medication as well as higher relative weight reduction with GMVs versus individual medical visits [211]. GMVs may help advance equitable obesity care: a retrospective study among majority Latino and low-income households in a federally designated underserved area found greater absolute weight reduction (12 vs. 4 pounds) and meaningful weight reduction (55% vs. 11% with 7%+ weight reduction) with GMVs versus individual visits [212]. Large, long-duration lifestyle intervention randomized controlled trials have also employed group counseling sessions for participants, resulting in meaningful weight reduction [213].

Given the increasing rates of GLP-1 prescriptions and the relatively well-studied efficacy of GMVs in supporting lifestyle behaviors, combining the 2 may provide synergistic benefits. GMVs are covered by insurance payers, allowing broad access. Several health system initiatives are developing clinical pathways to integrate GMV models with prescribing obesity management medications [214]. As the use of GLP-1s grows, the need for long-term supportive health promotion (and not merely short-term weight reduction) through lifestyle efforts will equally rise [91], and GMVs appear well suited for such efforts

Registered dietitian nutritionists

RDNs have important roles to play in delivering comprehensive obesity care, particularly by providing MNT to support lifestyle, pharmacological, and/or surgical therapy. MNT incorporates individualized nutrition assessment, diagnostics, therapy, and counseling to modify dietary behaviors, manage health conditions, and enhance well-being [215]. In controlled trials, RDN-delivered MNT modestly but meaningfully improves dietary quality, body weight, waist circumference, glycemic control, blood pressure, and blood cholesterol levels [216–219]. RDNs who provide MNT for obesity care can follow evidence-based practice guidelines [220] and earn a board-certified specialist credential in obesity and weight management [221].

Pairing GLP-1 use with RDN dietary counseling should support medication adherence, help prevent or manage GI side effects (particularly during medication initiation and dose increases), promote adequacy of nutrient intake, and support engagement in other behaviors (e.g., regular physical activity, adequate sleep, goal-setting) that enhance long-term weight management and overall health. RDNs can address dietary self-monitoring, adjustments to food choices and meal timing, identification of minimally processed, nutrient-dense food choices and guidance for preparation, portion control, problem solving, peer support, and goal-setting [222].

Although limited direct evidence has evaluated use of GLP-1s with or without RDN-provided MNT, the SCALE [13], STEP 1 [14], SURMOUNT [15], and STEP 3 [178] trials each demonstrated substantial weight reduction by combining GLP-1s with regular counseling sessions by RDNs or other qualified healthcare professionals (such lifestyle support was also provided to the placebo group in each trial). Compared to general practice, the more frequent and structured use of RDNs and MNT in these trials could be one reason why these trials demonstrated larger weight reductions than seen in real-world GLP-1 utilization for obesity.

However, private and public payer coverage for RDN-provided MNT for obesity remains limited, preventing broad utilization in practice. For example, Medicare covers MNT only for individuals with diagnoses of diabetes, chronic kidney disease, and 36 months post-kidney transplant, and for only 3 h during the first year of referral and 2 h annually thereafter [223]. Most state Medicaid programs have followed suit. Commercial plan coverage varies more widely and may provide MNT counseling for obesity but with annual or lifetime limits. Recent national policy efforts around payer coverage for GLP-1s [224, 225] have elevated the importance of concurrent coverage for MNT as part of comprehensive lifestyle programming that should accompany

GLP-1 treatment. Intensive behavioral therapy provides a potential option for reimbursement of services by dietitians and other health care professionals; this service can only be billed by a primary care provider but can be delivered by a qualified health professional incident to that provider [109,110].

Telehealth and digital platforms

New telehealth and digital platforms provide opportunities to deliver personalized nutrition support for individuals on GLP-1s. These tools can help address barriers posed by in-person visits, enhance patient engagement, and promote adherence to nutritional and lifestyle recommendations [226–229]. Relevant applications and features include video visits, collaborative care, remote patient monitoring, dietary tracking and guidance, education and behavioral support, and increased equity and accessibility (Table 7). There is hope that benefits may include improved accessibility and engagement with individuals, better tracking of progress and self-monitoring, broader reach to underserved areas, and improved cost-effectiveness compared to conventional nutrition support.

Challenges to using these platforms include the potential for limited device or internet access; low health or digital literacy; visual, hearing, or cognitive impairment; lower emotional connection with providers; and exacerbation of social isolation. Individuals may also have limited support (family, caregivers) to assist with telehealth consultations and reluctance or lower trust to embrace unfamiliar healthcare methods. Tailored solutions can help address these challenges, which require healthcare provider knowledge and sensitivity and identification of individuals more likely to experience digital challenges (e.g., older adults) [230].

While these programs offer new ways to engage more regularly with individuals on GLP-1s, obesity management frequently involves assessing and addressing complex behavioral, emotional, and social, for which virtual visits may not always be adequate. Several for-profit telehealth and digital companies are now engaging with health systems, aiming to provide more efficient and less costly obesity management. Given promise as well as challenges, more research is needed on telehealth and digital interventions for adherence to GLP-1 therapy, long-term weight management, and individual behaviors, health outcomes, quality of life, and satisfaction.

Food is medicine

Food is Medicine (FIM) programs are structural interventions in healthcare that offer food-based nutritional therapies as part of an individual's plan to manage or treat specific disease conditions and, often, social needs [231]. These are prescribed by a clinician, tailored by an RDN to relevant medical conditions, and covered by health insurance. FIM therapies include medically tailored meals, medically tailored groceries, and produce prescriptions, each accompanied by varying types, delivery modalities, and intensities of nutrition and culinary education. Supportive measures include electronic health record screening for food and nutrition security, curricular and accreditation interest in medical nutrition education, and expanded care pathways and reimbursement models [231]. State Medicaid programs, Medicare Advantage payers, commercial payers, the Veterans Health Administration, and the Indian Health Service are all implementing and evaluating various FIM programs. Piloting coverage has been proposed but not implemented in traditional Medicare [232].

Evidence from pre/post, quasi-experimental, and some randomized interventions supports the benefits of FIM for food security, nutrition security, diet quality, blood glucose control, hypertension, disease self-management, self-perceived physical and mental health, and health care utilization [231]. In non-randomized interventions, FIM therapies are associated with BMI reductions of 0.4 to 0.6 kg/m^2. However, these programs did not focus on weight reduction or exercise, suggesting that a FIM program that is expressly designed for weight reduction and maintenance could be more effective. The role of FIM for weight management, including as a potential adjunctive therapy to GLP-1 use, is an area of growing interest and investigation. Because FIM programs can help overcome multiple barriers to healthful eating, including cost, time, access, and knowledge, they could play an important role in achieving better as well as more equitable short- and long-term outcomes with GLP-1 therapy—a critical area for further investigation.

TABLE 7
Telehealth and digital platform support for nutrition during GLP-1 treatment.

Application or feature	Example of opportunity to support nutrition
Video visits	• Synchronous video visits with physicians, other practitioners, registered dietitian nutritionists (RDNs), exercise physiologists, and clinical psychologists can support both initial evaluation and for ongoing follow-up. • Such visits can improve adherence and motivation; identify, address, and provide timely feedback to manage side effects; adjust therapy including medication and goals of care; determine when in-person visits are indicated for testing or other evaluation; and increase appointment attendance rates and patient engagement.
Remote patient monitoring	• Digital engagement enables timely feedback to healthcare providers to adjust recommendations based on patient progress and feedback. • Features that support remote monitoring include Bluetooth-enabled scales, blood pressure cuffs, and continuous glucose monitors; apps with food logs and photo reviews for RDNs or other nutrition specialists; physical activity and sleep monitors; and private messaging with clinicians.
Dietary guidance and tracking	• Dietary-tracking apps can help primary care, specialty obesity care, and telehealth medical groups and platforms monitor nutritional habits against individualized nutritional goals. • Specialized features such as automated nutrient deficiency alerts, AI-powered meal recommendations, and integration with wearables can help identify nutritional gaps in real time.
Education and behavioral support	• Virtual education modules and coaching sessions can teach individuals how to incorporate minimally processed, nutrient-dense foods, manage gastrointestinal side effects, and implement sustainable dietary habits. • These can further reinforce SMART (specific, measurable, achievable, realistic, timely) goals to ensure optimized nutrient therapy, physical activity, and behavioral modification alongside medical monitoring. • Modules and coaching can be both synchronous and asynchronous, increasing flexibility for both clinicians and patients.
Equity and accessibility	• Telehealth and digital platforms reduce geographic and other logistical barriers to quality care, for example for individuals who live in rural or underserved areas or have limited time, physical mobility, or transportation, which can reduce health disparities.

Abbreviations: AI, artificial intelligence; RDN, registered dietitian nutritionist; SMART, specific, measurable, achievable, realistic, timely.

GLP-1s and Health Equity

Health equity can be defined as a state in which everyone has a fair and just opportunity to attain their highest level of health [233], and health disparity is a particular health difference linked with economic, social, or environmental disadvantage, often adversely affecting groups of people who have systematically experienced greater social or economic obstacles. Poor nutrition and obesity disproportionately affect individuals with lower socioeconomic status in rural communities and in racial and ethnic minoritized populations [234], and disparities in poor nutrition and obesity prevalence are mirrored in disparities in access to quality health care [235].

GLP-1 access

Disparities in access to GLP-1s have been documented by race/ethnicity and socioeconomic status [236]. In a study of ~1.2 million commercially insured U.S. individuals with diabetes from 2015 to 2019, lower GLP-1 use was seen among Asian, Black, and Hispanic, compared with White, individuals and among those living in lower versus higher income households [237]. Using electronic health record data from 6 U.S. care delivery systems from 2014 to 2022, American Indian/Alaska Native, Asian, Black, Hawaiian or Pacific Islander, and Hispanic individuals were less likely to be prescribed a GLP-1 than White individuals [238].

In comparison, while half (51%) of U.S. adults meet FDA eligibility for semaglutide using nationally representative data, this is higher among Black (57%) and Hispanic (55%) adults [239]. Yet compared with eligible White individuals, larger proportions of Black and Hispanic individuals have potential barriers to GLP-1 access, such as being uninsured, lacking a regular provider, having low income, or lacking higher education [239]. Racial/ethnic disparities in weight bias and stigma have also been documented in healthcare settings and may affect GLP-1 access; research and clinical opportunities to address weight stigma and foster health equity have been proposed [240]. Given unequal payer coverage, the income also directly reduces GLP-1 access due to the inability to afford high co-payments or self-payment.

In a review of racial and ethnic differences in obesity outcomes of lifestyle, surgical, and pharmacological interventions published between 2000 and 2022, lower efficacy of lifestyle and surgical interventions was commonly identified among Black compared with White participants (with no or smaller differences for Hispanic compared with White participants). Findings were more mixed for pharmacologic obesity interventions, with inconsistent or no differences observed by race/ethnicity [241]. In trials, medication treatments may be more standardized and less influenced by sociocultural variables than lifestyle and surgical interventions. However, all treatment pathways showed racial/ethnic disparities in referral rates, access, engagement, and retention.

Given the importance of structured screening, monitoring, and long-term nutritional and lifestyle support for GLP-1s, treatment and outcome disparities will likely be further magnified by disparities in access to and use of these supports. Thus, equitable coverage for such efforts is important. Future research is needed to identify the social, environmental, structural, and other factors that influence access to GLP-1s and supportive nutrition-focused lifestyle programs.

Food and nutrition insecurity

Food security and nutrition security may influence efficacy of GLP-1s. Poor nutrition while on therapy can exacerbate GI side effects, nutrient deficiencies, and reduction of muscle mass; negatively impact metabolic health and risk of chronic conditions; and reduce likelihood of long-term weight maintenance (especially if GLP-1 therapy is stopped). Food insecurity is closely tied to poverty and financial strain, measured as a household-level economic and social condition of limited or uncertain access to adequate food [242]. In 2023, 13.5% of U.S. households were food insecure [243], with prevalence varying by race/ethnicity, family income, educational attainment, and disability status [244].

As compared to food security measures which assess regular access to sufficient food (quantity or calories), nutrition security is a distinct but related concept that evaluates consistent access, availability, and affordability of foods and beverages that promote well-being and prevent and, if needed, treat disease [245]. Validated screening tools such as the Nutrition Security Screener have been implemented in large health systems, regional, and national surveys and identified the prevalence of nutrition insecurity as modestly higher than that of food insecurity, with only partial overlap (correlations: ~0.4 to 0.6), highlighting the distinction between access to sufficient calories versus nourishing foods [246]. Commonly reported barriers to healthy eating included cost (81%), lack of knowledge on how to cook healthy foods (75%), too few healthy foods at local stores (53%), or long distances to healthy food stores (46%); lack of healthy cultural foods (49%); and insufficient equipment to prepare (41%), time to shop for (41%), or time to cook (34%) healthy foods. Nutrition insecurity was more common among adults with younger age, lower income, lower educational attainment, and identifying as Black, Hispanic, or Native American/indigenous compared with White backgrounds [246]. Adjusting for age, sex, race/ethnicity, income, education, and food security status, individuals experiencing nutrition insecurity were 40%–60% more likely to have obesity as well as type 2 diabetes, heart disease, hypertension, and hypercholesterolemia. In contrast, adjusting for sociodemographics and nutrition security status, individuals experiencing food insecurity were not more likely to have obesity.

Food sovereignty—"the right of peoples to healthy, culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems"—is also relevant to equitable GLP-1 outcomes [247]. For example, food sovereignty among indigenous North American communities can be promoted through community ownership, inclusion of traditional food knowledge, use of culturally relevant foods, and environmental sustainability [248,249]. Tailoring GLP-1-coupled nutrition interventions to promote food sovereignty may help reduce disparities in diet-related diseases that persist among historically minoritized groups with strong cultural food traditions [250,251].

The inability to consistently access sufficient and nutritious food affects an individual's ability to adhere to an obesity treatment plan, particularly given the importance of dietary modifications to optimize the benefits of GLP-1 use, reduce nutrient shortfalls, and manage side effects. The identified challenges underscore the need for supportive clinical and population policies that equitably address food and nutrition insecurity to support effective, cost-effective, and equitable use of

GLP-1s. Such strategies could include, for example, greater integration of FIM programs into clinical care, strengthening of federal nutrition assistance programs to address food and nutrition security, and regulatory policies to address the quality of foods available to the public [252].

Nutrition and culinary knowledge

Nutrition knowledge and culinary skills are associated with the health profile of dietary choices [253–255]. Decreased emphasis on nutrition and culinary education in public schools; changing household and sociocultural family dynamics around eating; increased development, accessibility, and marketing of low-cost ultraprocessed packaged foods; and higher perceived financial and opportunity costs of many health-promoting foods have each contributed to a dearth of nutrition and culinary knowledge and competencies [256–258]. These factors have particularly impacted individuals with lower health literacy, food/nutrition literacy, and socioeconomic status—perpetuating health inequities for diet-related diseases [256,259]. Clinicians are not immune to these societal trends and often lack sufficient knowledge about food, nutrition, and healthy food preparation.

Given the importance of adequate nutrition before, during, and after GLP-1 use, clinicians and individuals must be equipped with knowledge and skills around healthy eating. Interest in medical nutrition education for clinicians is growing throughout training and practice [260,261]. Teaching kitchen curricula for clinicians and individuals has emerging evidence for enhancing nutrition knowledge, culinary skills, and dietary pattern change [262–264]. When culturally tailored, nutrition education further supports dietary change [265–267].

Future Directions

As clinical and public interest in GLP-1s accelerates, the pace of peer-reviewed evidence has not kept up to provide answers to all relevant topics. We herein highlight some timely gaps and recommendations based on limited available evidence and expert opinion to help guide clinicians in addressing real-world questions raised in practice. With the accumulation of more science, guidance on these topics may evolve.

Dietary modulation of GLP-1 release and action

The GLP-1 hormone is naturally released in response to eating by intestinal enteroendocrine L-cells, present throughout the intestines and especially the distal colon. After eating, GLP-1 blood concentrations rise by 2- to 4-fold, activated by neuroendocrine pathways (with onset 10–15 min after eating) and nutrient-specific G-protein coupled intestinal receptors (with onset 30-60 minutes after eating) [268]. Circulating endogenous GLP-1 has a half-life of 1-2 minutes, being rapidly inactivated by dipeptidyl-peptidase IV. Despite this, endogenous GLP-1 exerts powerful metabolic effects, including on pancreatic beta cells and the brain [268]. The latter includes both central homeostatic (energy-intake-focused) and non-homeostatic (reward-focused) regulation of food consumption in the hypothalamus and nucleus of the solitary tract [268–271], influenced by a relatively small amount of GLP-1 that crosses the blood-brain barrier and, more notably, GLP-1 modulation of vagal afferent neurons [268]. This latter pathway may have potent metabolic effects, even when endogenous GLP-1 blood concentrations are lower than pharmacologic GLP-1 levels [268].

Physiologic GLP-1 secretion is a complex, incompletely understood process, with early studies suggesting potentiated release through nutrient supplementation, whole foods, dietary patterns, and microbiome alterations [268,272]. In the small intestine, monosaccharides directly drive GLP-1 secretion by binding to enteroendocrine L-cell glucose transporters (268,273]. In the colon, unabsorbed monosaccharides, polysaccharides, and non-digestible carbohydrates (fiber, resistant starch) are metabolized by bacterial fermentation into short-chain fatty acids [268,272] that bind free fatty acid receptors 2 and 3, resulting in GLP-1 secretion. Similarly, mono- and polyunsaturated long-chain fatty acids strongly stimulate GLP-1 release via free fatty acid receptors 1 and 4. Protein-induced GLP-1 secretion is poorly understood but appears to play a role in GLP-1-mediated satiety [268]. In experimental studies, specific bioactives also stimulate GLP-1 secretion, for example, polyphenols in fruits and vegetables, catechins in green tea, curcumin in turmeric, capsaicin in chili peppers, omega-3 fatty acids in fish, and cinnamon and ginger [274,275].

Nutrient supplementation with fiber, resistant starch, and unsaturated fats are the most studied supplements in both animal studies and small-scale human trials—often showing increased circulating GLP-1 concentrations and associated metabolic improvements [269]. Mixed-nutrient meals higher in protein or fiber and specific dietary patterns (e.g., Mediterranean diet) may also increase GLP-1 secretion. Studies of microbiome alterations and GLP-1 release are inconclusive, but may be more impactful when including both prebiotics and probiotics [272]. Further investigation is critical to understand the health implications of specific nutritional and microbiome interventions on endogenous GLP-1 secretion. Questions include dose-specific effects of single nutrient, food, and dietary pattern interventions; targeting multiple enteroendocrine pathways simultaneously; potential differences in subgroup responses (e.g., with insulin resistance or obesity); and effects of prebiotic, probiotic, and symbiotic therapies [268,272].

Improving long-term adherence

While persistent GLP-1 therapy is recommended for obesity control and weight maintenance, most individuals prescribed GLP-1s for obesity treatment stop taking the drug within one year. Although demographic and clinical predictors of discontinuation have been assessed [74], the underlying reasons for discontinuation remain poorly quantified. In the authors' clinical experience, some individuals have challenges with side effects, out-of-pocket costs, or changes in payer coverage. Others tolerate the drug but, once meaningful weight reduction is achieved, do not wish to stay on the medication for life.

Adherence challenges are not unique to GLP-1s. Nearly 1 in 3 prescribed medications are never filled, and individuals regularly adhere to only half of prescribed agents [276]. Evidence-based strategies to improve general medication adherence include dose simplification, patient education, electronic reminders, reduced out-of-pocket costs, and patient incentives [5,276]. Integrating GLP-1 use with longitudinal, structured nutrition and lifestyle programming might also support simplified dose titration schedules and management of side effects. These interventions could be coupled with electronic reminders and FIM benefits, such as medically tailored groceries or produce prescriptions, to encourage medication adherence in the setting of dietary pattern changes. Standardized clinical workflows that incorporate structured programs of stepped therapy, supported by nutritional and lifestyle interventions, could also help promote more effective and cost-effective use for individuals and healthcare systems.

Importantly, adherence with dietary and other lifestyle changes is also challenging for many people. Just as occurs following GLP-1 discontinuation, weight regain is common with waning adherence to dietary and physical activity weight loss interventions. Approaches to

address and support the ability of individuals to achieve long-term success with their overall weight management program are a critical area for future implementation research.

Nutritional priorities for long-term weight maintenance post-therapy

Given adherence challenges, clinicians should help individuals establish positive nutrition and other lifestyle practices before and during GLP-1 therapy, to increase success at maintaining such practices if the drug is stopped. Weight maintenance is one top goal—preserving health gains as much as and for as long as possible. While the specific nutritional and other behaviors contributing to weight maintenance post-GLP-1 therapy have not been rigorously studied, other observational data elucidate general predictors of successful long-term weight reduction. For example, the National Weight Control Registry has identified several nutrition-related correlates of weight maintenance [277,278], including eating at regular times daily; eating regular breakfast; eating more minimally processed foods higher in nutrients, fiber, and/or protein; avoiding sugary drinks, highly processed foods, and snack foods; and permitting flexibility with food choices and occasional portion-controlled treats rather than severe restriction. Other behaviors associated with success include regular physical activity ($\geq$60 min/d), self-monitoring of body weight, food intake, and activity, limiting screen time ($<$10 h/wk), and use of coping strategies including social support, advance planning, and problem solving skills.

Combination or staged GLP-1 with nutrition therapy

Given the existing adherence and cost challenges of GLP-1s coupled with significant weight regain after discontinuation, combination or staged therapy with intensive lifestyle management could promote greater efficacy, cost-effectiveness, and equitable obesity care [3,18,20,231,279,280]. Both the STEP-1 and SURMOUNT-4 trials included the availability of RDN dietary counseling and recommendations to exercise 150 minutes/week during the treatment period, but with notable weight regain for most participants upon GLP-1 discontinuation without continued nutrition support [18,20]. In the SURMOUNT-3 trial, individuals who received tirzepatide after a comprehensive 12-week lifestyle intervention achieved a mean 25% weight reduction, compared to 4.8% in the placebo group [178], suggesting a benefit for staged lifestyle intervention with GLP-1s. Overall, preceding or combining GLP-1s with intensive behavioral therapy shows promise in increasing achieved weight reduction. Notably, such programs did not include a full spectrum of evidence-based behavioral therapies—such as tailored support and tracking for nutrition, culinary skills, physical activity, sleep, stress management, social connectivity, and medication management—which could further augment efficacy [181,182].

Given high rates of discontinuation, use of intensive lifestyle management could also aid in weight maintenance long term. A recent simulation analysis compared continuous GLP-1 therapy versus a staged program of GLP-1 therapy until sustained weight reduction was achieved, followed by discontinuation and a structured behavioral lifestyle intervention for weight maintenance [84]. With a wide range of plausible effectiveness and costs of behavioral intervention, this alternative program was projected to generate substantial savings in net healthcare costs, with minimal loss of health-related quality of life. Such programs will unlikely work for all or even most individuals. However, given high GLP-1 costs and discontinuation rates, success among even a modest proportion of individuals could greatly augment overall efficacy and cost-effectiveness of GLP-1 therapy.

Nutrition counseling may be insufficient for individuals who face significant barriers to healthy eating, such as food insecurity, nutrition insecurity, or insufficient time or income. Incorporating FIM interventions, such as medically tailored groceries or meals, may improve compliance with nutrition recommendations during GLP-1 use and, if stopped, thereafter [3]. Consistent with this, in non-GLP-1 weight reduction studies, access to healthy food at home is associated with weight maintenance [280]. The current challenges and costs of GLP-1 therapy highlight the urgent need for rigorous research on how staged or combination nutritional programs, including multiple components and possibly FIM therapies, might improve outcomes, mitigate weight regain or cycling, and promote health equity.

Nutritional considerations for off-label use

Some individuals use "microdosing", spaced out dosing, or lower compounded dosing of GLP-1s. Such use may be motivated by personal preferences, GI tolerability, costs, and drug shortages. Cost-related drug rationing is more common among those who are younger, female, lower income, uninsured, or have prevalent obesity or cardiovascular disease (CVD) [281]. Analyses of social media suggest that off-label use is influenced by dosing concerns, insurance denials, and GI side effects [282–284]. Off-label use can lead to dosing errors and reduced efficacy. Concerns have been raised about off-label use of compounded GLP-1s [285], including for cosmetic weight reduction [286–289]. Nutritional considerations for off-label use remain unclear and, given the rapidly growing public use of GLP-1s, are an important area of needed research.

Use of specific dietary patterns

Several dietary practices and topics of public interest intersect with use of GLP-1s, including ketogenic diets, intermittent fasting, and ultraprocessed foods. Ketogenic or very-low-carbohydrate diets can be a practical approach to weight loss and glycemic control for some people, while others find long-term adherence difficult [290–292]. People on ketogenic diets should be counseled to prioritize minimally processed foods, those with higher fiber, such as vegetables, and nutrient-dense foods to ensure nutritional adequacy (Table 6). For individuals with diabetes, the ketogenic diet in combination with GLP-1 therapy could increase the risk of diabetic ketoacidosis and hypoglycemia. Discontinuation or reduction of sulfonylureas and insulin should occur with careful monitoring by the primary care or provider, as appropriate, for individuals with type 2 diabetes interested in a ketogenic diet [293,294].

Intermittent fasting may increase the risk of hypoglycemia in individuals with type 2 diabetes on hypoglycemic agents and those with type 1 diabetes [295,296]. Individuals on GLP-1 therapy may also practice unintended intermittent fasting, due to not being hungry. Even when using intermittent fasting, individuals taking GLP-1s should be encouraged to consume meals at regular times of the day. Long periods of fasting without sufficient protein intake or dietary variety can lead to nutritional inadequacy, clinical nutrient deficiencies, loss of fat-free mass, and reduced resting energy expenditure [297]. These effects can be mitigated through strength training, adequate protein and calories consumption, and a variety of minimally processed, nutrient-rich foods (Table 6) [298].

Ultraprocessed foods are defined by the use of industrial additives or processing technologies not normally used in home cooking [299]. Mechanisms of harm appear likely varied and could include changes to the food matrix; higher starch, sugar, or salt; less fiber, micronutrients, or polyphenols; harms of certain additives, industrial toxins, or packaging

contaminants; and displacement of minimally processed, healthful foods [299]. Avoiding these foods is generally advisable, although certain subcategories of ultraprocessed foods may have neutral or net positive health effects (e.g., those rich in whole grains, fruit, yogurts, or seafood), depending on their ingredients, processing, and additives [300,301].

Definitions and diagnostic criteria for clinical obesity

A recent expert group reviewed the utility of BMI-based measures for assessing individual health and concluded that these can misclassify (both underestimate and overestimate) adiposity—and thus undermine effective clinical care and policy development [271]. To address this, the report proposed a new definition of *clinical obesity*—a chronic, systemic illness resulting from excess adiposity and characterized by alterations in tissue and organ function. The report further distinguished clinical obesity, defined as excess adiposity with significant tissue or organ dysfunction that can lead to severe complications, from preclinical obesity, defined as excess adiposity without immediate organ dysfunction but with an increased risk of progression to clinical obesity and other non-communicable diseases.

That expert group recommended using BMI as a surrogate measure of clinical obesity for population-level assessments. However, for individual health evaluations, they recommended assessing adiposity using direct body fat measurements or additional anthropometric criteria, and evaluating tissue or organ dysfunction using laboratory measurements or based on significant limitations in daily activities due to obesity. The report noted that individuals with clinical obesity should receive timely, evidence-based treatment to improve or remit symptoms and prevent further complications; while those with preclinical obesity could be managed with health counseling and monitoring to mitigate progression.

This new proposed paradigm more closely aligns with clinical goals and practice around obesity care. How and when it may be integrated by clinical societies and practicing clinicians, as well as the impact on GLP-1 utilization and monitoring, is an area for future investigation.

In conclusion, although GLP-1s alone can produce significant weight reduction and related health benefits, several challenges limit its long-term success for individuals and populations. These include GI side effects; risk of nutrient inadequacies, muscle, and bone loss; high costs; frequent discontinuation; and weight regain. Careful attention to evidence-based nutritional and behavior modification can help mitigate the adverse effects of these challenges. Thus, all clinicians prescribing GLP-1s for obesity management should establish a thoughtful plan of care that includes thorough nutritional and lifestyle counseling before, during, and after the weight reduction period. This should include an emphasis on healthful eating, physical activity, and resistance training; screening and management around substance use disorders, eating disorders, mental health, and sleep; and micronutrient or protein supplementation as needed. These approaches can provide benefits beyond body weight alone: reducing GI side effects, micronutrient deficiencies, and muscle and bone loss, and improving general metabolic health and well-being. Such comprehensive care will make clinicians more effective stewards of these medications and positive contributors to their patients' health.

Summary Takeaway Messages

- Despite the ability of GLP-1s to produce significant weight reduction and related health benefits, challenges such as GI side effects, risk of nutrient inadequacies, loss of muscle and bone mass, high costs, frequent discontinuation, and weight regain limit the use of these drugs for long-term success in individuals and populations.
- Clinicians prescribing GLP-1s for obesity management should focus on and help mitigate these challenges by developing care plans that include thorough nutritional and lifestyle counseling before, during, and after the weight reduction period.
- Such comprehensive care will support treatment benefits beyond body weight alone and will make clinicians more effective stewards of GLP-1s and, ultimately, of patients' overall health.

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Medical & Surgical
Weight Loss Center

YOUR GLP-1 LIFESTYLE GUIDE

A Guide to Support Your GLP-1 and Weight Loss Journey

Common Questions

01

What are GLP-1 medications?

These are a class of medications called *incretins* used to help manage blood sugar and treat obesity. They mimic a hormone occurring naturally in our bodies called *GLP1* which helps our pancreas produce insulin

02

How do these medications work?

They work in our body by suppressing appetite and slowing digestion. They help lower blood glucose in people with diabetes by increasing insulin secretion and can also help promote weight loss in people with obesity. They also increase satiety, so you may notice that you feel full sooner than normal and will tend to stay full longer than normal.

03

Are they covered by my insurance?

This varies among insurance providers. You will need to contact your insurance company to determine if these are covered and the criteria that they may require you to meet to have access.

04

How are they taken?

These medications are injections. They start at a low dose and increase periodically until you reach an appropriate dose for you. You do not always have to reach the max dose of the medication for it to work very effectively.

05

How long will they take to be effective?

Not everyone will notice a difference in appetite or satiety right away on the lowest doses of medications. Understand that they need time to work and will be regularly evaluated by your team

FYI: Understand that medications are "helpers", not a magic solution, so lifestyle and medications must go hand in hand to have the best outcomes.

Possible Side Effects and Strategies to Reduce Them

Nausea and Vomiting

Choose smaller portions, limit foods high in fat and sugar, eat slowly, stop eating 3 hours before bedtime, take meds with food, and be sure to hydrate well every day. Choose cold foods/beverages, try ginger or peppermint tea, get some fresh air and do some deep breathing. Particularly on the day of your injection, try some crackers, mint or ginger based drinks and try to avoid strong smells. Vomiting and diarrhea can cause dehydration, so good hydration is a must.

Diarrhea

Avoid high fiber foods, dairy products, coffee, alcohol, soft drinks, very hot or cold foods, and sugar alcohols (erythritol, mannitol, sorbitol, etc.)

Constipation

Focus on getting adequate fiber in your diet. People need 25g of fiber or more each day for digestive and cardiovascular health. Fiber is found in fruits, vegetables, whole grains, starchy vegetables, beans, legumes, and seeds. Incorporate some of these foods with every meal/snack. Be sure to get >64oz fluids daily. Try adding bran, "go juice", or a fiber supplement like Metamucil or Benefiber to your day. You may need MiraLAX as directed by your medical provider. Also try walking after meals.

Poor Appetite

This may occur the first day or two after your injection or when you increase your dose. You may have little or no hunger, but you still need to eat. Skipping meals frequently can lead to low blood sugar, increased risk of nutrient deficiencies, hair loss, poor sleep quality, low energy, moodiness, and loss of muscle mass. It is common to be less hungry right after taking your injection and you may notice an increase in hunger over time before your next injection is due.

INTENTIONAL NUTRITION

Eat with intention. Find simple ways to meet your nutrient needs. Use this simple framework to plan your meals:

Pick Your Protein: Make Your Choices Lean

- Chicken
- Steak
- Pork
- Turkey
- Lamb
- Ground Chicken
- Ground Beef
- Ground Turkey
- Eggs
- Fish
- Shellfish
- Tofu
- Tempeh
- Seitan
- Cottage Cheese
- Greek Yogurt
- Mozzarella Cheese

Pick Your Produce: 1 cup

- Broccoli
- Brussel Sprouts
- Cabbage
- Carrots
- Cauliflower
- Cucumber
- Green Beans
- Greens (collard, kale, mustard, turnip)
- Lettuce
- Mushrooms
- Peppers
- Spinach
- Squash
- Tomatoes
- Apples
- Bananas
- Grapefruit
- Kiwi
- Melon
- Peaches
- Pears

Pick Your Fiber: Whole Grains and Starchy Vetetables 1/2-1 cup

- Rice
- Pasta
- Couscous
- Farro
- Oats
- Granola
- Tortilla
- Pita
- Bread
- Corn
- Potatoes
- Sweet Potatoes
- Lentils
- Beans (lima, navy, kidney, etc)
- Popcorn
- Pretzels
- Tortilla Chips

Pick Your Healthy Fat: 1 tbsp

- Olive oil, olives
- Avocado oil, avocado
- Canola oil
- Nuts, seeds
- Nut butter
- Butter or spread like olivio, smart balance, or butter blended with olive or canola oil
- Sour cream (swapping plain Greek yogurt in for this is also a good high protein option)

Tips for Getting Adequate Nutrition

Protein, Fiber, and Fluids

Protein

· Protein bars and drinks can be a great meal swap or addition to your day. However, we do not recommend using these as meal replacements for more than one meal a day. This is because there are so many other important nutrients you obtain from whole foods, so it is best to obtain protein through a variety of sources.

· Recommended protein drinks: see protein shake handout

· Recommended protein bars: Pure Protein, Fit Crunch, Ensure High Protein, Atkins meal or protein bars, Quest, Nature Valley protein bar, Bariatrix Proti bars

· Having snacks on hand that contain protein can help chip away at your total protein goal. Think cheese sticks, low sodium meat sticks, hummus (with veggies or crackers), hardboiled eggs, edamame, roasted chickpeas, etc.

· If you struggle with time for meal preparation, make ready-made proteins a part of your weekly grocery trip, such as tuna packets (low sodium when possible) and rotisserie chicken. These can quickly be added to a salad or to other meals.

· Make cottage cheese and yogurt (preferably Greek) a regular purchase. They have so much utility in the kitchen or are great on their own.

Fiber

· Choose whole grains such as brown or wild rice, whole wheat pasta, or quinoa as well as whole grain bread products to add more fiber to each meal

· Include starchy vegetables like sweet potatoes, corn, and lima beans to increase important nutrient and fiber intake.

· Beans and legumes are a nutritional powerhouse, providing both protein and fiber! They can be eaten as the starch for the evening or added to salads and soups
· Add chia seeds or flax seeds to oatmeal or smoothies

Fluids

· Keep a reusable water bottle with you and sip all day, and set reminders or post notes to remind you to sip or drink a full glass and refill
· Replace your other drinks with water such as sugar sweetened beverages like soda, sweet tea, sports drinks
· Drink a glass of water between each meal, and drink and 8oz glass of water every hour at work
· Use filtered or flavored water to increase palatability
· Drinks a glass of water each time you brush your teeth
· Eat more foods high in water content: fruits, vegetables, sugar free jello and popsicles, soups/broth

Sample Menu

What does 90g of protein a day look like?
And 25g of fiber?

BREAKFAST	**¾ cup Greek yogurt with 1 cup raspberries** **2 hardboiled eggs**
LUNCH	**Kale salad with 4oz chicken** **½ cup beans**
DINNER	**Salmon quinoa Greek bowl with 4 oz grilled salmon, 3/4c quinoa, fresh veggies (including broccoli, cucumbers, beets, tomatoes) and Greek dressing**
SNACKS	**Low-fat cheese stick** **Wasa crackers**

FOOD BEHAVIORS

01 Eat slowly and chew well. Notice your eating pace. If you eat too fast, you will be more likely to overeat. Savor and enjoy your food

02 Pay attention to your fullness cues. These may come earlier than expected when taking these medications. Think about stopping when you feel about 80% full (satisfied, not full)

03 If liquids fill you up, drink between meals rather than with meals

04 Be mindful of why you eat (emotions, boredom, stress, etc.) and acknowledge habits that don't serve you

05 If you find that you are NEVER hungry or are routinely eating very little, this is a warning sign. We need to reassess your nutrition plan and your medication dosing.

Physical Activity

Cardiovascular exercise is important for heart health and to increase overall movement, especially if you have a sedentary job.

Strength training is essential to help mitigate loss of muscle mass on any weight loss journey. However, because the GLP-1s can be so effective, they can potentially lead to a loss of muscle mass. Therefore, the incorporating of strength training is very important.

Tips to Add Movement

It's important to start small. Trying to go full throttle at the beginning of a workout plan often leads to being overwhelmed and over fatigued. There is no lower threshold for benefits, meaning any amount counts.

There is no "one size fits all" exercise plan. It's important to pick something you enjoy and can stick to. There are a variety of options for more movement, such as walking, jogging, biking, swimming, rowing, and using different equipment at a gym such as the treadmill, elliptical, or stair climber.

Sometimes, getting the recommended amount of physical activity for weight loss (300 minutes per week, or 60 minutes 5 days per week) sounds impossible while balancing our schedules. It can be helpful to split it up throughout the day. For example, a 15-minute walk in the morning, 15-minute walk during a lunch break, and 30-minute workout after work can be more attainable than dedicating a full hour at one time.

Tips to Add Strength Training

Again, there is no "best" or "one size fits all" strength training routine. There are a variety of options: weights, resistance bands, weight machines, or using your own body weight.

You do not have to go to the gym to get a good strength training workout in. At home, there are a variety of options:

- BeachBody App (subscription)
- Peloton App (subscription)
- GymShark Training and Fitness App: free
- YouTube Videos for resistance band exercises, chair exercises, or body weight exercises

When starting out, choose a weight and rep range where the last 2-3 reps are a struggle. For example, if you start with a 5lb dumbbell and have to do 20 or more reps to feel the burn, you probably need a higher weight. Once you find your weight and rep range and are doing this consistently, the amount that used to cause you to feel fatigued will likely not anymore. This is a signal to increase either the weight, reps, or number of sets. Muscles need to be consistently challenged to grow.

Examine Your Support System

Are there people around you who will lift you up and support your journey? This is important to both your mental and physical health and wellbeing. It's extremely helpful to have a "buddy" during this process, whether they workout with you, share recipes with you, or are someone to vent to. Your medical team is also here to help! The more touch points you have with a provider, the more you can feel supported.

We also provide several online social support options, including:

Our Team Facebook Page

WVU Medicine Medical Weight Management Program Support

Your medical team and other patients in the program post in here daily. It is super helpful for recipe and workout ideas, asking questions to people going through a similar experience, and staying engaged and motivated.

Eat Well, Live Well Groups

These 8-week online sessions are provided by the dietitian team.

Each week, a variety of health-related topics are covered and participants share their experiences and set goals.

Monthly Support Groups on Zoom

Each month, we post a link in our Facebook page to a support group we hold on Zoom.

Topics vary and each session is run by one of our different experts in their respective fields.

Medical & Surgical
Weight Loss Center

Movement

The disease of obesity is influenced by a **complex** culmination of **genetic, behavioral, environmental, and biological factors.** Physical inactivity is a modifiable risk factor that can be addressed through structured exercise and increased daily activity. [1-7]

Exercise, particularly aerobic training, leads to **modest reductions** in body weight (typically 2–3 kg) and abdominal visceral fat, which are associated with improvements in cardiometabolic risk factors independent of weight loss.[1][3][5-7]

Resistance training is **specifically recommended** to preserve lean body mass during weight loss and when performed with the appropriate stress for muscle gain, will have the ability to increase patient's metabolism.[1][3][6]

Importantly, higher levels of physical activity are associated with better long-term weight loss maintenance, which is a major challenge in obesity management.[2][4][6]

Exercise improves cardiorespiratory fitness, muscle strength, insulin sensitivity, and reduces systemic inflammation. All of these can help decrease the adverse health consequences of obesity regardless of genetic predisposition, sleep patterns, environmental exposures, etc. [3][8]

Exercise also helps with appetite regulation (hunger) and may counteract some of the metabolic adaptations that promote weight regain.[9]

So, in conclusion, **exercise is a valuable component of obesity management** because it addresses both the energy imbalance and the broader metabolic, functional, and psychosocial complications associated with excess adiposity. [1-4][8][9]

What type of training should you be doing?

Is there a difference between men and women?

Is there a difference between pre and post-menopausal women?

1. Cardiovascular Training

Cardio burns calories and improves insulin sensitivity.

- **Walking (brisk pace or incline)** – Low impact, accessible, and sustainable.
- **Cycling (outdoors or stationary)** – Joint-friendly, scalable intensity.
- **Swimming or Aqua Aerobics** – Excellent for those with joint pain or high BMI.
- **Rowing Machine** – Full-body cardio with strength elements.
- **Jump Rope or Low-Impact Jumping Jacks** – Great for short bursts (if joints tolerate).
- **Dance-Based Cardio or Zumba** – Fun, high-calorie burn.

✅ *Goal:* 150–300 minutes per week of moderate-intensity or 75–150 minutes of vigorous cardio.

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2. Strength Training (to build muscle and raise metabolism)

Muscle increases resting metabolic rate, helping burn more calories even at rest.

- **Bodyweight Exercises** (e.g., squats, modified push-ups, wall sits)
- **Resistance Band Workouts** (glute bridges, rows, chest presses)
- **Dumbbell or Barbell Lifts** (deadlifts, squats, overhead presses)
- **Cable Machine Work** (especially for beginners or those with limited range)
- **Chair-Based or Seated Exercises** for those with limited mobility

Goal: 2–3 times per week, full-body workouts with progressive overload.

3. Functional & Mobility Training (to prevent injury and improve consistency)

These exercises help obese individuals move safely and efficiently:

- **Step-ups or Box Squats** – Builds leg strength safely
- **Farmer's Carries** – Boosts grip, core, and endurance
- **Stability Ball Work** – Engages core, improves balance
- **Chair Yoga or Gentle Yoga** – Improves mobility, reduces cortisol
- **Foam Rolling & Dynamic Warm-ups** – Crucial for joint health and recovery

4. High-Intensity Interval Training (HIIT) – *Use with caution*

If fitness level permits, short bursts of intense exercise followed by rest can be very effective for fat loss. Excellent for Post Menopausal women to preserve bone loss and osteopenia

Examples:

- 30 seconds of fast pedaling + 90 seconds slow on a bike
- 20 seconds squats + 40 seconds rest, repeat

Not ideal for beginners without supervision

Key Considerations:

- **Start slow** – consistency is more important than intensity early on.
- **Joint health matters** – avoid high-impact moves until strength and mobility improve.
- **Incorporate NEAT** – non-exercise activity thermogenesis (daily movement like walking, chores) significantly impacts total calorie burn.
- **Strength + cardio is the best combo** – together they improve body composition and metabolic health better than either alone.

Men VS Women

Category	Men	Women
Fat Distribution	More visceral (belly) fat	More subcutaneous (hips, thighs) fat
Joint Stress Points	Lower back, knees	Knees, ankles, hips
Muscle Mass	Naturally higher muscle mass, especially upper body	Lower overall lean mass; relatively stronger lower body
Hormonal Influence	Testosterone supports muscle gain more easily	Estrogen affects fat storage & joint laxity
Cardio Tolerance	Often better performance in rowing/cycling	May prefer walking, pool cardio due to breast weight or pelvic floor stress
Mobility Challenges	Core tightness, low back pain	Hip tightness, balance challenges due to wider Q-angle (pelvic alignment)
Psychosocial Barriers	May avoid group classes, seek solo work	Often face higher body image concerns and anxiety about gym environment

Download this app for demonstrations of all exercises listed here

Exercise Focus for Men:

1. **Core and posterior chain strength** to support the lower back
2. **Low-impact cardio**: cycling, rowing, incline walking
3. **Upper-body mobility and posture** (tight chest/shoulders common)

4. **High-intensity interval cardio** can often be better tolerated due to higher lean mass
5. **Progressive resistance training** to leverage higher testosterone for faster metabolic improvement

✅ *Sample strength move:* Barbell or dumbbell deadlifts with posterior chain emphasis
✅ *Sample cardio:* Rowing machine intervals or hill walking

🏋️‍♀️ **Exercise Focus for Women:**

1. **Lower body strength**: glutes, hamstrings, quads for knee and hip support
2. **Pelvic floor-friendly core training** (no crunches, more bird dogs, dead bugs)
3. **Joint-friendly cardio**: walking, step-ups, swimming, elliptical
4. **HIIT/SIT**: high intensity training for advanced patients, great for post menopause!
5. **Balance and ankle stability** (due to wider hips and Q-angle stress)
6. **Mind-body exercises**: yoga, Pilates, barre often help reduce cortisol and improve body image

✅ *Sample strength move:* Dumbbell goblet squats or resistance band glute bridges
✅ *Sample cardio:* Walking intervals, step aerobics, aqua Zumba

Pre vs Post Menopausal Women and Training

The **key difference** between **pre-menopause** and **post-menopause** exercise routines lies in how the **body responds to hormonal changes**—especially **estrogen, progesterone, and testosterone**.

These shifts affect **muscle mass, bone density, fat storage, recovery, and injury risk**, so exercise strategies should adjust accordingly.

	Pre-Menopause	Post-Menopause
Estrogen levels	Stable or fluctuating	Low
Recovery	Quicker	Slower, higher inflammation
Muscle retention	Easier	Harder—risk of sarcopenia
Fat distribution	Lower body (hips, thighs)	Central (abdomen/viscera)
Bone density	Maintained	Decreases rapidly
Joint laxity	Higher (progesterone effect)	Lower, but joints may ache more
Stress response	Balanced cortisol	Higher baseline cortisol
Sleep quality	Generally better	Often worsens—affecting recovery/metabolism

✅ Program Guidelines:

- **Progressive Overload**: Increase weight slightly each week if form is solid.
- **Rest**: 60–90 seconds between sets (longer for deadlifts or squats).
- **Nutrition**: Focus on high protein (1g per lb of lean body mass), moderate carbs, and healthy fats.
- Optional cardio: 15–30 minutes on rest days if fat loss is a goal.

🏋️‍♀️ Exercise Focus: Pre-Menopause

Goal: Performance, body composition, hormone balance

- ✅ **Moderate to high intensity strength training**: 3–4x/week
  Full-body resistance training (e.g., squats, deadlifts, rows, presses)
- ✅ **Cardio variety**: steady-state + interval work (2–3x/week)
  E.g., running, spin, HIIT, circuit training
- ✅ **Mobility & Core Training**: prevent injury
  Yoga, Pilates, active stretching
- ✅ **Cycle syncing (optional)**: vary intensity across menstrual cycle

🧘 Exercise Focus: Post-Menopause

Goal: Preserve muscle and bone, manage fat gain, reduce inflammation

- ✅ **Resistance training is non-negotiable**: 2–4x/week
  Focus on heavy-enough loads to stimulate muscle and bone (progressive overload)
- ✅ **Low-impact, joint-friendly cardio**: walking, swimming, elliptical
  Aim for 150–300 min/week total
- ✅ **Moderate to high intensity strength training**: 3–4x/week
  Full-body resistance training (e.g., squats, deadlifts, rows, presses)
- ✅ **Balance and stability training**: reduce fall risk
  E.g., single-leg work, heel-to-toe walking, yoga
- ✅ **Mobility and recovery focus**: longer warm-ups, cool-downs
- ✅ **Core & pelvic floor strengthening**: dead bugs, glute bridges, bird dogs

📋 Summary of Exercise Modifications

Component	Pre-Menopause	Post-Menopause
Strength training	Moderate-to-heavy, high reps	Moderate-to-heavy, lower reps, longer rest
Cardio	Intense intervals okay	Focus on consistency, less impact
Recovery	Shorter, less emphasis	Longer, crucial for progress
Core	Dynamic and endurance-based	Focused on stability and pelvic floor
Hormonal support	Cycle-aware training optional	Exercise helps *mitigate* low estrogen effects
Bone focus	Maintain	Build/preserve (weight-bearing essential)

Please feel free to download this free app that will demonstrate how to perform all the exercises listed

Workout Examples:

3-day strength training example for post-menopausal Women

Broken down by muscle groups. This routine supports bone density, lean muscle mass, and joint health. It includes strength, stability, and mobility work.

Always warm up (5–10 min of light cardio + dynamic stretching) and consult with a healthcare provider if starting new exercise routines.

✅ Program Guidelines:

- **Progressive Overload**: Increase weight slightly each week if form is solid.
- **Rest**: 60–90 seconds between sets (longer for deadlifts or squats).
- **Nutrition**: Focus on high protein (1g per lb of lean body mass), moderate carbs, and healthy fats.
- **Optional cardio:** 15–30 minutes on rest days if fat loss is a goal.

Day 1: Chest & Triceps

Warm-Up:

- Arm circles x 10 each direction
- Wall push-ups x 10
- Light band pull-aparts x 10

Workout:

1. **Incline Chest Press (Dumbbells)** – 3 sets of 8-10
2. **Push-Ups (Wall or Modified)** – 3 sets of 8–12
3. **Chest Fly (Dumbbells or Cable)** – 3 sets of 10
4. **Triceps Kickbacks** – 3 sets of 10-12
5. **Overhead Triceps Extension (1 DB or 2)** – 3 sets of 10
6. **Plank (on knees if needed)** – 3 x 20–60 sec hold

Cool Down: Chest and triceps stretches

Day 2: Back & Biceps

Warm-Up:

- Shoulder rolls x 10
- Banded pull-aparts x 10
- Cat-Cow x 10

Workout:

1. **Bent-Over Rows (Dumbbells or Barbell)** – 3 sets of 8-10
2. **Lat Pulldown or Assisted Pull-Up** – 3 sets of 10
3. **Face Pulls (Band or Cable)** – 3 sets of 12
4. **Bicep Curls (Dumbbells)** – 3 sets of 10-12
5. **Hammer Curls** – 3 sets of 10
6. **Dead Bug or Bird-Dog** – 3 sets of 12 reps per side

Cool Down: Stretch lats, biceps, and back

Day 3: Legs & Shoulders

Warm-Up:

- Bodyweight squats x 10
- Hip circles x 10
- Glute bridges x 10

Workout:

1. **Squats (Bodyweight or Dumbbell)** – 4 sets of 8-10
2. **Step-Ups or Lunges (Chair or Bench)** – 3 sets of 10 per leg
3. **Romanian Deadlifts (Dumbbells)** – 3 sets of 8-10
4. **Shoulder Press (Dumbbells)** – 3 sets of 8-10
5. **Lateral Raises** – 3 sets of 12
6. **Wall Sit** – 3 x 30 sec holds

Cool Down: Hamstring, quad, and shoulder stretches

3 day strength training example for pre-menopausal Women

🗓 Weekly Split

Day	Focus
Day 1 (Mon)	Strength + Upper Body Focus
Day 2 (Wed)	Lower Body + Core
Day 3 (Fri)	Full Body Circuit + Conditioning

Day 1: Strength + Upper Body

Warm-Up (5–7 mins):

- Arm circles x 10
- Band pull-aparts x 15
- Light dumbbell shoulder presses x 10

Workout (3 sets each):

1. **Incline Dumbbell Chest Press** – 10 reps
2. **1-Arm Dumbbell Row** – 10 reps each side
3. **Overhead Shoulder Press (DB)** – 10–12 reps
4. **Triceps Kickbacks** – 12 reps
5. **Hammer Curls** – 10 reps
6. **Plank Hold** – 30 seconds

Finisher (Optional):

- 3 rounds: Jumping jacks x 30 sec + dumbbell thrusters x 10

Day 2: Lower Body + Core

Warm-Up (5–7 mins):

- Glute bridges x 10
- Air squats x 10
- Hip circles x 10 each side

Workout (3 sets each):

1. **Goblet Squat (DB)** – 10 reps
2. **Romanian Deadlift (DB)** – 10 reps
3. **Step-ups (chair or box)** – 8 reps per leg
4. **Lateral Band Walks** – 15 steps each direction
5. **Bird Dog** – 10 reps per side
6. **Dead Bug or Toe Taps** – 12 reps

Finisher:

- Wall sit x 30 seconds + Glute bridge hold x 30 seconds (repeat 2x)

Day 3: Full Body Circuit + Conditioning

Warm-Up (5 min):

- March or jog in place
- Arm swings and leg kicks

- Light dumbbell cleans x 10

Circuit (3 rounds):

1. **Dumbbell Squat to Press** – 12 reps
2. **Renegade Row (from knees if needed)** – 10 reps
3. **Alternating Reverse Lunges** – 10 reps per leg
4. **Dumbbell Deadlift** – 12 reps
5. **Standing Oblique Crunch** – 15 per side
6. **Jump Rope / Marching High Knees** – 30 sec

Cool Down (Stretch):
Hamstring, hip flexor, chest and shoulder stretches – 5 minutes

3 day strength training example for Men

Weekly Split (3-Day Strength Training for Men)

Day	Focus
Day 1 (Mon)	Push (Chest, Shoulders, Triceps)
Day 2 (Wed)	Pull (Back, Biceps)
Day 3 (Fri)	Legs + Core

Day 1 – Push: Chest, Shoulders, Triceps

Warm-Up (5–7 mins):

- Arm circles, band pull-aparts, light shoulder presses

Workout:

1. **Barbell Bench Press** – 4 sets of 5–8
2. **Incline Dumbbell Press** – 3 sets of 8–10
3. **Standing Overhead Press (Barbell or Dumbbells)** – 3 sets of 6–8

4. **Lateral Raises** – 3 sets of 12–15
5. **Overhead Triceps Extension or Skullcrushers** – 3 sets of 10–12
6. **Push-ups (finisher)** – 2 sets to failure

Day 2 – Pull: Back, Biceps

Warm-Up (5–7 mins):

- Arm swings, scapular push-ups, band rows

Workout:

1. **Deadlifts** – 4 sets of 4–6 (heavy strength)
2. **Pull-Ups or Lat Pulldown** – 3 sets of 6–10
3. **Barbell or Dumbbell Row** – 3 sets of 8–10
4. **Face Pulls or Rear Delt Flys** – 3 sets of 12–15
5. **Barbell or Dumbbell Curls** – 3 sets of 10–12
6. **Hammer Curls** – 2 sets of 10–12

Day 3 – Legs & Core

Warm-Up (5–7 mins):

- Bodyweight squats, hip openers, glute bridges

Workout:

1. **Back Squat or Goblet Squat** – 4 sets of 5–8
2. **Romanian Deadlift (Barbell or Dumbbells)** – 3 sets of 8–10
3. **Walking Lunges or Step-Ups** – 3 sets of 8 per leg
4. **Calf Raises** – 3 sets of 15–20
5. **Hanging Leg Raises or Reverse Crunches** – 3 sets of 12–15
6. **Plank Hold** – 3 x 30–45 seconds

Program Guidelines:

- **Progressive Overload**: Increase weight slightly each week if form is solid.
- **Rest**: 60–90 seconds between sets (longer for deadlifts or squats).
- **Nutrition**: Focus on high protein (1g per lb of lean body mass), moderate carbs, and healthy fats.
- Optional cardio: 15–30 minutes on rest days if fat loss is a goal.

Exercise Physiology Human Performance Lab Information:

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HUMAN PERFORMANCE LAB

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Medical Weight Management (MWM) Special Pricing

HPL Service	Regular Price	MWM Price
BOD POD (body composition analysis)	$50	$25
RMR Test (resting metabolic rate)	$60	$50
Bod Pod & RMR Package	$100	$60
Personalized Home Exercise Plan	$50	$25
Fitness Membership (includes personalized workout plan)	$50 enrollment fee $15/month	Enrollment fee waived, First month free $15/month

Testing Information

BOD POD Body Composition Analysis:

- Computerized, egg-shaped device that measures your body weight and volume displacement in order to calculate your amount of fat and lean body mass.

- **Test time:** 5-10 min

- **What you need:**
  - Fasting and no exercise 2-4 hours prior to test
  - No stimulants, including nicotine and caffeine
  - Tight fitting clothing (bathing suit, sports bra/compression shorts, undergarments)

- **Why is this useful?**
  - **Lean Body Mass:**
    - As you begin your weight-loss journey, it is important to conserve and even increase the amount of lean body mass you have.
    - The more lean body mass you have, the more calories you burn !
  - **Resting metabolic rate:**
    - The BOD POD can ***estimate*** your caloric expenditure at rest, based on your body composition.

https://wvumedicine.org/wellness/resources/wvu-human-performance-laboratory-hpl

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Resting Metabolic Rate Analysis (RMR):

- A computer measures how much oxygen you consume as you breathe through a face mask. This allows for a more accurate estimation of how many calories you expend at rest.

- **Test time: 30-45 min**

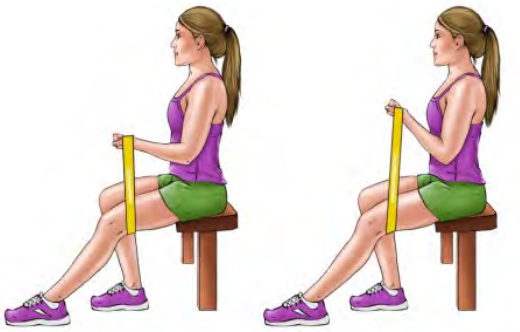
- **What you need:**
  - 8-10 hour fast with no exercise prior to testing, overnight preferred
  - No stimulants, including nicotine and caffeine

- **Why is this useful?**
  - This analysis provides a more accurate measure of how many calories your body needs to survive. Your providers at MWM can use it for your nutrition counseling!

https://wvumedicine.org/wellness/resources/wvu-human-performance-laboratory-hpl

Upper Body

Bicep Curl

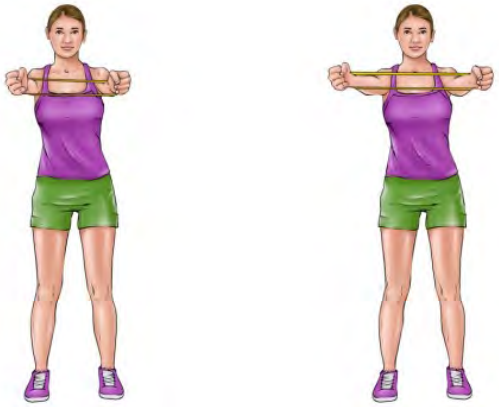


1. Place the band just above the knee on your left leg and slightly extend it out.
2. Take the band in your left arm and curl it upward until your hand is close to your chin.
3. Move the arm back toward the knee until there is only slight tension left. Repeat on the other side.

Tricep Extension

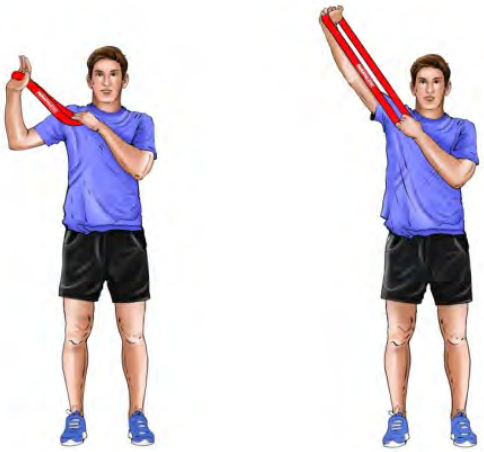
1. Place the band around your left hand and place this hand across the right side of your chest. Place your right hand on the other end of the band.
2. Stretch your right arm down until it is about at the level of your hip. Slowly return to the starting position until there is only slight tension in the band. Repeat on the other side.

Horizontal Abduction



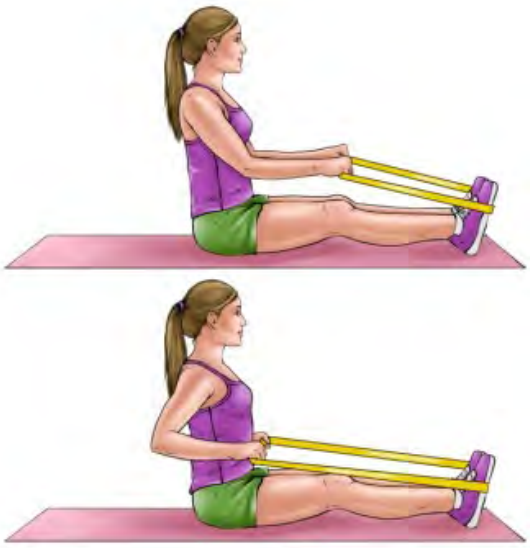
1. Place the band around yourwrists holding both arms straight out in front of you at shoulder height.
2. Slowly spread your arms until the band reaches almost double its length. Move arms back to the starting position.

Overhead Press



1. Hold the band in your left hand and place it by your right shoulder. Grab the other end of the band with your right hand.
2. Slowly raise your right hand straight above your head. Return to the starting position. Alternate arms.

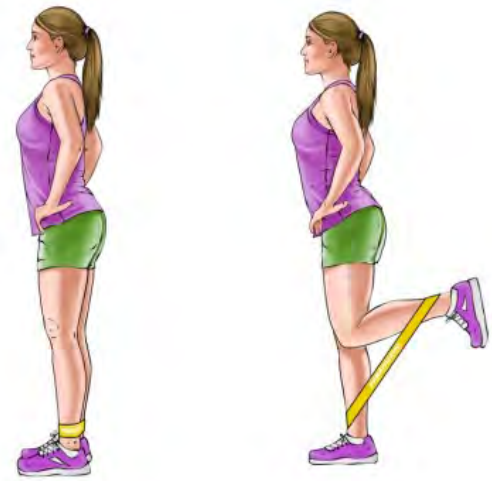
Seated Row



1. Sit on the ground with your legs stretched out in front of you. Place the band around both feet while holding the other end with both hands shoulder width apart. Arms should be slightly bent to start.
2. Pull the band toward you, bending your elbows alongside yourbody. Pinch your shoulder blades in as you pull backwards. Slowly return to the starting position and repeat.

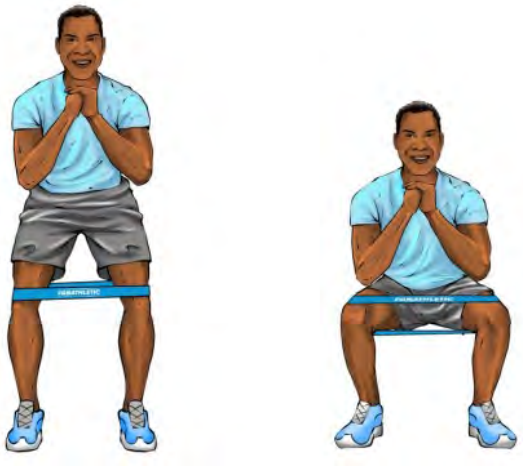
Lower Body

Leg Curls



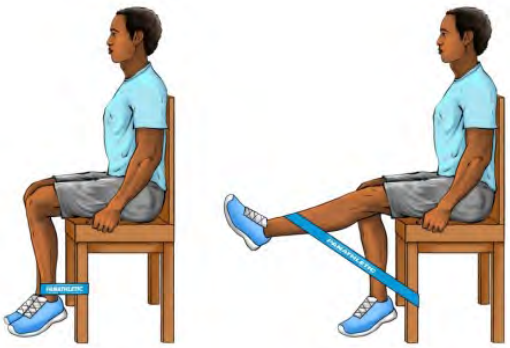
1. Place the band around your ankles while in the standing position.
2. Curl your leg backwards and upward making sure the thigh of the exercising leg remains parallel to the leg on which you stand.
3. Slowly lower your legs back down, just touching the ground, and repeat

Squats



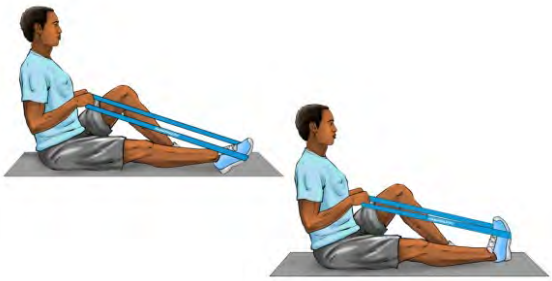
1. Place the band around your thighs just above the knees. Position your feet so that they are about shoulder width apart and there is tension in the band.
2. Slowly squat down until your thighs are parallel with the ground. Make sure your knees do not extend past your toes.

Knee Extensions



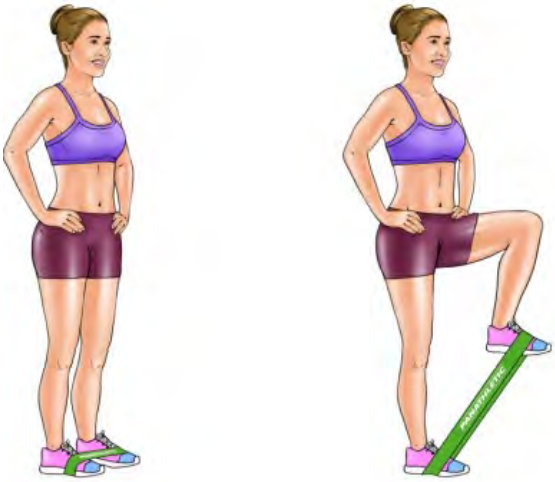
1. Place the band around your ankle and secure the end of the band on the leg of the chair.
2. Slowly extend the leg out in front of you. Be sure not to lock the knee out at the end of full range of motion.
3. Slowly return to the starting position

Plantarflexion



1. Sit on the ground with one leg bent with your foot flat on the floor and the other stretched out straight.
2. Place the band under your toes while holding the other end of the band close to your stomach.
3. Slowly point the toes away from your body and return to the starting position.

High Knees



1. Position your feet hip-width apart with the band around the arch of each foot.
2. Bend your knee up toward your chest. Your thigh should come up high enough so that it is parallel to the ground.
3. Be sure to maintain a straight back throughout the exercise. Slowly lower the leg and repeat sides.

METHODIST SPORTS MEDICINE—THE ORTHOPEDIC SPECIALISTS

Sitting Posture and Sit to Stand

PURPOSE: In order to protect your back from pain and re-injury it is important to have good sitting posture at all times. It is also crucial to go from sitting to standing while protecting the back. The pictures below should be followed all the time, even after your pain is gone

WHAT YOU SHOULD FEEL: A relief from your back pain compared to your usual posture.

Sitting:
Sit with hips against back of seat. Shoulders should be back and head up.

☐ Use back roll if possible

Sit-to-Stand:
It is very easy to injure your back during this common movement. To protect your back, you must move at your hips and knees and keep the back straight.

1. Tighten abdominals
2. Lean forward at hips
3. Keep head up and shoulders back
4. Stand up using leg muscles
5. Keep your lower back straight

Hold for _____ seconds and repeat _____ times. Perform _____ sessions per day / week

If you have any questions regarding your exercises, please contact your physical therapist at (317) 817-1200 or 1-800-SPORTS-MED

Therapist _____ Ext: _____

HOME EXERCISE PROGRAM

S-14

FORTE SPORTS MEDICINE AND ORTHOPEDICS

Table Slides

PURPOSE: To increase motion in your shoulders without using your shoulder muscles.

WHAT YOU SHOULD FEEL: Mild discomfort or stretching in shoulder area.

With a towel or piece of cloth of some kind laying flat on a firm, smooth surface, place forearm of affected shoulder flat but comfortably on the cloth with thumb pointing toward the ceiling. With the forearm of the unaffected shoulder also on the towel, use it to slide the towel forward. The affected arm should just passively glide on the towel. DO NOT PUSH THE TOWEL WITH THE AFFECTED SIDE. Continue until you feel a mild stretch in the affected shoulder.

Perform ____ sets of _____ repetitions, _____ times per day / week

If you have any questions regarding your exercises, please contact your physical therapist at (317) 817-1200 or 1-800-SPORTS-MED

Therapist _____ Ext: _____

HOME EXERCISE PROGRAM

S-41

FORTE SPORTS MEDICINE AND ORTHOPEDICS

Upper Extremity Strengthening

PURPOSE: To strengthen the muscles in your upper body.

☐ **Standing Bicep Curl**

Start with wrist in a neutral position as shown above. Bend the elbow and turn hand towards your face. Reverse the movement back to the start position.

☐ Bring weight up straight to your shoulder without rotating wrist.

☐ **Supine Triceps Extension**

While laying on your back bring arm up to position shown in picture above. Bring opposite hand over to stabilize your elbow. Extend arm up while keeping your shoulder from moving and keep wrist straight.

☐ **Sidelying External Rotation**

Lay on uninvolved side, involved elbow bent at 90° resting on folded towel. Keeping elbow of involved arm bent and fixed to side, slowly rotate hand towards the ceiling then lower to starting position.

☐ **Bent-Over Tricep Kickback**

Bend forward over a table or bench with elbow bent at 90° and tucked tight into torso. Move hand backwards to straighten your elbow.

☐ **Shoulder Press**

Sit up straight with shoulders down and back, keeping the shoulder blades squeezed together. Hold weights in a 90/90 position. Straighten your elbows to push weight toward the ceiling. Slowly lower to starting position and repeat.

Perform _____ sets of _____ repetitions, _____ times per day / week

HOME EXERCISE PROGRAM

HB-16

☐ **Level 4**

Hip flexed to greater than 90 degrees and the alternate foot lifted.

- Lift one foot off the floor and bring your knee toward your chest to more than 90 degrees, do not hold with hand.
- Lift the other foot off the floor, and lower it back down to the starting position.
- Lower the first leg back to the starting position.
- Repeat the sequence starting with the opposite leg.

☐ **Level 5**

Hip flexed to 90 degrees and lift the alternate foot.

- Lift one foot off the floor and stop when your hip is bent to 90° and your thigh is pointing towards the ceiling.
- Lift the other foot off the table and lower it back down to the starting position.
- Lower the first leg to the starting position.
- Repeat the sequence starting with the opposite leg.

☐ **Level 6**

One hip flexed to 90 degrees, the alternate foot lifted and slid to extend the hip and knee.

- Lift one leg up until your hip is bent to 90 degrees and your thigh is pointing toward the ceiling.
- Lift your other foot off the floor and slide it down while lightly touching the table.
- Straighten your leg completely.
- Slide your foot back to the starting position.
- Repeat the sequence starting with the opposite leg.

If you have any questions regarding your exercises, please contact your physical therapist at (317) 817-1200 or 1-800-SPORTS-MED

Therapist _____ Ext: _____

FORTE SPORTS MEDICINE AND ORTHOPEDICS

Advanced Lower Abdominals - Bridging

PURPOSE: To continue to strengthen your lower abdominal muscles and gluteus maximus which helps you control pelvic and low back positions.

WHAT YOU SHOULD FEEL: Lower stomach tightness or muscle burn. Tightening of lower abdominal and gluteal muscles.

BILATERAL BRIDGE

Begin by placing hands over lower abdominal area. Tighten your lower abdominals and squeeze buttocks. Lift hips off the table and keep the lower back straight.

UNILATERAL BRIDGE

Begin by placing your hands over lower abdominal area. Tighten your lower abdominals and squeeze buttocks. Raise one foot off the ground. Using only the leg on the ground, lift hips off the table and keep the lower back straight and your hips level.

Perform ____ sets of _____ repetitions, _____ times per day / week

HOME EXERCISE PROGRAM

FA-5

FORTE SPORTS MEDICINE AND ORTHOPEDICS

Heel Raises

PURPOSE: To strengthen the calf muscles in the back of your lower leg.

☐ **Level One**

Starting Position:
Sitting in a firm chair with both feet flat on the floor.
Action:

Raise up slowly onto the "balls" of your feet. Return **slowly** to starting position.

☐ **Level Two**

Starting Position:
Standing flat footed on both feet.

Action:
Raise up slowly onto the "balls" of your feet. Return **slowly** to starting position.

Gradually shift ☐ more weight onto the involved leg until all your body

☐ **Level Three**

Starting Position:
Standing flat footed on your injured leg.

Action:
Raise up slowly onto the balls of your injured foot. Return **slowly** to the starting position. **Avoid rolling onto outer foot when raising up.**

☐ **Eccentric Heel Raises**

Starting Position:
Standing flat footed.

Action:
Raise up on **R L Both** foot/feet, shift all of your weight onto **R L** foot and slowly lower body weight on this foot only

Perform _____ sets of _____ repetitions, _____ times per day / week.

If you have any questions regarding your exercises, please contact your physical therapist at (317) 817-1200 or 1-800-SPORTS-MED

Therapist _____ Ext: _____

HOME EXERCISE PROGRAM

FORTE SPORTS MEDICINE AND ORTHOPEDICS

LE-

Concentric & Eccentric Knee Flexion

PURPOSE: To strengthen your hamstring muscles and tendons.

WHAT YOU SHOULD FEEL: Muscle burn or fatigue in the back of the thigh, but no pain in the tendons, muscle or knee joint.

☐ **Concentric**
Starting with knee extended, slowly bend the knee to move the heel towards your hip. Lower heel back down slowly.

☐ You can do this same exercise on a hamstring curl exercise machine when advised by your therapist.

☐
Eccentric
Bend your injured knee, by using the non involved leg to assist (shown in top picture).

Remove the non involved leg and lower the involved

☐ **Standing Knee Flexion**
Stand with feet together and slowly bend the involved knee to raise your heel upward.
**Your knee should stay next to the opposite knee.

Perform ____ sets of _____ repetitions, _____ times per day / week

If you have any questions regarding your exercises, please contact your physical therapist at (317) 817-1200 or 1-800-SPORTS-MED

Therapist _____ Ext: _____

HOME EXERCISE PROGRAM

FORTE SPORTS MEDICINE AND ORTHOPEDICS

LE-

Squat Progression

☐ **Quarter Squat**
With feet hip-width apart and back straight, perform the motion of sitting down into a chair. Stop when your knees are bent to about a 20° angle. Make sure knees do not pass over the front of your toes. Dig into the ground through your heels. Return to standing position.

Perform _____ repetitions.
Do _____ sets/day.

☐ **Half Squat**
With feet hip-width apart and back straight, perform the motion of sitting down into a chair. Stop when your knees are bent to about a 45° angle. Make sure knees do not pass over the front of your toes. Dig into the ground through your heels. Return to standing position.

Perform ____ repetitions.
Do _____ sets/day.

If you have any questions regarding your exercises, please contact your physical therapist at (317) 817-1200 or 1-800-SPORTS-MED

Therapist _____ Phone: _____

HOME EXERCISE PROGRAM

FORTE SPORTS MEDICINE AND ORTHOPEDICS

☐ **External Rotation in Neutral**
Lying on back, bend involved elbow to 90 degrees. The non-involved arm now pushes the involved arm rotating it outward. Make sure your elbow stays bent at 90 degrees and remains against the side of your body.

☐ **External Rotation at 45 Degrees**
Lying on back with elbow bent to 90 degrees, bring elbow away from body at a 45 degree angle. Unaffected arm pushes affected arm toward the floor. Make sure elbow remains bent at a 90 degree angle.

☐ **External rotation at 90 Degrees**
Lying on back with elbow bent to 90 degrees, bring elbow away from body at a 90 degree angle. Unaffected arm pushes affected arm back toward the floor. Make sure elbow remains bent at a 90 degree angle.

☐ **Doorway Stick External Rotation**
Begin by standing in the doorway with your elbow bent to 90° and positioned between your side and the door frame. Push your involved hand away from your side with the stick, until you feel a stretch.

Hold for ____ seconds and repeat ____ times. Perform ____ times per day / week

If you have any questions regarding your exercises, please contact your physical therapist at (317) 817-1200 or 1-800-SPORTS-MED

Therapist _____ Phone: _____

HOME EXERCISE PROGRAM

FORTE SPORTS MEDICINE AND ORTHOPEDICS

General Wand Exercises

PURPOSE: To increase the motion in your shoulder. Use the stick and you non-involved arm to assist movement in your involved shoulder. The stick will enable you to move further than you can on your own.

WHAT YOU SHOULD FEEL: Minimal pain or stretching sensation in shoulder area. With all exercises go to a mild level of discomfort.

☐ **Standing Horizontal Flexion**
In standing, grasp wand with both hands and raise overhead. Allow uninjured arm to actively move the injured arm upwards

☐ **Lying Flexion**
Grasp wand with both hands and raise or push overhead.

☐ **Standing Vertical Flexion**
In standing, place injured arm at side, stick in hand. Push the injured arm upward in front of you.

☐ **Lying Abduction**
Use non-involved arm to push involved arm out to the side and overhead with the wand (slide involved arm along the floor).

☐ **Standing Abduction**
In standing, place injured arm at side, stick in hand. Push injured arm up and out to your side.

☐ **Extension**
Standing, grasp stick behind back. Lift the stick away from your buttocks.

Internal Rotation

☐ Slowly and cautiously use the noninvolved arm to pull the involved arm up, behind your back with a towel.

OR

☐ Use your non-involved hand to slowly push the involved hand up your

Hold for ____ seconds and repeat ____ times. Perform ____ times per day / week

HOME EXERCISE PROGRAM

Obesity Management in Adults: A Review.
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Leading Journal

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Physical Activity and Exercise for Weight Loss and Maintenance in People Living With Obesity.
Oppert JM, Ciangura C, Bellicha A.
Reviews in Endocrine & Metabolic Disorders. 2023;24(5):937-949. doi:10.1007/s11154-023-09805-5.

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Role of Physical Activity and Exercise in Treating Patients With Overweight and Obesity.
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5.
Aerobic Exercise and Weight Loss in Adults: A Systematic Review and Dose-Response Meta-Analysis.
Jayedi A, Soltani S, Emadi A, Zargar MS, Najafi A.
JAMA Network Open. 2024;7(12):e2452185. doi:10.1001/jamanetworkopen.2024.52185.

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The Role of Exercise in the Interplay Between Myokines, Hepatokines, Osteokines, Adipokines, and Modulation of Inflammation for Energy Substrate Redistribution and Fat Mass Loss: A Review.
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Appetite Control and Energy Balance: Impact of Exercise.
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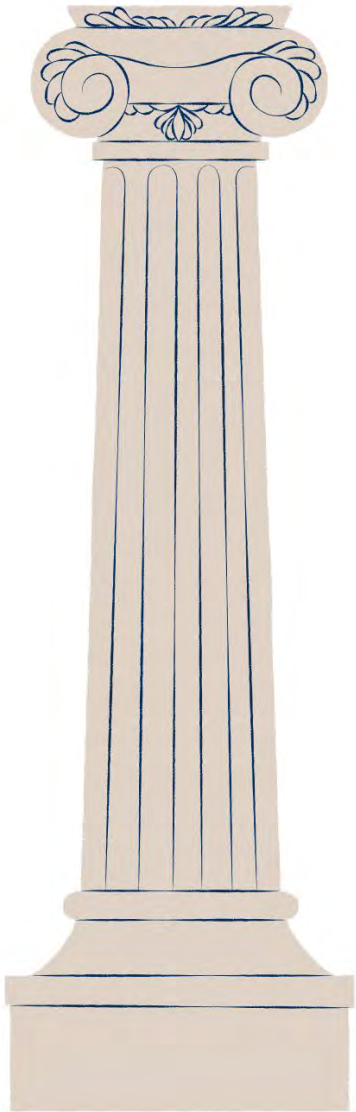
Obesity Reviews : An Official Journal of the International Association for the Study of Obesity. 2015;16 Suppl 1:67-76. doi:10.1111/obr.12257.

Medical & Surgical
Weight Loss Center

Behavior



Are you ready to make healthy changes?

Finding Wellness is a FREE 8-week program designed to help you live a healthier lifestyle, prevent chronic disease, and/or manage a current medical condition.

WVU Medicine

For more information:

304-293-2604

findingwellness@wvumedicine.org

www.wvumedicine.org/findingwellness

Finding Wellness

78

Our Classes

- Weekly two-hour class for 8 weeks
- Offered in-person and online
- Educational, fun, and interactive
- Get help with personal goal setting in a supportive group environment

Topics Covered

Cooking Demo — Learn how easy and delicious healthy cooking can be and taste test new foods.

Finding Fitness — Link physical and mental benefits of exercise. Practice a variety of stretches.

Make S.M.A.R.T.E.R. Goals — Assess your motivation level and identify positive/negative influences on your success.

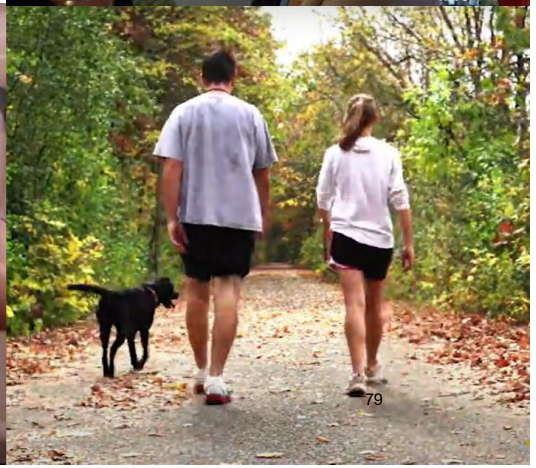
Menu Planning — Learn meal planning strategies and how to add/substitute healthier foods.

Mindful Eating — Recognize what mindless eating looks and feels like. Identify emotional, environmental, and physical triggers.

Portion Distortion — Learn how to read and understand food labels. Recognize common portion size pitfalls and how to avoid them.

Stress Management — Recognize stress and unhealthy coping habits and learn ways to quiet your mind.

Supermarket Safari — Acquire skills to shop healthier by comparing labels and prices.



WVUMedicine

WEEK OF:

WEEKLY FOOD & ACTIVITY JOURNAL

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
BREAKFAST							
LUNCH							
DINNER							
SNACKS							
WATER							
ACTIVITY							
SLEEP							
WEIGHT							
NOTES							

MWM Group Visits

Eat Well, Live Well Group Visits

The Eat Well, Live Well group program is an eight-week weight management and health promotion course designed to help our patients improve their wellness. Based on the latest nutrition science, participants are provided weekly ideas on what lifestyle changes would best benefit them. Through interactions with the dietitians and the other group members, small, weekly goals are set and often achieved. Together, we encourage members to eat healthy, increase movement, and help to establish behaviors that will last.

Eat Well, Live Well classes occur on Monday and Tuesday from 4:30 – 5:30 pm via WVU MyChart. Please join us in our next session and receive your road map to success. To register for the program, email medicalweightmanagement@hsc.wvu.edu or ask your provider at your next appointment.

Continue to Eat Well

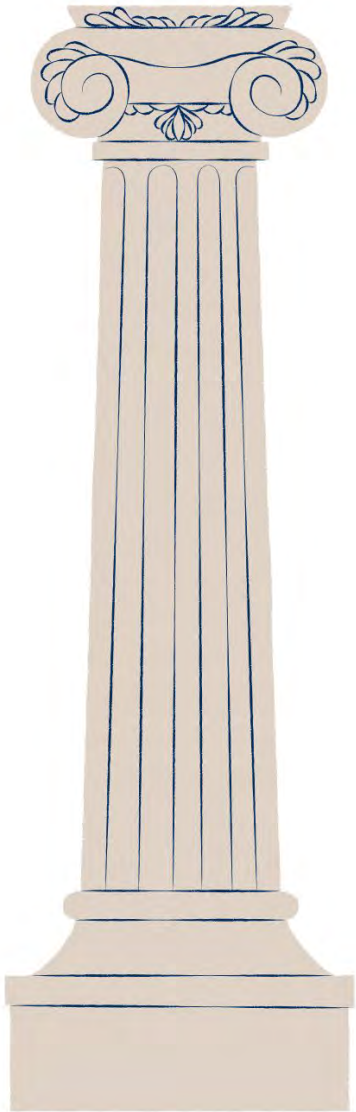
We offer a monthly support group for those who have completed the eight-week Eat Well, Live Well series. This group offers encouragement, shares success stories, and provides tips to help empower one another on their journey. Once you have completed the Eat Well, Live Well course, make sure to sign up with Judy Siebart or email medicalweightmanagement@hsc.wvu.edu.

Lunch and Learn Group Visits

We are offering an informative and fun lecture series via Microsoft Teams every second and fourth Friday of the month from noon – 12:30 pm. Our providers will present conversations on current weight management strategies. Topics range from medications for weight loss to the meal planning and recipes for success. Our staff, including doctors, advanced practice providers and dietitians will present the thought-provoking topics to help you gain a deeper understanding on your journey to establish lifelong healthy habits.

Medical & Surgical
Weight Loss Center

Medical



Medical & Surgical
Weight Loss Center

Anti-Obesity Medications (AOMs) (updated 5-15-2024). The AOMs used commonly in Medical Weight Management (or meds FDA approved for other indications that may help with weight loss.)

Anti-obesity medications often used in Medical Weight Management

Bupropion/naltrexone (Contrave): Can order the combined medication through Ridgeway pharmacy at Contrave or the two components can be prescribed separately

- Combines two medications and works in the brain to help decrease appetite.
- **Bupropion** is used by itself as an antidepressant, for smoking cessation, or for weight (off label for this).
- **Naltrexone** is used by itself for addiction but does not help with weight unless combined with bupropion.

Liraglutide (**Saxenda** is approved as an AOM, **Victoza** is approved for Diabetes Mellitus Type 2 or DM2)

- Liraglutide is a GLP1 agonist which works in the brain and GI tract to decrease appetite.
- This medication is a daily subcutaneous injection.

Semaglutude (**Wegovy** is approved as an AOM, **Ozempic** is approved for DM2, and oral **semaglutide** as **Rybelsus** is approved for DM2)

- **Semaglutide** is a GLP1 agonist which works in the brain and GI tract to decrease appetite.
- This medication is a weekly subcutaneous injection except oral **semaglutide (Rybelsus)**.

Tirzepatide (**Zepbound** is approved as an AOM, **Mounjaro** is approved for DM2)

- Tirzepatide is a combined GLP1 agonist and GIP agonist which works in the brain and GI tract to decrease appetite
- This medication is a weekly subcutaneous injection

Other GLP1 agonists

- Other GLP1 agonists are approved for treating DM2 but also work in the brain and and GI tract to decrease appetite and help with weight loss. Examples: **Dulaglutide (Trulicity), Exenatide (Byetta or Bydureon**.
- These medications are subcutaneous injections.

Phentermine (Adipex)

- This stimulant medication works in the brain to reduce appetite.
- It is approved for short-term use (3 months) but is sometimes prescribed for longer (is “off label”.)
- This medication is a schedule 4 controlled substance.

Phentermine/topiramate (Qsymia): can order the combined medication through Qsymia home delivery or the two components can be prescribed separately

- This prescription combines two medications and works in the brain to reduce appetite.
- The **phentermine** component is a stimulant used for weight loss (see above).
- The **topiramate** component is also used as a seizure medication or for headache prevention.
- Sometimes **topiramate** (or its sister medication, **zonisamide or zonegran**) is used by itself for weight loss.
- This medication is a schedule 4 controlled substance because of the phentermine component.

Metformin is a medication for DM2 that sometimes is used to help with weight loss, insulin resistance, metabolic syndrome, polycystic ovary syndrome, or medication-associated weight gain (some indications "off label").

SGLT2 inhibitors are a class of medications approved for treating DM2 but that also can help with weight loss through glucose removal in the urine. Examples: **dapagliflozin (Farxiga), empagliflozin (Jardiance), or canagliflozin (Invokana).**

Orlistat (Ally or Xenical) is another option that works by inhibiting absorption of fat in the diet, but it is not commonly used (side effects of loose bowels or fecal leakage.)

Lisdexamfetamine (Vyvanse) has a specific FDA indication for the treatment of binge eating disorder. It may be used if that diagnosis has been confirmed by a psychologist or psychiatrist.

Imcivree (setmelanotide) is an injectable medication used for rare genetic causes of obesity including Bardet Biedl syndrome, which should be considered if patients report hyperphagia.

*Note that **Plenity (gelesis hydrogel)** is no longer available. It was classified as a device. It was taken with large amounts of water to promote fullness and help with weight loss. It is not absorbed so it has no systemic side effects other than the GI tract.

Medications that may increase body weight—note: should not stop without discussing potential risks and benefits

- **Cardiovascular Medications**
  - Some beta blockers (if beta blocker needed, prefer carvedilol)
    - Propranolol
    - Atenolol
    - Metoprolol
  - Older and/or less lipophilic dihydropyridine calcium channel blockers may increase body weight gain due to edema and can confound body weight as a measure of body fat
    - Nifedipine
    - Amlodipine
    - Felodipine
- **Diabetes Mellitus Medications** (prefer use of those that may decrease weight: metformin, GLP1 agonists, SGLT2 inhibitors, alpha glucosidase inhibitors, pramlintide)
  - Insulin
  - Sulfonylureas
  - Thiazolidinediones
  - Meglitinides
- **Hormones**
  - Glucocorticoids
  - Estrogens
  - Progestins (if needed for contraception, prefer oral for contraception--Injectable or implantable greatest weight gain risk)
- **Anti-seizure Medications** (prefer use of those that may decrease weight: lamotrigine, topiramate, zonisamide)
  - Carbamazepine
  - Gabapentin
  - Pregabalin
  - Valproate

- **Mood stabilizers** (variable: lamotrigine, oxcarbazepine)
  - Gabapentin
  - Valproate
  - Lithium
  - Cariprazine
  - Carbamazepine
- **Migraine medications** (prefer use of those that may decrease weight: topiramate, zonisamide)
  - Amitriptyline
  - Gabapentin
  - Paroxetine
  - Valproic acid
  - Some beta blockers

- **Antidepressants** (prefer bupropion because it may decrease weight; variable weight effects: venlafaxine, lexapro, sertraline, fluoxetine, desvenlafaxine, vortioxetine)
  - TCAs (prefer: desipramine, nortriptyline, protriptyline)
    - Amitriptyline
    - Doxepin
    - Imipramine
  - SSRIs (prefer: fluoxetine, escitaloprine, sertraline or the non-SSRI bupropion)
    - Paxil
    - Celexa
    - Sertraline
  - SNRIs
    - Venlafaxine (variable)
    - Duloxetine
  - Other
    - Mirtazapine
    - Trazodone

- **Antipsychotics** (variable/neutral weight effects: aripiprazole, Haldol, lurasidone, ziprasidone, cariprazine)(consider adding metformin)
    - Substantially increase:
        - Olanzapine
        - Quetiapine
        - Clozapine
        - Risperidone
        - Zotepine
    - Somewhat increase:
        - Chlorpromazine
        - Paliperidone
        - Lithium
        - Bexipiprazole
        - Iloperidone
- **Hypnotics** (limited weight effects: benzos, melatonergic hypnotics, trazodone)
    - Diphenhydramine
- **HIV medications**
    - Some HAART protease inhibitors (some may decrease weight and some without HIV lipodystrophy)
- **Chemotherapies** (may decrease weight: apremilast)
    - Tamoxifen
    - Cyclophosphamide
    - MTX
    - 5-FU
    - Aromatase inhibitors
    - Steroids

WVU Department of Psychology

Insomnia Team


Erika Fenstermacher


Alivia Frazier


Jerin Lee


Zachary Soulliard


Stephanie McWilliams, PhD


Amy Fiske, PhD

The Insomnia Team provides behavioral treatment for **adults of all ages who suffer from insomnia**. The clinic is staffed by psychology doctoral students under the supervision of Amy Fiske, Ph.D., of the WVU Psychology Department. Services are provided on **Fridays, 1:30-3:30 pm.** Fees are sliding scale, ranging from $10 to $60 per visit, based on ability to pay. The team provides **evidence-based treatment** that has been shown to be effective in patients with primary or secondary insomnia; results are sustained for up to 12 months (Morin et al., 2006. *Sleep* 29:1398-1414).

Services:

Cognitive behavioral therapy for insomnia is a structured program (**typically 4-8 sessions**) that helps patients identify and replace behaviors that cause or worsen sleep problems with habits that promote sound sleep.

Treatment will help patients:

- Identify, control, and eliminate behaviors that prevent good sleep
  - e.g., going to bed early or sleeping in after a poor night's sleep, working in bed.
- Improve relaxation skills
  - Through muscle relaxation training
- Develop strategies for recognizing and challenging thoughts or beliefs that interfere with sound sleep
  - e.g., "I'll never get through the day tomorrow if I don't get to sleep tonight!"

Unlike medication, this treatment targets the underlying causes of sleep problems, and teaches patients **strategies to promote better sleep for life**!

Referrals:

Appropriate **referrals** would be:
- Adults of any age with difficulty initiating or maintaining sleep
- 30+ minutes to fall asleep or fall back asleep, 3x/wk, 1+ month duration

Note: if signs of sleep apnea, sleep study should be conducted before patient is referred for insomnia treatment

To refer a patient:

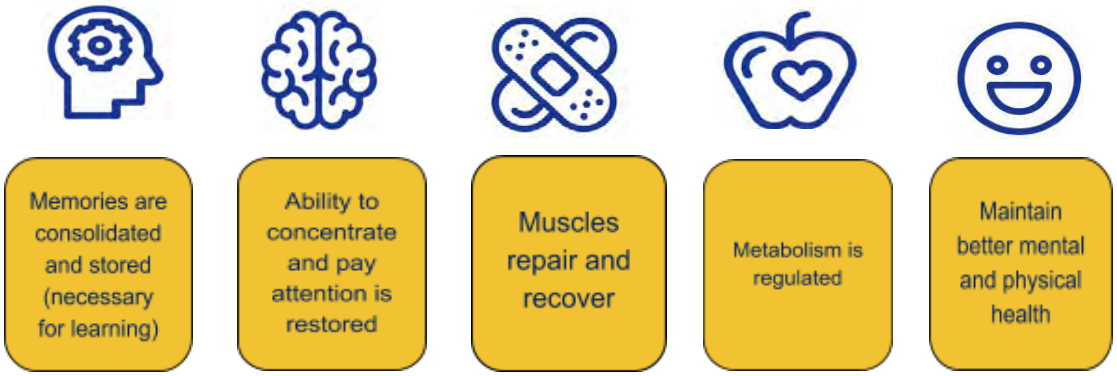
- Ask patient to call the **Quin Curtis Center for Psychological Services**, **304-293-1824** (press 0)
- If you wish to provide additional information about the referral, either contact Dr. Fiske (304-293-1708) or send information to our secure fax at 304-293-4225 (attention Dr. Fiske)

10/31/19

The Connection Between Sleep and Your Health

Sleep is one of the most under-appreciated strategies for optimizing health and wellness. A lack of sleep has been associated with an increased risk of having obesity. Ghrelin, a hunger hormone in your body, increases when you get less sleep, causing you to feel hungry and eat more. Leptin, a satiety hormone, decreases with a lack of sleep, which signals to your brain that you're still hungry. The alterations in these hunger hormones may make it more difficult for you to lose weight.

What happens when you sleep:



Use these tips to get more sleep throughout the night:

- Aim for 7-9 hours of sleep each night
- Get sunlight during the day to reset your circadian rhythm
- Exercise, but not 2-3 hours before bed
- Avoid dogs and kids in the bed
- Keep your bedroom cool – 65-70 degrees F is optimal (a drop in core body heat will help to initiate sleep)
- Go to bed at the same time each night
- Avoid consumption of alcohol and caffeine
- Shut off electronics 1-2 hours before bed, read a book instead
- Use an app to track your sleep
- Prioritize your sleep and make a night time ritual to let your body know it's time for bed

Medical & Surgical
Weight Loss Center

Medical Weight Management

The Medical Weight Management clinic features a patient-centered, non-surgical weight management program run by a team of highly trained healthcare professionals who specialize in safe and healthy weight management and treat all patients with respect.

We communicate regularly to provide coordinated, team-based care through the creation of an individualized nutrition and daily living plan that you will be able to maintain for life.

During the program, you will learn personal lifestyle skills, such as self-monitoring of food intake, movement, sleep, and stress. We help you find what works for you and make adjustments to achieve your weight-management goals.

Our program has four areas of focus, including:

Food

- Personalized nutrition plans
- Medical nutrition therapy
- Meal replacement options

Movement

- Exercise programs
- Exercise monitoring
- Fitness and metabolic testing

Behavioral Change

- Self-monitoring
- Goal setting
- Strategies to turn goals into permanent habits

Medical Management

- Medical evaluations
- Addressing medical concerns, like diabetes
- Optimizing medications

WVUMedicine

For more information or to view our orientation video, please visit: WVUMedicine.org/weightmgmt

For questions, please contact:

mwmwellnessprogram@hsc.wvu.edu

We offer additional support through a private Facebook group: WVU Medicine Medical Weight Management

Our Team

Laura Davisson, MPH, FACP
Director of Medical Weight Management

Treah Haggerty, MD
Director of Pediatric Medical Weight Management

Ayesha Hassna, MD

Tara Rickhard, MD

Lyn DeChristopher, PA-C, MS

Robin Elkins, APRN

Amberly Osbourn, PA

Amber Shaffer, FNP-BC, MSN, BSN, RN

Michelle Ritchie, APRN-FNP-BC

Caroline Rosenberger, RN

Susann Faverio, RN

Cathy Shaw, RD, LD

Judy Siebart, MS, RD, LD, CDE

Rachel Wattick, RD

Emily Murphy Health Coach

Lauren Davis Patient Navigator

Medical & Surgical
Weight Loss Center

SURGICAL WEIGHT LOSS

The WVU Medicine MSWLC Surgical Weight Loss Track is accredited by the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program.

The first step to entering this program directly is by attending a bariatric information session. These sessions are held three times a month and are mandatory for all patients wanting to be considered for bariatric surgery. The information session will explain our program, the options you have, and what is required of you to be a candidate.

The surgical options we offer include:

SURGEONS

Salim Abunnaja MD

Nova Szoka MD

Lawrence Tabone MD
Director

Laparoscopic Sleeve Gastrectomy	**Approximately 85% of the stomach is removed.**
Roux-en-Y Gastric Bypass	**Stapling reduces the size of the stomach to a 1 oz. pouch.**
Endoscopic Gastric Sleeve Surgery	**Done by GI**
Revisional Weight Loss Surgery	**Converts the adjustable gastric band to a Laparoscopic Sleeve Gastrectomy or Roux-en-Y Gastric Bypass. Revisions to roux-en-y and gastric sleeve.**

Medical Weight Management Clinic

WVU Medicine Children's

We aim to empower children, to improve their quality of life, and to achieve health gains that will follow them into adulthood. Our multidisciplinary team provides evidence-based guidelines to improve family health.

A visit to the Medical Weight Management Clinic at WVU Medicine Children's will include:

- Comprehensive medical assessment
- Nutritional assessment
- Behavioral/mental health assessment
- Physical activity assessment
- Assessment for appetite and disordered eating behaviors

Providers

Treah Haggerty MD

Judith Siebart RD
Registered Dietitian

Susann Faverio RN
Nurse Coordinator

Isabela Negrin MD

Caroline Rosenberger RN
Nurse Coordinator

Jennifer Ludrosky PhD
Pediatric Psychologist

Rachel Wattick
Registered Dietitian

304-598-4855 | **WVUKids.com**

University Medical Laboratories

3040 University Avenue, Suite 1200 (lower level) (Across the street from Tudor's)
Morgantown, WV 26505
304-285-7201

WVU Medicine Medical Weight Management & Fresh Steps Meal Replacement

Instructions: Direct Access Lab Testing Mon-Fri 8AM - 5PM

Payment (cash, check, or credit/debit card) is required at the time of testing as insurance will not be billed. For your convenience, recommended testing will be marked on this form. Fees generally run between $10-$20 per test, but please refer to the website for updated prices: https://wvumedicine.org/ruby-memorial-hospital/services/wvu-specialty-clinics/direct-access-testing/ Your results will show up in MyWVUChart as soon as they are completed, most often within four to six hours of being drawn. **You will need to inform your provider of lab results.**

Lab test options:

Recommended initial tests for Fresh Steps Meal Replacements if not done within last 6 months

- ☐ Complete blood count with differential
- ☐ Magnesium
- ☐ Ck
- ☐ Thyroid stimulating hormone
- ☐ Comprehensive metabolic panel
- ☐ Lipid (cholesterol) panel
- ☐ Uric acid
- ☐ Hemoglobin A1C (HbA1c, diabetes)

Recommended follow-up tests for Fresh Steps Meal Replacements

Others (optional):

- ☐ hCG: Pregnancy screen, blood, quantitative
- ☐ T4, total: Thyroxine, total
- ☐ T4, free: Thyroxine, free
- ☐ Vitamin B12
- ☐ Folate
- ☐ Vitamin D (25-OH)

Things you should know about

COMPOUNDED ANTI-OBESITY (AOM) MEDICATIONS

What Is Compounding?

Drug compounding is often regarded as the process of combining, mixing, or altering ingredients to create a medication tailored to the needs of an individual patient. Examples of customization could be a patient with an allergy to a certain dye and need for a medication to be made without it, or an elderly patient or child who needs a liquid formulation instead of a pill. Compounding does not include making copies of commercially available drug products, as this is not allowed by law. Patients should inquire about the source of the drug used in a compounded formulation. If the source ingredient is not from a Food and Drug Administration (FDA)-Approved drug manufacturer, the drug ingredient, quality, safety, and efficacy of the compound is unknown.

What Are These Compounded AOM Injections?

The newest FDA-Approved medications to treat obesity mimic protein (peptide) gut hormones. They help to regulate blood sugar, slow the transit of food in the gastrointestinal tract, and decrease hunger sensation in the brain. Recently, compounding pharmacies, clinics, and medical spas have begun to advertise and distribute what they claim are generic forms of these medications. The injections these pharmacies are compounding are not the same as the FDA-Approved medications. Compounded AOM injections may not contain the same active ingredients as FDA-Approved AOMs. In reported cases, a modified version of the drug called a "salt form" or "acetate" is used. Products including these salt forms have not been shown to be safe or effective. In addition, the combination of these drugs with other ingredients such as Vitamin B12 or Vitamin B6 has not been tested and may affect the efficacy of the medications and the risk of potential adverse reactions. Further, the FDA has expressed concerns regarding the salt forms of these products here: https://bit.ly/FDAConcerns

Are Compounded AOM Injections Safe?

Compounded AOM injection medications are not regulated, tested, or monitored for quality, safety, and efficacy by the FDA. Compounding pharmacies are not required to manufacture these injections to the required standard of quality set forth by the FDA. Unsafe practices in making these sterile injections can lead to contamination, serious patient harm, and death. In 2012, the most serious outbreak of contaminated compounded injections led to more than 750 people in 20 states developing fungal infections with more than 60 patient deaths. The FDA has called into question the validity of compounding these injections since the ingredients may not be from an FDA-Approved manufacturer. The Boards of Pharmacy in several states have explicitly discouraged the use of these injections in their states. IN MAY 2025 THE FDA RULED TO HALT THE SALE OF COMPOUNNED OZEMPIC/WEGIVY AND ZEPBOUND/MOUNJARO.

Obesity Medicine Association

www.obesitymedicine.org

Written by:

Michelle Look, MD, FAAFP, DABOM

Mike McClurken, MD, FACOG, DABOM, FOMA

Dana Trippi, DO, DABOM

How AOMs Fit into a Comprehensive Obesity Treatment Plan

The specialty of obesity medicine has evidence-based guidelines to treat the chronic and relapsing disease of obesity. Obesity medicine clinicians provide care in a multidisciplinary and comprehensive approach; one that uses FDA-Approved AOMs, a healthy eating plan, physical activity, and behavior modification. FDA-Approved medications are supported by numerous clinical trials that determine their predictability and the dosage necessary to achieve the desired effect. The use of compounded drugs (i.e. peptides) lacks the basic components that are necessary to define a quality standard of care in the comprehensive management of obesity. For more information, please see the OMA's Position Statement on Compounding[17]Peptide Medications here: https://bit.ly/PeptideStatement

Insurance Coverage *Guide*

INSTRUCTIONS ON CONTACTING YOUR INSURANCE FOR COVERAGE INFORMATION

Keep in mind that your prescriptions may be managed separately from your medical insurance, so be sure to call the customer service number of your prescription insurance plan to find out.

Follow these steps to assist you in determining if your pharmacy benefits include anti-obesity medication (AOM) coverage:

Qualify for Medications: Per the FDA, you must have either a BMI of 30 or higher **or** a BMI of 27 or higher with at least one weight-related medical condition to qualify for anti-obesity medications

Insurance Information: Gather insurance card for medical and/or pharmacy benefits the customer service phone number, which is usually located on the back of your insurance card.

Contact Insurance: Call the customer service number on your insurance card. Once connected with a representative, ask whether your policy covers anti-obesity/weight loss medications. You can ask specifically for coverage of **Wegovy, Zepbound and Saxenda** as these are indicated for obesity treatment

Ask About Cost: If these medications are covered, be sure to clarify what you're responsible for when it comes to prescription copays or coinsurance. Ask about how these costs associated with weight loss medication apply to your specific policy!

Follow-up Visit: At your next visit, please bring a copy of your insurance card and/or pharmacy benefits card. If using insurance benefits, the provider will need the following insurance information to complete a Prior Authorization:
Member ID, Group Number, RxBIN, RxPCN, RxGRP

Please note that insurance may 'cover' Ozempic, Mounjaro, Victoza, Trulicity, or Rybelsus but these medications are for individuals with Type 2 Diabetes. If you do not have **Type 2 Diabetes, it will most likely be denied by the insurance.*

Options Without Insurance Coverage

WHAT TO DO IF YOUR INSURANCE DOES NOT COVER WEIGHT LOSS MEDICATIONS

1. Talk to Your Employer: Weight loss medication coverage Is considered a 'carve out' on a health insurance plan. Talk to your employer and/or HR department about having this coverage added to your employee benefits. Ask us for a guide on tips for persuading your employer/HR to provide coverage for comprehensive obesity care.

2. Drug Manufacturer Assistance Programs: Eli Lilly, who produces Zepbound, and Novo Nordisk, who produces Wegovy and Saxenda, offer assistance programs for qualifying individuals. These savings cards are presented to the pharmacy from the patient. These programs can reduce the cost of the medication at the pharmacy. On average, Wegovy is about $800/month and Zepbound is about $550/month. You can find more information on the drug companies websites.

3. Other Medications: Discuss prescription for more affordable medication options such as Phentermine, Contrave, Wellbutrin, Qysmia, Metformin, etc

4. Call Your Rep: The absence of comprehensive obesity care can be attributed to the absence of legislation from both state and federal governments. Take action by reaching out to your federal, state, and local representatives to voice your frustration about the disparities in coverage for anti-obesity medicine. Share your personal story to illustrate how this weight bias has affected your life.

5. Join Advocacy Organizations: Contribute to advocacy groups such as **Obesity Action Coalition** by becoming a member for free, sharing your story, reporting your challenges, donating to the organization, and staying up-to-date with the advocacy work being done.

6. Avoid Non-FDA Approved Options: Despite the frustration of limited medication coverage, steer clear of scams offering weight loss medications at lower costs than retail pharmacies. Non-FDA approved alternatives claiming to be GLP-1, like compounded semaglutide or tirzepatide, lack regulation and may not be genuine medications, potentially containing harmful ingredients.

7. Stay Positive: In the face these challenges, staying positive is key. Focus on advocacy, engage with policymakers, and support initiatives for comprehensive healthcare.

Top 10

Takeaway Messages

Bariatric Surgery Nutrient Considerations

1. While biliopancreatic diversion with duodenal switch may result in the greatest amount of weight loss, it is a procedure that has a high rate of multiple post-procedure vitamin and mineral deficiencies
2. Common vitamin and mineral deficiencies after gastric bypass and sleeve gastrectomy include deficiencies of vitamins B1 (thiamine), B9 (folate), B12 (cyanocobalamin), and D, as well as deficiencies of the minerals iron and calcium (gastric bypass); other vitamin and mineral deficiencies are more rarely reported
3. Lower levels of vitamin D are often found pre-operatively in patients with obesity
4. High-quality bariatric specific multivitamins are routinely recommended after bariatric procedures, with supplements often containing higher amounts of vitamin B12, iron, vitamin C (to assist with iron absorption), vitamin D, and calcium
5. Vitamin B1 (thiamine) deficiency can cause "dry" beriberi (e.g., Wernicke-Korsakoff encephalopathy) and "wet" beriberi (e.g., congestive heart failure)
6. Vitamin B9 (folate) deficiency can cause megaloblastic anemia
7. Vitamin B12 (cyanocobalamin) deficiency can cause megaloblastic anemia and nervous system disorders
8. Vitamin D deficiency can cause osteopenia, secondary hyperparathyroidism, and hypocalcemia
9. Calcium deficiency can cause osteopenia, secondary hyperparathyroidism, and hypocalcemia
10. Iron deficiency can cause microcytic anemia

WVUMedicine

Date

WVU Bariatrics: A Comprehensive Surgical Weight Loss Program
PO BOX 9238 HSCS Morgantown, WV 26506
304-293-1728 (p) 304-293-6628 (f)

Routine Labs

✓	CBC/diff
✓	CMP
✓	Iron/TIBC
✓	Ferritin
✓	B12
✓	RBC Folate
✓	Vit. D 25-Hxdroxy (25-OH D3, 25-OH D2)

Mineral Labs - optional OTD Bypasses

	Magnesium
	Copper, serum
	Zinc
	Selenium

Miscellaneous Labs

✓	Thiamine (B1), Whole Blood
✓	Vitamin A, Retinol
	Hemoglobin A1C —
	Lipid Profile —
	PTH, Intact
	TSH —
	PT/PTT

Diagnosis

	Bariatric Surgery Status	Z98.84
	Other aftercare fol. surg.	Z48.815
	Pre-procedure lab work	Z01.812
	Morbid Obesity	E66.9
	Hypertension	I10
	Type 2 Diabetes Mellitus	E11
	Hyperlipidemia	E78.5
	Abnormal Weight Gain	R63.5
	Nausea alone	R11.0
	Vomiting alone	R11.10
	Anemia Unspecified	D64.9
	Vitamin Deficiency	E56.0
	Vitamin D Deficiency	E55.9
	Vitamin B12 Deficiency	D51
	Fatigue	R53.83

Additional Diagnoses:

Lawrence Tabone, MD/Nova Szoka, MD/Salim Abunnaja, MD

Kiley Iams, PA-C

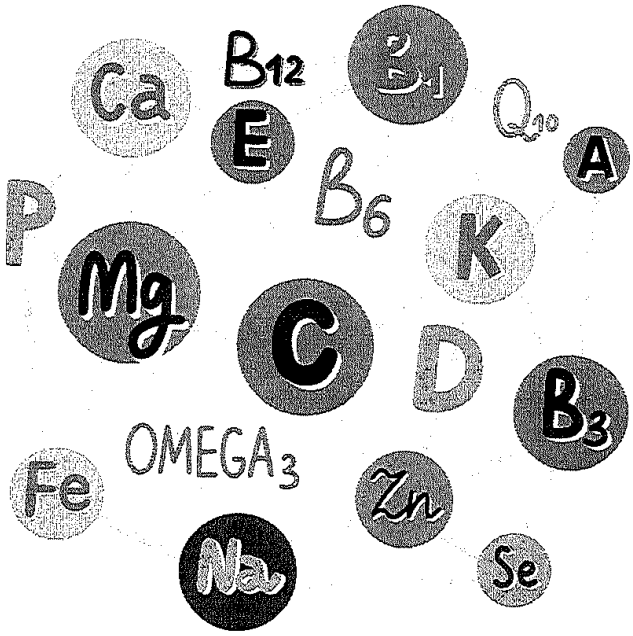
Megan Przybrowski, PA-C

Courtney Brown, APRN, FNP

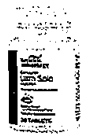
Bariatric Surgery: Common Micronutrient Deficiencies

	Vitamins							Minerals		
	A	B1	B9	B12	D*	E	K	Ca	Fe	Zn/Cu
RNY		X	X	X	X			X	X	
Sleeve		X	X	X	X				X	
LAGB		X			X					
BPD or SIPS/SADI-S	X	X	X	X	X	X	X	X	X	X

**Vitamin D deficiency is seen in a significant number of patients with obesity at baseline. However, due to malabsorption, the risk is further increased post-operatively.*



Post-Surgery Chewable Multivitamins

NAME		DOSE	WHERE TO BUY	PRICE
Bariatric Fusion Vitamin and Mineral Supplement		Chewable Tablet Rx 4/day ***need additional Vitamin B12**	**WVU Pharmacy-(304) 598-4848** Online: www.bariatricfusion.com Amazon.com	$24.99- $26.99 (120 ct)
Celebrate Multi Complete 36 Chewable		Chewable Tablet Rx 2/day ***need additional Calcium with Vit D & Vitamin B12**	Online: www.celebratevitamins.com 1-877-424-1953	$19.95 (60 ct) $52.95 (180ct)
Centrum Adults Fresh & Fruity or store brand equivalents		Chewable Tablet Rx 3/day ***need additional Calcium with Vit D & Vitamin B12**	Walmart, Drug Stores, Grocery Stores, Rite Aid, Amazon	$9.99-11.99 (90 ct)
Opurity Bypass and Sleeve Optimized Multivitamin Multimineral Chewable Supplement		Chewable Tablet Rx 1/day ***need additional Calcium with Vit D & Vitamin B12**	Online: www.unjury.com Phone: 1-800-517-5111	$29.95 (90 ct)
Bariatric Advantage Chewable Ultra Solo with Iron		Chewable Tablet Rx 1/day ***need additional Calcium with Vit D & Vitamin B12**	Online: www.bariatricadvantage.com Phone: 800-898-6888	$22.95 (30 ct) validation code: "WVU" for discount
Opurity Bariatric Surgery Multicapsule with Iron		Swallow-Capsules Rx 2/day >3 month post-op ONLY ***need additional Calcium with Vit D & Vitamin B12**	Online: www.unjury.com Phone: 1-800-517-5111	$34.15 (180 ct)
Bariatric Fusion One Per Day Multivitamin Capsule		Swallow-Capsules Rx 1/day >3 month post-op ONLY ***need additional Calcium with Vit D & Vitamin B12**	Online: www.bariatricfusion.com Phone: 1-800-993-1143	$19.99 (30 ct) $47.99 (90 ct)
Bariatric Choice All-In-One		Chewable Tablet Rx 4/day ***need additional Vitamin B12**	Online: www.bariatricchoice.com Phone: 1-800-993-1143	$27.99 (120 ct)

Updated 11/2021

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WVU Metabolic and Weight Loss Surgery
Phone: 304-293-1728 Fax: 304-293-6628

If you are a female who has had bypass or sleeve and are menstruating or an individual with a history of anemia may need to take additional iron. Please discuss this with your provider.

- Take 14-65 mg elemental iron once a day in addition to the 36 mg you would receive from taking your multivitamin. Best forms are ferrous fumarate, ferrous sulfate and ferrous gluconate.
- Pair with multivitamin or a vitamin C for enhanced absorption.
- Do not take at same time as calcium supplements (separate by at least 2 hours).

Example time table

Vitamin and Mineral Supplement	6 AM	8 AM	11 AM	2 PM	6 PM
Calcium Citrate 500mg w/Vitamin D (3 times a day)		X		X	X
Multivitamin, if taken in 2 servings/day, supplement dosing varies	X		X		
Vitamin B-12 500-1000 mcg daily	X				
Iron* 14-65 mg elemental iron *Only for menstruating women and/or whose instructed to take			X		

Example for those on thyroid medication

Vitamin/Medication	6 AM	10 AM	1 PM	3 PM	5 PM	9 PM
Thyroid Medication	X					
Calcium Citrate 500mg w/Vitamin D (3 times a day)			X		X	X
Multivitamin, if taken in 2 servings/day, supplement dosing varies		X		X		
Vitamin B-12 500-1000 mcg daily		X				
Iron* 14-65 mg elemental iron *Only for menstruating women and/or whose instructed to take				X		

Calcium/Vitamin D

1200-1500mg/d

NAME		DOSE	CONTAINS	WHERE TO BUY	PRICE
Citracal Petites Calcium Citrate plus D-3 Or store brand equivalent		Petite Tablets Rx 2 tabs, 3x/day (may need cut for first several months)	1200 mg Calcium Citrate 1500 IU Vit D	Walmart Target Grocery Stores Drug Stores	$10.92 - $13.99 (200 ct)
Bariatric Advantage 500mg Chewy Bites		Soft Chews Rx 3/day	1500 mg Calcium Citrate 1500 IU Vit D	Online: www.Bariatricadvantage.com 1-800-898-6888	$29.54 (90 ct) with code "WVU" for discount
Celebrate Calcium PLUS 500 Chewable		Chewable Tablet Rx 3/day	1000IU Vit D 1500mg Ca Citrate 100mg Mg	Online: celebratevitamins.com 1-877-424-1953	$22.95 (90 ct)
OPURITY® Calcium-Citrate Plus – Chewable		Chewable Tablet Rx 4/day	1300mg Ca Citrate 800IU Vit D 80mg Mg	Online: www.unjury.com Phone: 1-800-517-5111	$15.95 (125 ct)
Viactiv Calcium + Vitamin D (or store brand equivalent)		Soft Chews Rx 2/day (650mg each)	1300mg Calcium Carbonate 1000 IU vitamin D 120mcg vit K* *MUST TAKE WITH FOOD*	Walmart Target Grocery Stores Drug Stores	$8.99-10.99 (100 ct)
Caltrate Bone Health Chewables OR Soft Chews (or store brand equivalent)	 	Bone Health Chewable Tablets Rx 2/day Soft Chews, Rx 2/day	1200mg Ca Carbonate 1600 IU Vit D 80mg Magnesium 1200mg Ca Carbonate 1600 IU Vit D *MUST TAKE WITH FOOD*	Walmart Target Grocery Stores Drug Stores	$7.99-10.99 (60 ct) $7.99-12.99 (60 ct)

Updated 11/2021

WVUMedicine

WVU Metabolic and Weight Loss Surgery
Phone: 304-293-1728 Fax: 304-293-6628

Sublingual Vitamin B12

NAME		DOSE	CONTAINS	WHERE TO BUY	PRICE
Celebrate B12 QuickMelt		Quick Melt (cherry or mint)	1000 mcg B12	www.celebratevitamins.com	$15.95 (90 ct)
Spring Valley Sublingual Vitamin B12		Microlozenge (cherry)	500 mcg B12	Walmart	$3.96 (200 ct)
Nature's Bounty Vitamin B-12 Sublingual Microlozenges		Microlozenge (cherry)	500 mcg B12	Drugstores	$3.99+ (100 ct)
Life Extension Vitamin B-12 Dissolving Lozenges		Lozenge	500 mcg B12	Walmart www.lifeextension.com	$7.58 (100 ct)

Updated 10/2021

WVUMedicine

WVU Metabolic and Weight Loss Surgery
Phone: 304-293-1728 Fax: 304-293-6628

Celebrate
Nutritional Supplements

2019 ASMBS Guidelines for AGB

Multivitamin (MVI)	
Thiamin	At least 12 mg / day *
Folic Acid	400 – 800 mcg / day from MVI 800 – 1,000 mcg / day total (female, child bearing age)
B12	Oral: 350 – 1,000 mcg / day
Vitamin D	3,000 IU (75 mcg)
Vitamin A	5,000 IU (1,500 mcg) / day
Vitamin E	15 mg / day
Vitamin K	90-120 mcg / day
Copper	1 mg / day from MVI
Zinc	8 – 11 mg / day from MVI
Zinc to copper ratio: 8 – 15 mg of zinc for every 1 mg of copper	
Iron (from all supplements)	
At least 18 – 60 mg / day ** CANNOT take with Calcium	
Calcium (from food and supplements)	
1,200 – 1,500 mg / day Take in divided doses Calcium Citrate may be taken with or without meals	
Other	
Protein (often individualized)	Minimum of 60 g / day with some patients needing higher amounts of 80 – 90 g / day
Fluids (often individualized)	At least 50 oz / day to ensure adequate hydration

* At risk patients: rapid weight loss, protracted vomiting, the need for parenteral nutrition, excessive alcohol, neuropathy, encephalopathy, and/or heart failure. At risk patients need at least 50 – 100 mg of thiamin daily.

** Low risk patients (males and patients without a history of anemia) need 18 mg of iron from their multivitamin. Higher risk patients (menstruating females who have had SG, RNY, or BPD / DS or those with anemia) need at least 45-60 mg of iron daily.

Information adopted from Mechanick et al SOARD. 2020; 16:175-247

rev 3.4.20

Celebrate
Nutritional Supplements

2019 ASMBS Guidelines for VSG

Multivitamin (MVI)	
Thiamin	At least 12 mg / day *
Folic Acid	400 – 800 mcg / day from MVI 800 – 1,000 mcg / day total (female, child bearing age)
B12	Oral: 350 – 1,000 mcg / day
Vitamin D	3,000 IU (75 mcg)
Vitamin A	5,000 – 10,000 IU (1,500 – 3,000 mcg) / day
Vitamin E	15 mg / day
Vitamin K	90 – 120 mcg / day
Copper	1 mg / day from MVI
Zinc	8 – 11 mg / day from MVI
Zinc to copper ratio: 8 – 15 mg of zinc for every 1 mg of copper	
Iron (from all supplements)	
At least 18 – 60 mg / day ** CANNOT take with Calcium	
Calcium (from food and supplements)	
1,200 – 1,500 mg / day Take in divided doses Calcium Citrate may be taken with or without meals	
Other	
Protein (often individualized)	Minimum of 60 g / day with some patients needing higher amounts of 80 – 90 g / day
Fluids (often individualized)	At least 50 oz / day to ensure adequate hydration

* At risk patients: rapid weight loss, protracted vomiting, the need for parenteral nutrition, excessive alcohol, neuropathy, encephalopathy, and/or heart failure. At risk patients need at least 50 – 100 mg of thiamin daily.

** Low risk patients (males and patients without a history of anemia) need 18 mg of iron from their multivitamin. Higher risk patients (menstruating females who have had SG, RNY, or BPD / DS or those with anemia) need at least 45-60 mg of iron daily.

Information adopted from Mechanick et al SOARD. 2020; 16:175-247

rev 3.4.20

Celebrate®
Nutritional Supplements

2019 ASMBS Guidelines for RNY

Multivitamin (MVI)	
Thiamin	At least 12 mg / day *
Folic Acid	400 – 800 mcg / day from MVI 800 – 1,000 mcg / day total (female, child bearing age)
B12	Oral: 350 – 1,000 mcg / day
Vitamin D	3,000 IU (75 mcg)
Vitamin A	5,000 – 10,000 IU (1,500 – 3,000 mcg) / day
Vitamin E	15 mg / day
Vitamin K	90 – 120 mcg / day
Copper	2 mg / day from MVI
Zinc	8 – 22 mg / day from MVI
Zinc to copper ratio: 8 – 15 mg of zinc for every 1 mg of copper	
Iron (from all supplements)	
At least 18 – 60 mg / day ** CANNOT take with Calcium	
Calcium (from food and supplements)	
1,200 – 1,500 mg / day Take in divided doses Calcium Citrate may be taken with or without meals	
Other	
Protein (often individualized)	Minimum of 60 g / day with some patients needing higher amounts of 80 – 90 g / day
Fluids (often individualized)	At least 50 oz / day to ensure adequate hydration

* At risk patients: rapid weight loss, protracted vomiting, the need for parenteral nutrition, excessive alcohol, neuropathy, encephalopathy, and/or heart failure. At risk patients need at least 50 – 100 mg of thiamin daily.

** Low risk patients (males and patients without a history of anemia) need 18 mg of iron from their multivitamin. Higher risk patients (menstruating females who have had SG, RNY, or BPD / DS or those with anemia) need at least 45-60 mg of iron daily.

Information adopted from Mechanick et al SOARD. 2020; 16:175-247

rev 3.4.20

Celebrate
Nutritional Supplements

2019 ASMBS Guidelines for BPD / DS

Multivitamin (MVI)	
Thiamin	At least 12 mg / day *
Folic Acid	400 – 800 mcg / day from MVI 800 – 1,000 mcg / day total (female, child bearing age)
B12	Oral: 350 – 1,000 mcg / day
Vitamin D	3,000 IU (75 mcg)
Vitamin A	10,000 IU (3,000 mcg) / day
Vitamin E	15 mg / day
Vitamin K	300 mcg / day
Copper	2 mg / day from MVI
Zinc	16 – 22 mg / day from MVI
Zinc to copper ratio: 8 – 15 mg of zinc for every 1 mg of copper	
Iron (from all supplements)	
At least 18 – 60 mg / day ** CANNOT take with Calcium	
Calcium (from food and supplements)	
1,800 – 2,400 mg / day Take in divided doses Calcium Citrate may be taken with or without meals	
Other	
Protein (often individualized)	Minimum of 60 g / day with some patients needing higher amounts of 80 – 90 g / day
Fluids (often individualized)	At least 50 oz / day to ensure adequate hydration

* At risk patients: rapid weight loss, protracted vomiting, the need for parenteral nutrition, excessive alcohol, neuropathy, encephalopathy, and/or heart failure. At risk patients need at least 50 – 100 mg of thiamin daily.

** Low risk patients (males and patients without a history of anemia) need 18 mg of iron from their multivitamin. Higher risk patients (menstruating females who have had SG, RNY, or BPD / DS or those with anemia) need at least 45-60 mg of iron daily.

Information adopted from Mechanick et al SOARD. 2020; 16:175-247

rev 3.4.20

Micronutrient Deficiency Replacement After Bariatric Surgery: Vitamins

Vitamin/ Mineral	Assessment	Replacement of Deficiency & Maintenance
Vitamin A	Retinol	• If deficiency and corneal keratinization, ulceration or necrosis: 50,000 - 100,000 IU IM for 3 days, followed by 50,000 IU per day IM for 2 weeks – Don't currently do IM • If deficiency and no corneal changes: 10,000 - 25,000 IU orally per day until clinical improvement (may take at least 1-2 weeks) • Maintenance dose = 5000 – 10,000 IU orally per day (lower dose without clinical malabsorption and higher dose with clinical malabsorption), as found in many bariatric multivitamins • With biliopancreatic diversion/duodenal switch specifically, consider 10,000 IU orally per day
Vitamin B1 (Thiamine)	Thiamine	• With potential thiamine deficiency, thiamine is best given before glucose to avoid iatrogenic neurologic complications, and magnesium (a thiamine cofactor) deficiency, might also best be corrected as well • With deficiency (Wernicke's encephalopathy), thiamine 100 mg orally 3 times per day. If possible, malabsorption, hyperemesis, or unable to give orally, then thiamine 500mg IV twice a day for 5 days, then 250 mg IV until symptoms resolve, and then 100 mg orally per day for patients with persistent risk. factors for thiamine deficiency such as chronic malnutrition or malabsorption (may require additional supplement beyond a bariatric multivitamin) • Maintenance oral = vitamin B1 of at least 12 mg orally per day, as often found in many bariatric multivitamins • Thiamine can also be given intramuscularly, starting with 250 mg per day for 5 days, and then 100 – 250 mg monthly
Vitamin B9 (Folate)	Red blood cell (RBC) folate	• If daily bariatric multivitamin has 800 mcg of folic acid, then replacement dose for deficiency is an additional 400 mcg/day supplement (total of 1200 ug/d of folic acid until RBC folate in normal range); maintenance dose is 800 mcg of folic acid, as often found in many bariatric multivitamins

Vitamin/ Mineral	Assessment	Replacement of Deficiency & Maintenance
B12 (Cobalamin)	Vitamin B12	• B12 deficiency = treat with 1000 mcg or 1mg per day • Orally by disintegrated tablet, sublingually, liquid, or parenteral (IM or SQ) • B12 is also available by nasal spray, with dose as per manufacturer • Once B12 in normal range, maintenance dose 500 mcg or 1000 mcg orally, as often found in many bariatric multivitamins, or 1000 mcg/month IM
Vitamin D	25-hydroxyl-(OH)-vitamin D	• For mild deficiency, vit. D3 3000 IU/d orally. Once vitamin D levels normalized, vitamin D3 dose should be at least 1000 IU/d after gastric bypass and at least 2000 IU/d after biliopancreatic diversion/duodenal switch • Many bariatric multivitamins have 3000 IU Vitamin D3 (cholecalciferol) • For severe deficiency (e.g., biliopancreatic diversion), vitamin D3 6000 IU daily or vitamin D2 50,000 IU/wk orally until vit. D levels in normal range, then D3 3000 IU if still with substantial malabsorptive signs and symptoms • Regarding formulation, vit. D2 (ergocalciferol) is a form of dietary vit. D found in plants. Vit.D3 (cholecalciferol) is found in foods of animal origin and is similar to the vit. D3 generated when 7-dehydrocholesterol in the skin is converted by ultraviolet radiation from sunlight. Both D2 and D3 are reported as 25-hydroxyvitamin D, which is then converted by the kidneys into the more active 1,25 dihydroxyvitamin D (calcitriol). Vit. D3 may be preferred (longer half-life and potentially more potent) than vit. D2. Although the most potent, calcitriol is more rarely used (.25 or .50 mcg/d orally).
Vitamin E	A-Tocopherol	• A typical dose to treat vitamin E deficiency is 100 to 400 IU/d orally, with maintenance dose at least 15 mg per day (~22.5 IU). Some bariatric multivitamins may have 20 mg vitamin E per day. Other bariatric multivitamins have a wide IU range of vitamin E (7.5 IU - 150 IU).

Vitamin/ Mineral	Assessment	Replacement of Deficiency & Maintenance
Vitamin K	Prothrombin time	• If vitamin K deficiency occurs due to acute gastrointestinal malabsorption, then vitamin K can be replaced 10 mg by slow IV • A typical oral replacement dose is 90 – 120 mcg/day vitamin K • Many bariatric multivitamins have 120 – 300 mcg vitamin K • Continued treatment depends on persistent malabsorptive effects, as may most be a concern with biliopancreatic diversion/duodenal switch, which may require 300 mcg/day vitamin K

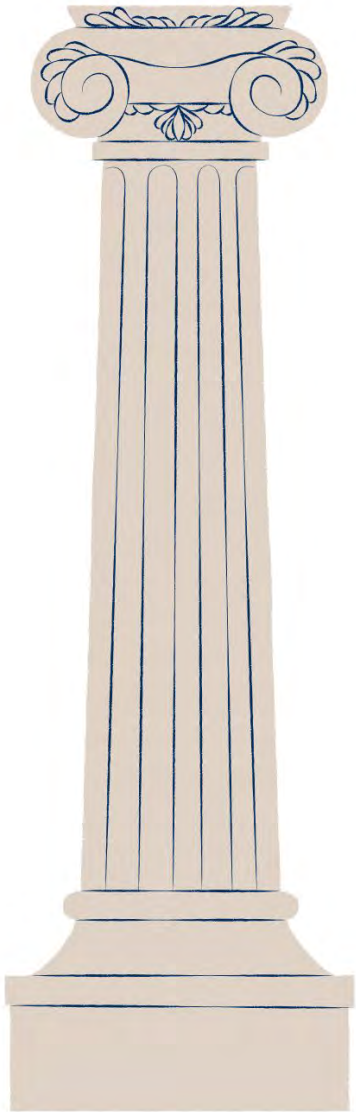
Micronutrient Deficiency Replacement After Bariatric Surgery: Vitamins/Minerals

Vitamin/ Mineral	Assessment	Replacement of Deficiency & Maintenance
Calcium	Calcium	• Need to ensure adequate vitamin D • Calcium deficiency is often treated with calcium citrate 1200-1500 mg/d, or 1800 – 2400 mg/d after BPD/DS – preferably in divided doses to enhance absorption • Maintenance dose is generally similar to treatment doses • Calcium citrate may be better absorbed than calcium carbonate, and is often preferred • Oral calcium bariatric supplements (tablets & chewable) often contain 250 – 500 mg of calcium; typical liquid preparations may contain 500, 600, 1200 mg per tablespoon • Calcium is best taken at least 1 hour apart from other supplements, especially iron (which competes for absorption)
Copper	Copper	• For mild to moderate deficiency, 3 – 8 mg/d oral copper gluconate or sulfate. • For severe deficiency, 2 – 4 mg/d IV copper for ~ one week or until blood levels, signs, and symptoms resolve • Maintenance dose is 1 - 2 mg/d as often found in many bariatric multivitamins

Vitamin/ Mineral	Assessment	Replacement of Deficiency & Maintenance
Iron	Ferritin, iron, total iron binding capacity	• For moderate deficiency, menstruating women, or patients at risk for iron deficiency anemia, total elemental iron oral intake is often 150 - 200 mg twice a day • Maintenance elemental iron supplementation (in patients without anemia) is ~18 mg per day • Ferrous fumarate supplies ~33% elemental iron (EI), ferrous sulfate ~20% EI, ferrous gluconate ~12% EI • Ferrous fumarate 325 mg iron supplement provides ~106 mg elemental iron; ferrous fumarate 45 mg (often found in many bariatric multivitamins) supplies ~ 15 mg elemental iron • Iron supplementation may be more effective with vitamin C supplementation 500 mg/d, and when taken separately from calcium supplements, acid-reducing medications, and foods high in phytates or polyphenols • For severe deficiency, IV iron is sometimes required, which is provided in multiple different formulations, some that require test doses • Copper deficiency can contribute to iron deficiency
Zinc	Zinc	• Zinc consumption may impair copper absorption. • Thus 1 mg of copper might best be given per each 10 mg of zinc administered • Once zinc is in normal range, if malabsorption remains a risk, a typical supplemental dose is zinc 30 mg/d • If malabsorption less of a risk, then a common dose of zinc is 8 – 22 mg per day. • Many bariatric multivitamins have 7.5 - 30 mg of zinc

Medical & Surgical
Weight Loss Center

Access to Care



ACCESS TO CARE

Today, more than 93 million adult Americans are living with obesity. Many do not know obesity is disease and their healthcare provider can help them with weight-loss and maintenance. Others do not have insurance coverage to help them pay for these healthcare options. Everyone should have access to healthcare.

Access should not be limited by a person's size, weight or economic status. Access to care is not a complicated idea. It can mean different things for different people, but in the end, it is about people getting the help they need to treat obesity.

Access to care begins with seeing obesity as a chronic disease diagnosed by a healthcare provider. Obesity is not someone's fault or their job to manage alone.

People with obesity can face barriers when it comes to access to care.

These barriers can include:

INSURANCE DENIALS
Very few insurance companies pay for obesity care and weight management options such as:
- Bariatric surgery
- Prescription weight management medications
- Consultations with dietitians

WHOLE PERSON CARE
Patients need effective and respectful care no matter what health condition(s) they have. Treatment for the flu or back pain should not be dependent on a patient's weight or size.

IMPROPER EQUIPMENT
People with obesity deserve medical equipment that meet their needs. Individual needs can vary, but often include:
- Scales
- Blood pressure cuffs
- Exam gowns

SCIENCE-BASED CARE
There is no miracle cure for obesity. However, effective, science-based treatment options do exist. Receiving these options is not possible if your healthcare provider does not know about them.

AVAILABLE HEALTHCARE PROFESSIONALS
A team of healthcare providers who understand obesity medicine can give the best care. This team can include:
- Physicians
- Nurse practitioners
- Registered dietitians

AVAILABLE LIFELONG CARE
Obesity is a chronic disease. Patients deserve access to lifelong obesity care even if the weight maintenance period has been reached.

REQUIRED STEPS FOR INSURANCE COVERAGE:
Many insurance companies have requirements to qualify for obesity care coverage. Requirements can be:
- Referrals
- Long wait times
- Mandatory weight-loss

ACCEPTING CARE
It may be hard for some people to accept obesity care from a healthcare provider. This can be from:
- A negative care experience in the past
- A belief that they need to lose the weight on their own
- Unsuccessful weight-loss in the past

Support Access to Obesity Care for Everyone!

Medical Weight Management Fact Sheet

Obesity Action Coalition
www.ObesityAction.org

The Centers for Disease Control (CDC) estimates that 75% of Americans will have excess weight or obesity by 2020,[1] yet 82% of individuals with obesity feel they are alone in their efforts to control their weight.[2] Managing weight with the help of a medical professional can be a useful tool in treating obesity. Weight management can greatly improve overall health and lessen the impact of the diseases and conditions that can accompany obesity.

Fact 1

Medical weight management options are available for individuals living with excess weight and obesity and have proven results following modest to moderate weight-loss:

- Effective treatment can be provided in primary care settings, weight management clinics, community-based programs, by a dietitian, web-based programs or through commercial programs that are evidence-based.[3]
- Overall lifestyle modifications generally result in a weight-loss of 5-10% of excess body weight.[4]
- Individuals participating in weight management programs tend to lose 3-5% more weight than those following self-directed programs.[5]
- To achieve the greatest rate of success, lifestyle modifications should have manageable goals and include eating habits, physical activity and overall behavior modifications. They may also include prescription medications for continued weight management.[6]
- Medications approved for long-term obesity treatment, when used with lifestyle modifications, lead to greater weight-loss and increased likelihood of meaningful 1-year weight outcomes.[4]
- Some of the medications used for long-term weight management have been proven to achieve weight-loss of 5-15%.[7] *Results of the use of medication for the treatment of obesity may vary.*

Fact 2

Medical weight management reduces effects of chronic diseases:

- Nearly 32% of U.S. adults have hypertension, also known as high blood pressure. Modest weight-loss, as small as 10 pounds, can lower one's blood pressure.[8]
- The CDC reports that 9.4% of Americans have diabetes, with an additional 84.1 million people diagnosed with prediabetes.[9] A landmark National Diabetes Prevention Program (DPP) study found that the progression from prediabetes to type 2 diabetes is reduced by 59% when lifestyle modifications are made.[10]
- Sleep apnea may lead to additional chronic diseases including type 2 diabetes[11] and cardiovascular diseases.[12] Medical weight management can reduce the severity of sleep apnea.[13]
- Medical weight management can decrease inflammatory markers, which are predictors of chronic disease.[14]

Fact 3 Medical weight management provided by an obesity medicine physician is a resource for patients affected by excess weight or obesity:

- Obesity medicine physicians are committed to providing evidence-based treatments for obesity through a comprehensive approach including lifestyle modifications. These modifications include healthy eating, physical activity, prescription medicines and surgical treatment options.[15]
- Working with an obesity medicine physician can significantly improve the patient experience. It can also increase results through continued counseling and a range of treatment options including referrals to dietitians, exercise physiologists, physiologists and bariatric surgeons.[14, 16]

Fact 4 Minorities and middle-aged adults suffer from higher rates of obesity:

- Non-Hispanic blacks have the highest age-adjusted rates of obesity (48.1%) followed by Hispanics (42.5%), non-Hispanic whites (34.5%), and non-Hispanic Asians (11.7%).[17]
- Obesity is higher among middle-aged adults (age 40-59 years; 40.2%) and older adults (age 60 and over; 37.0%) than among younger adults (age 20–39; 32.3%).[17]

Fact 5 The costs and health effects of being overweight and living with obesity are high:

- Just over 70% of Americans are currently overweight, with nearly 40% having obesity.[1, 2]
- Excess weight is associated with the development of additional chronic diseases such as: type 2 diabetes, high blood pressure, high cholesterol, heart disease, stroke, gallbladder disease, sleep apnea and osteoarthritis. The risk for developing these diseases can increase as an individual's weight increases. And the overall risk of developing diabetes can double for people with obesity rather than excess weight.[18]
- Around 75% of people with severe obesity have at least one other health- related condition (type 2 diabetes, hypertension, sleep apnea, etc.) which can increase the risk of premature death.[19]
- The National Institutes of Health (NIH) reports that adults dealing with severe obesity are most likely to die from cancer, diabetes or heart disease, and that years of lost life could be as high as 14 when compared to a healthy adult of the same age.[20]
- A substantial and rising percentage of healthcare costs are associated with the treatment of obesity. In 2015, 7.91% of health spending went toward obesity-related illness and spending on obesity-related illness increased 29% between 2001 and 2015.[21]

Fact 6 Insurance coverage for medical weight management is not sufficient. Many individuals affected by excess weight and obesity do not have access to specialized care. This places an economic burden on the healthcare system as costs increase with disease progression:

- Offering medical treatment for obesity makes economic sense as these individuals are at risk for developing additional and costlier chronic diseases.[18]
- State and individual spending on obesity-related medical care varies by state. For example, in New York 10.9% of Medicaid spending was for obesity-related illness while Kentucky and Wisconsin each spent 20%.[21]
- In 2008 the total amount spent on medical costs associated with obesity was $147 billion. That equates to an individual increase in health care costs of $1,429 each year compared to an individual without obesity.[22]

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OAC Obesity Action Coalition

Fact Sheet

Why it Makes Sense to Provide Treatment for Obesity through Bariatric Surgery

Reason	Evidence/Details
Obesity is widespread, deadly and expensive.	• 34% of Americans are affected by obesity[1] with 5.7% affected by severe obesity (more than 100 pounds overweight).[2] • Approximately 75% of those affected by severe obesity have at least one co-morbid condition (diabetes, hypertension, sleep apnea, etc.), which significantly increases the risk of premature death.[3] • Life expectancy for a 20-year-old male affected by severe obesity is 13 years shorter than a normal weight male of the same age.[4] • Annual direct medical expenditures attributable to obesity are $147 billion.[5]
Obesity disproportionately affects minority and poor populations.	• African-Americans are disproportionately affected by obesity. Caucasians make up 75% of the U.S. population, but only 64% of the population affected by severe obesity. In contrast, African-Americans make up 12% of the population but 23% of the population is affected by severe obesity.[6] • Poor populations (those making less than $20,000 annually) show a similar increase in likelihood of being affected by severe obesity.[5]
Bariatric surgery is a life-saving procedure as it is proven to increase life expectancy.	• Christou study compared those affected by severe obesity who were treated with surgery versus those who were not. It found an 89% reduction in the risk of death throughout five years in the surgery group. **In other words, those who received surgery were nine times less likely to die over the next five years.**[7] • New England Journal of Medicine study comparing 15,000 plus individuals affected by severe obesity found a 40% lower risk of death over 7 years in surgery patients for all causes. The study found a 52% lower risk of death from obesity related illnesses including a 92% lower risk of death from diabetes.[8]
Bariatric surgery resolves potentially fatal co-morbid conditions.	• A meta-analysis study including more than 22,000 patients showed the following effects of surgery on co-morbidities: ◊ Diabetes was completely resolved in 76.8% of patients. ◊ High cholesterol was resolved or improved in more than 70% of patients. ◊ High blood pressure was resolved in 61.7% of patients. • Sleep apnea was resolved in 85.7% of patients.[9] • Other studies have shown even higher (82%) resolution of diabetes10 and "profound improvement in obstructive sleep apnea."[11]
Weight-loss post-surgery is extensive and durable.	• A long term study following patients for up to 14 years after surgery found that 89% of weight-loss was maintained.[12]
The risk-benefit tradeoff for bariatric surgery is favorable.	• The mortality rate for bariatric surgery varies by surgeon. Experienced surgeons have mortality rates ranging from .02%-.5% (averaging the rate for all types of procedures).[13,14] The risks of not receiving surgery is far higher as demonstrated by the Christou study where those who did not receive surgery were almost nine times more likely to die.[15]
Coverage for bariatric surgery makes economic sense.	• Downstream savings associated with bariatric surgery are estimated to offset the costs in 2 years (laparoscopic procedure) to 4 years (open procedure).[16] • Post-surgery drug costs for diabetic and anti-hypertensive medications decrease dramatically. Potteiger study found a 77.3% savings.[17]

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Contact the OAC

If you have any questions regarding the above information or would like to interview an OAC representative, please contact James Zervios, *OAC Director of Communications*, at **jzervios@obesityaction.org**.

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OBESITY ACTION COALITION'S POLICY PLATFORM: BELIEFS AND EFFORTS SUPPORTED BY THE OAC

The OAC is the leading non-profit organization representing those affected by the chronic disease of obesity. The OAC provides educational and advocacy information to individuals throughout the United States who are seeking to educate themselves on the disease of obesity, the negative stigma associated with it, its health risks and much more. The OAC encourages individuals affected by obesity, their family members, healthcare professionals and all who are concerned to advocate for access to safe and effective care. With this in mind, the OAC has developed the following beliefs and supported efforts to structuralize, address and identify a multitude of obesity-related issues within the healthcare community.

UNDERSTANDING OBESITY

- Obesity is a chronic condition that continues to have a growing impact on our society. **Therefore, action must be taken to address this epidemic at all levels — individual, family, community, government, healthcare and insurance.**

- Obesity is a complex, multifactoral, and chronic disease, which requires a comprehensive approach to both prevent and treat. Obesity is a major contributor to a vast number of preventable deaths in the United States and it usually carries with it a large number of related conditions such as diabetes, hypertension, heart disease, certain cancers, sleep apnea, and arthritis. **Therefore, care should not be seen as simply having the goal of reducing body weight, but should additionally be focused on improving overall health and quality of life.**

- Obesity is too often misconstrued as a cosmetic problem and/or a personal failure. However, many individuals affected by obesity often deal with physical, emotional and social issues that can hinder them from addressing their weight issues. **Obesity is not a condition of personal choice.**

OBESITY DISCRIMINATION

- Individuals affected by obesity frequently struggle with not only the health and physical consequences of their disease but also with workplace and other social consequences. Discrimination against individuals affected by obesity occurs in schools, workplaces, doctors' offices and more. **No person should be discriminated against based on their size or weight.**

TREATING OBESITY IS DIFFICULT BUT NECESSARY

- **Treating or addressing obesity among those already affected by obesity is difficult.** This is clearly demonstrated by the more than 34% of Americans who are currently affected by obesity. However challenging though, efforts must be made to both prevent and treat obesity at all stages and in all age groups. Treatment approaches should include: school and community-based programs; lifestyle interventions; educational programs; drug, diet and physician-supervised programs; and surgery. The goals laid out for those who have chosen to address their obesity should focus less on total weight-loss and more on health improvement. We believe such an approach may encourage more consistent and continued individual participation in programs to address obesity – highlighting realistic outcomes and expectations for those affected by obesity.

INSURERS AND OBESITY COVERAGE

- **Health insurance should provide care for obesity as a standard benefit – establishing coverage for the most appropriate and proven prevention and treatment methods to address the given stage of overweight or obesity.** Recognizing obesity as a chronic disease, insurance should also cover necessary long-term follow-up care for obesity treatment. Patients must have access to this comprehensive treatment approach through reasonable means and this access to care should not be hindered by undue tests or prerequisites on the part of the patient.

EMPLOYERS AND OBESITY

- Employers are impacted by obesity because of increased healthcare costs, absenteeism and workers compensation, which can often be associated with obesity. **Companies should provide comprehensive obesity prevention and treatment programs for their employees and employ incentive programs (such as discounted health club memberships, availability of healthier food choices at work, etc.) where possible.**

- **While incentive programs should be encouraged, we believe that punitive measures (higher premiums, penalties for non-participation, etc.) should not be utilized as a catalyst for individuals to address their obesity.** Further stigmatization and penalization of this population often elicits a response counter to the goal of the original penalty.

GOVERNMENT AND OBESITY

- **Government should take the same serious action regarding obesity as it does with other disease states.** Government needs to tap into existing resources, organizations and individuals affected in order to gain a clear understanding of obesity and proven prevention and treatment methods.

- **Government must improve funding for research on obesity as well as the outcomes of any prevention and/or treatment programs attempted.** In addition, as obesity is recognized as a significant health epidemic, the National Institutes of Health should form a National Institute of Obesity. In addition, policymakers should develop dynamic new collaborations and collective actions across federal and state agencies, between private and public entities and industries, individuals and communities, which the Institute of Medicine recommends as essential to successfully addressing our country's obesity epidemic.

- **Government can improve access to healthy foods by incentivizing/subsidizing high quality foods, making such foods more widely available and requiring the purchase of nutritious foods in government assistance programs.**

INDIVIDUALS AND OBESITY

- **Individuals need to be encouraged to discuss their weight and its impact on their health with their healthcare providers.** In turn, healthcare providers need adequate training, support, reimbursement and pathways to track, discuss and address weight issues with their patients. Addressing obesity takes a partnership between the individual affected and their healthcare team.

- **Individuals, through increased messaging about the health impact of obesity and the incentives/opportunities listed above, need to make healthy food choices and increase physical activity.**

- Obesity is often misunderstood, which contributes to both discrimination and barriers to care. It is important to educate the public, health professionals, and policymakers about obesity as a chronic disease – highlighting the issues impacting individuals affected by obesity and the methods available to help. **Individuals affected by obesity must also take the responsibility to begin changing public perception of individuals affected by obesity through the media.** Negative stigma-building ads, stories or articles displaying individuals affected by obesity in a poor light need to be addressed immediately and combated with a realistic viewpoint explaining the negativity of the situation (ad, story, article).

SCHOOLS AND OBESITY

- **School nutrition standards need to be strengthened at the local, state and federal levels.**

- Physical education requirements also need to be strengthened. Adequate time for school physical activity must be required and appropriate funding provided for PE teachers, equipment and facilities. **Physical activity in school should function as a primer for children at a young age to get them interested in physical activity and introduce them to sports. It should not be looked at as a weight-loss method.**

COMMUNITIES AND OBESITY

- **Communities should be encouraged to provide safe and inviting parks, sidewalks, bike paths, etc. to encourage physical activity.**

MARKETING AND OBESITY

- **The marketing of foods to children as well as the marketing of so-called weight-loss supplements need additional regulation.** In addition, food-labeling laws that require restaurants and other marketers of food to post calorie counts on their food items can help individuals make better food choices.

The above represent the core beliefs and policy positions of the OAC. From standing-up for access to safe and effective care for the more than 93 million Americans affected by obesity to ensuring that individuals, healthcare providers, the public and policymakers have access to balanced and objective education regarding the impact of this chronic disease, the OAC stands firm that we as a Coalition must unite together and voice our beliefs, concerns and needs to the public. No one item above will solve the obesity epidemic as a wide variety of actions will be necessary to address the complex and chronic disease of obesity.

OAC
Obesity Action Coalition

4511 North Himes Ave., Suite 250
Tampa, FL 33614

(800) 717-3117
(813) 872-7835
Fax: (813) 873-7838

info@obesityaction.org
www.ObesityAction.org

Date: March 15, 2023

Re: Coverage of Anti-Obesity Medications

To Whom It May Concern:

I am writing this letter on behalf of your employees and their family members that are living with the disease of obesity. Many of your employees need FDA-approved pharmacotherapy for obesity that is currently not covered by your insurance plan. Obesity is a multi-factorial chronic disease requiring a comprehensive approach to treatment. Prevention is important but alone is not enough because the 42% of Americans who are already living with obesity need treatment now. It is well-recognized that obesity is associated with many related diseases such as type 2 diabetes, hypertension, heart disease, lipid disorders, certain cancers, sleep apnea, and arthritis. Care should not be seen as having the goal of only reducing body weight but should rather be focused on preventing the related conditions and improving overall health and quality of life.

Obesity treatment needs a collaborative treatment and team approach, such as that provided by the WVU Medicine Medical Weight Management clinic where I practice and have seen great results. Lifestyle changes including healthy eating plans and regular physical activity are essential but are often not enough to help people with obesity lose or maintain clinically significant weight loss. The American Medical Association declared obesity a chronic disease in 2013, and obesity deserves the same treatment and attention as any other chronic illness. We now have treatment available with medicines in the anti-obesity medication class, including a medication called semaglutide. More medicines in this class that are also highly effective are anticipated to be approved soon.

Unfortunately, obesity treatment has been “carved out” and is not treated as an essential benefit in insurance formularies. Employers must “opt in” to treatment coverage with this class of medicine, and sometimes do not even realize they would have to take this additional step to ensure coverage. Treating obesity will benefit employers by improving the health of employees. Please contact your health plan or pharmacy benefits manager to pursue adding anti-obesity medications to the formulary for your employees.

If I can provide further information on the treatment of obesity, please do not hesitate to contact me at (304) 293-1964. Feel free to share this letter if that would be helpful.

Kind regards,

Laura Davisson, MD, MPH, FACP
Professor, West Virginia University School of Medicine
Chief of Obesity Medicine & Director, Medical Weight Management: wvumedicine.org/weightmgmt

DEPARTMENT OF MEDICINE

2024-2025 ANNUAL REPORT

Department of Medicine
Medical Weight Management

Medical & Surgical
Weight Loss Center

Medical Weight Management
Physician Office Center
Morgantown, WV
304-598-4855
wvumedicine.org/weightmgmt

WVUMedicine

DIRECTOR MESSAGE

Since Medical Weight Management began six years ago, we have faced persistent challenges with long wait times for new patient appointments. I often heard this described as a “good problem to have,” but I disagreed—limited access affects not only our patients, but also our reputation. I’m pleased to report that, thanks to aggressive hiring and focused catch-up efforts, our wait times have significantly improved. As of April 2025, the average new patient wait was just **12 days**. With changes on the horizon—particularly the ban on GLP-1 compounding—future demand remains uncertain, but we are in a strong position.

This milestone reflects our commitment to adapting to our patients’ needs. The program we run today is very different from the one we launched in May 2019. A recent qualitative study helped us understand where we were meeting patient needs—and where we were falling short. One clear message: patients wanted more clinician contact. Staffing shortages had limited our ability to meet that need. I don’t view that as a “good problem to have” either.

We’ve responded by expanding our team—not only with physicians and advanced practice providers, but also with a broader multidisciplinary staff. Our health coaches, who initially worked only with WVU Medicine employees, now serve all patients. We've also added a pharmacist to help patients navigate medication use, side effects, and dose adjustments.

This annual report highlights the progress we’ve made--not only in our clinical mission, but also in our broader vision. It details our initiatives to improve health in West Virginia and the populations served through outreach, education, research, and clinical management of obesity.

Laura Davisson, MD, MPH, FACP
Professor, WVU School of Medicine
Director, Medical Weight Management

MISSION

Medical weight management’s mission is to empower individuals and families to improve their health and make lasting lifestyle changes using science and care delivered by a team of experts.

WVUMedicine

MEET OUR CLINICAL TEAM

We experienced several staffing changes this year. Dr. Ayesha Hassan left to begin her Endocrinology Fellowship. We welcomed Drs. Kristen Moore, Tricia Galanti, and Joyce Foryoung to our team. Although Dr. Foryoung's time with us was brief, we wish her well as she transitions to a new practice in Missouri.

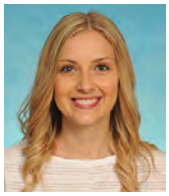
We also added our first clinical pharmacist, Dr. Madelyn Harvey, and psychiatrist, Dr. Camille Leon. Stephanie Thompson, RD provided crucial dietitian support during our staffing gap—so much so that she functioned as a core team member. We look forward to welcoming Karina Patel, RD, and Dr. Jessica Arvon to the team in 2025.


Laura Davisson, MD


Treah Haggerty, MD


Catherine Shaw, RD


Caroline Rosenberger, RN


Amber Shaffer, APP


Judith Siebart, RD


Jacob Rumer, Health Coach


Robin Elkins, APP


Susann Faverio, RN


Tara Rickard, MD


Lynette DeChristopher, APP


Joyce Foryoung, MD


Lauren Davis, PN


Amberly Osbourn, APP


Michelle Ritchie, APP


Kristen Moore, MD


Patricia Galanti, MD


Isabela Negrin, MD


Jennifer Ludrosky, PhD


Emily Murphy, Health Coach


Madalyn Harvey, PharmD


Camille Leon, MD


Stephanie Thompson, RD


Stephany Lora, PsyD

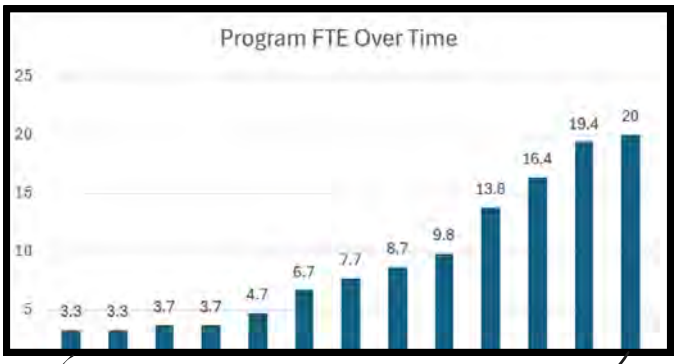

Rachel Wattick, RD


Stephanie Farah, MD


Jessica Arvon, MD

GROWTH

MWM FTE increased over 500% since 2019



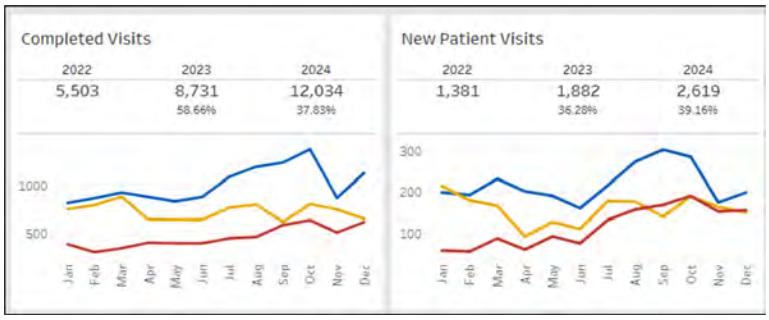
FTE 3.3 7/2019

Anticipated FTE 20 7/2025

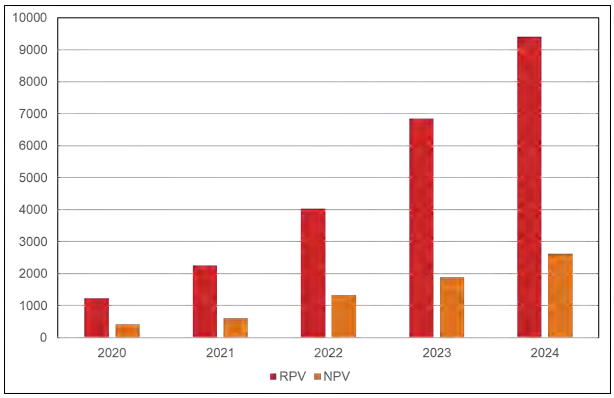
In 2024 vs. 2023, Completed Visits Increased 38%
New Patient Visits Increased 39%*

Blue: 2024
Gold: 2023
Red: 2022

62% of all visits by video
42% of new patient visits by video
*Data from Tableau analytics



Over 6900 new patients seen in MWM since opening!



NPVs per month:

- 2021: 51
- 2022: 110
- 2023: 157
- 2024: 218

NPV = New Patient Visit

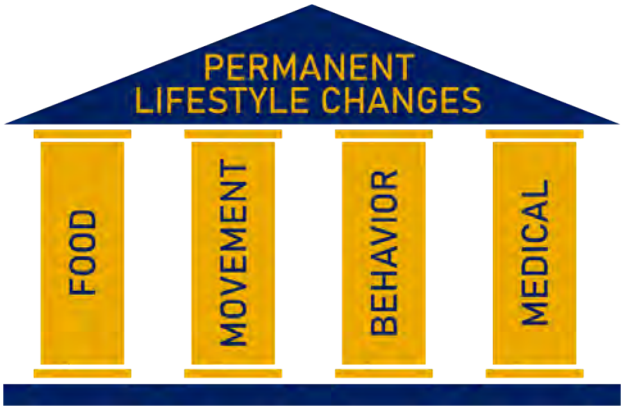
RPV = Return Patient Visit

CLINICAL OUTCOMES

10%
Overall 2024 average one-year weight loss

Weight loss stratified by medication:

Medicine Used	Weight Loss
Tirzepatide	17.6%
Semaglutide	16.4%
Topiramate	11.7%
Metformin	8.8%
Buproprion/naltrexone	8.8%
Phentermine	8.1%
Bupropion	6.9%



Note that clinical metrics for this report are measured by the 2024 calendar year, whereas academic metrics are measured by the 2024-2025 July-June academic year.

PEDIATRICS

139
New pediatric patients seen

60%
Increase in new patients

3
Peds weight clinics weekly

The pediatric weight management program is growing!

Pediatric Weight Management, led by Director Dr. Treah Haggerty, expanded significantly in 2024, seeing 139 new patients--a 60% increase from 2023. The clinic now operates three sessions per week. The team worked with surgery to prepare a pediatric surgery binder which is required for adolescent bariatric surgery, and they earned the adolescent Metabolic and Bariatric Surgery Quality Improvement Program (MBSAQIP) accreditation in early 2024.

Plans for 2025 include increasing pediatric weight management to clinics every day, the addition of pediatric telehealth clinics with hubs in Martinsburg and Vienna, and, now that the team has completed necessary preparations, performing the first adolescent bariatric surgeries.

The pediatric team also includes pediatrician Dr. Isabela Negrin, pediatric psychologist Dr. Jennifer Ludrosky, and Registered Dietitians Judith Siebart and Dr. Rachel Wattick. Child psychologist Dr. Stephany Lora will be doing intakes prior to the surgeries which will be performed by Dr. Patrick Bonasso and Dr. Lawrence Tabone.


Treah Haggerty, MD


Isabela Negrin, MD


Jennifer Ludrosky, PhD


Judith Siebart, RD


Rachel Wattick, RD


Stephany Lora, PsyD

OUTREACH

"Produce Prescription Program with a Twist"

This combined produce prescription program with a teaching kitchen went beyond simply distributing fresh produce—it empowered patients to grow, prepare, and cook vegetables through engaging, hands-on education. Evaluation showed that participants gained confidence in practical cooking techniques like steaming, stir-frying, using herbs and spices, and cooking from basic ingredients. While broader survey metrics showed limited statistical change—likely due to high baseline skills and the short program duration—qualitative feedback and participation levels suggested the classes were highly engaging and useful. The team plans to continue offering community cooking demonstrations and refine the teaching model based on participant feedback and lessons learned.

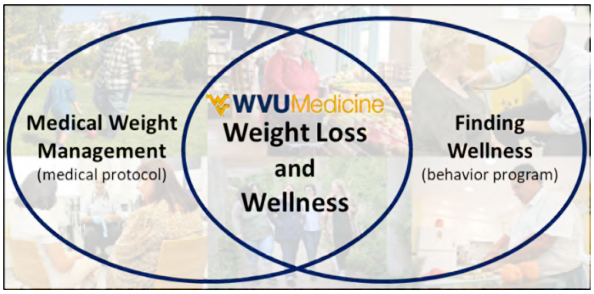
"Beyond GLP-1: Navigating the Journey Forward"

This GLP1 discontinuation program was developed to help patients stopping GLP1s for various reasons through an 8-week evidence-based virtual course to offer strategies and support to mitigate weight regain. Topics included food and nutrition, goal-setting, medical interventions, support, and it emphasized physical activity to boost strength and metabolism at each session. Feedback was positive, and the aim is to improve it more for future programs.

Other Registered Dietitian Outreach and Advocacy

The RDs frequently give educational talks and serve on a variety of community and professional boards. Outreach events such as empowering young women to take charge of their health and wellbeing through Y Teens of Marion County, promoting the RD profession at the East Fairmont Middle School career fair, dishing out evidence based nutrition facts regularly on a local radio show, and providing educational lectures to the Blue Prints Health Board, PIC Health Board, Chestnut Ridge Hospital, the West Virginia Academy of Nutrition and Dietetics, our fellows, students, interns, social workers, and nurses brings the power of nutrition from clinic to communities. Additionally, by serving on the Dietetic Internship Advisory Board at WVU Medicine, participating in state and national public policy committees, and engaging in policy events, our RDs help ensure that nutrition therapy for obesity management remains a priority in both policy and professional training.

OUTREACH



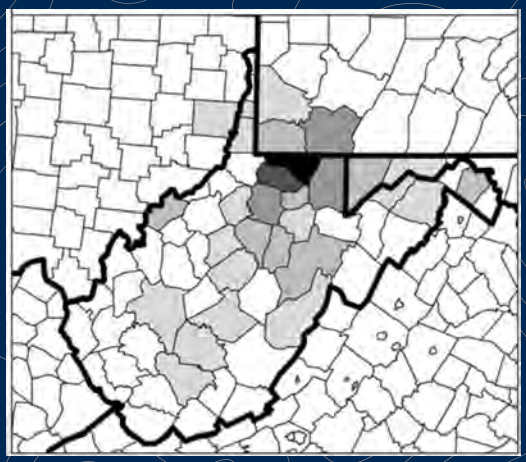
"Weight Loss & Wellness"

Medical Weight Management also continued to successfully offer the employee weight management program. It is a one year package of services utilizing an alternative payment model compared to the traditional fee for service model. Patients have no co-pays for visits with this program. BMI decreased 8.2%, cholesterol decreased 13.8%, and Ha1c decreased from 5.75 to 5.45 in 2024.

"Cardiometabolic Clinic"

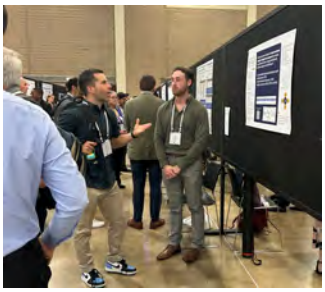
WVU Medicine started the first cardiometabolic clinic in the state. It is a multidisciplinary effort between the WVU Heart and Vascular Institute and the WVU Department of Medicine, Divisions of Endocrinology & Metabolism and Medical Weight Management. The clinic is designed to help patients with a history of cardiac disease and a metabolic condition such as pre-diabetes, diabetes, or obesity, manage their care more efficiently and prevent additional health concerns. The goal is to combine the expertise of cardiology, endocrinology, and weight management in a one stop shop to deliver the best comprehensive care. This approach presents a significant convenience for patients, eliminating the need for multiple appointments at differing times and locations. The clinic, located on the 4th floor of the WVU Heart and Vascular Institute, is currently seeing patients once per month, and plans to expand if needed.

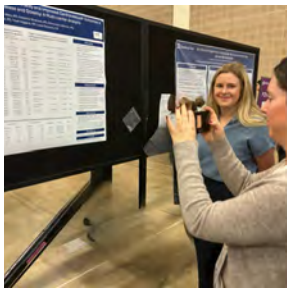
Geographic areas served by Medical Weight Management



RESEARCH AND SCHOLARSHIP

Medical Weight Management physicians were also actively involved in numerous state and national medical committees, including the Obesity Medicine Fellowship Council (LD), the National Rural Health Association Rural Obesity & Chronic Disease Committee (TH), the Obesity Medicine Association Advocacy Committee (LD), the Obesity Medicine Association Pediatrics Committee (TH), the WV Medicaid P&T committee (LD), and the WV State Medical Association Board of Trustees (LD).





Abstract Presentations

Haggerty T, Dekeseredy P, Davisson L. Navigating Coverage: *A Qualitative Study Exploring the Perceived Impact of an Insurance Company Policy to Discontinue Coverage of Anti-Obesity Medication*. The Obesity Society. Nov 2024. Oral presentation

Davisson L, Fetty A, Haggerty T. *A Value-Based Population Health Strategy for Health System Employees With Obesity: Quality Outcomes.* The Obesity Society. Nov 2024. Poster presentation

Narvaez S, Nieto L, Hageboeck K, Adeniran O, Vega K, Haggerty T, Davisson L. *GLP-1 Agonist Use is Associated with Lower Mortality and Improved Cardiovascular Outcomes in Patients with Celiac Disease and Obesity: A Multi-center Analysis*. The Obesity Society. Nov 2024. Poster presentation

Nieto L, Narvaez S, Adeniran O, Hageboeck K, Vega K, Haggerty T, Tabone L, Davisson L. *Alcoholic Liver Disease Outcomes After Roux-en-Y Gastric Bypass in Patients Taking GLP-1 Agonists: A National Database Analysis*. The Obesity Society. Nov 2024. Oral presentation

Narvaez S, Nieto L, Adeniran O, Vega K, Haggerty T, Davisson L, Tabone L, Chawla S. *GLP-1 Agonist Use is Associated with Lower Incidence of GERD, Lower use of PPIs and does not complicate GERD in Patients with Obesity who Undergo Sleeve Gastrectomy: A National Database Analysis*. ACG Oct. 2024. Poster presentation

Narvaez S, Nieto L, Contreras-Yametti F, Donghyun Ko, Kim D, Haggerty T, Davisson L, Rojas E. *GLP-1 Agonist Use is Associated with Lower Mortality and Improvement of Cardiovascular Outcomes in Patients with Obesity who have MAFLD and OSA: A Multi-center Analysis*. ACG Oct. 2024. Poster presentation *Presidential poster award

Nieto L, Narvaez S, Argueta P, Kim D, Ko D, Chawla S, Vega K, Davisson L. *GLP-1 Agonists Use is Associated with Lower use of PPI and do not worsen Outcomes in Patients with GERD: A National Database Analysis*. ACG Oct. 2024. Oral presentation *Auxiliary award

Nieto L, Narvaez S, Kim D, Ko D, Chawla S, Vega K, Davisson, L, Kinnucan J. *GLP-1 Agonist Use is Associated with Lower Complications and Mortality in Patients with Ulcerative Colitis and Obesity: A National Database Analysis*. ACG Oct. 2024. Poster presentation

OBESITY EDUCATION

Dr. Jessica Arvon was the first resident to complete the internal medicine residency program's obesity medicine track, which has quickly become a popular option for residents, with eight current participants. Track residents attend an obesity medicine conference, care for patients in Medical Weight Management Clinic, and are encouraged to align QI and scholarly work with obesity-related topics. Whether residents pursue an obesity medicine fellowship--such as the one offered at WVU--or seek board certification through the CME pathway, the track provides strong preparation for addressing obesity--one of the most pressing public health issues of our time. Dr. Arvon will be staying on as faculty in the Department of Medicine, where she will practice both general internal medicine and obesity medicine.

75
Learners* rotated in MWM

7
Learner types* in MWM

340
MWM clinics with learners

32
Internal obesity lectures

**5 Fellows from 2 programs, 18 Residents from 3 programs, 36 Medical Students from all 4 years of training, 4 Dietetic Interns, 2 Nursing students, 8 Nurse practitioner students, 2 Pharmacy residents*

Medical Weight Management's vision includes improving education and creating a workforce to treat obesity in WV. The team welcomed and educated many medical students from all years and learners from various other disciplines. The team also delivered many educational lectures within the institution about obesity. Dr. Kristen Moore was also selected to move into educational leadership roles in the medicine department's clerkship and residency program.

Obesity Fellowship

This was our third year of offering Fellowship training in obesity medicine. Our fellow Obesity Medicine board pass rate is 100%.

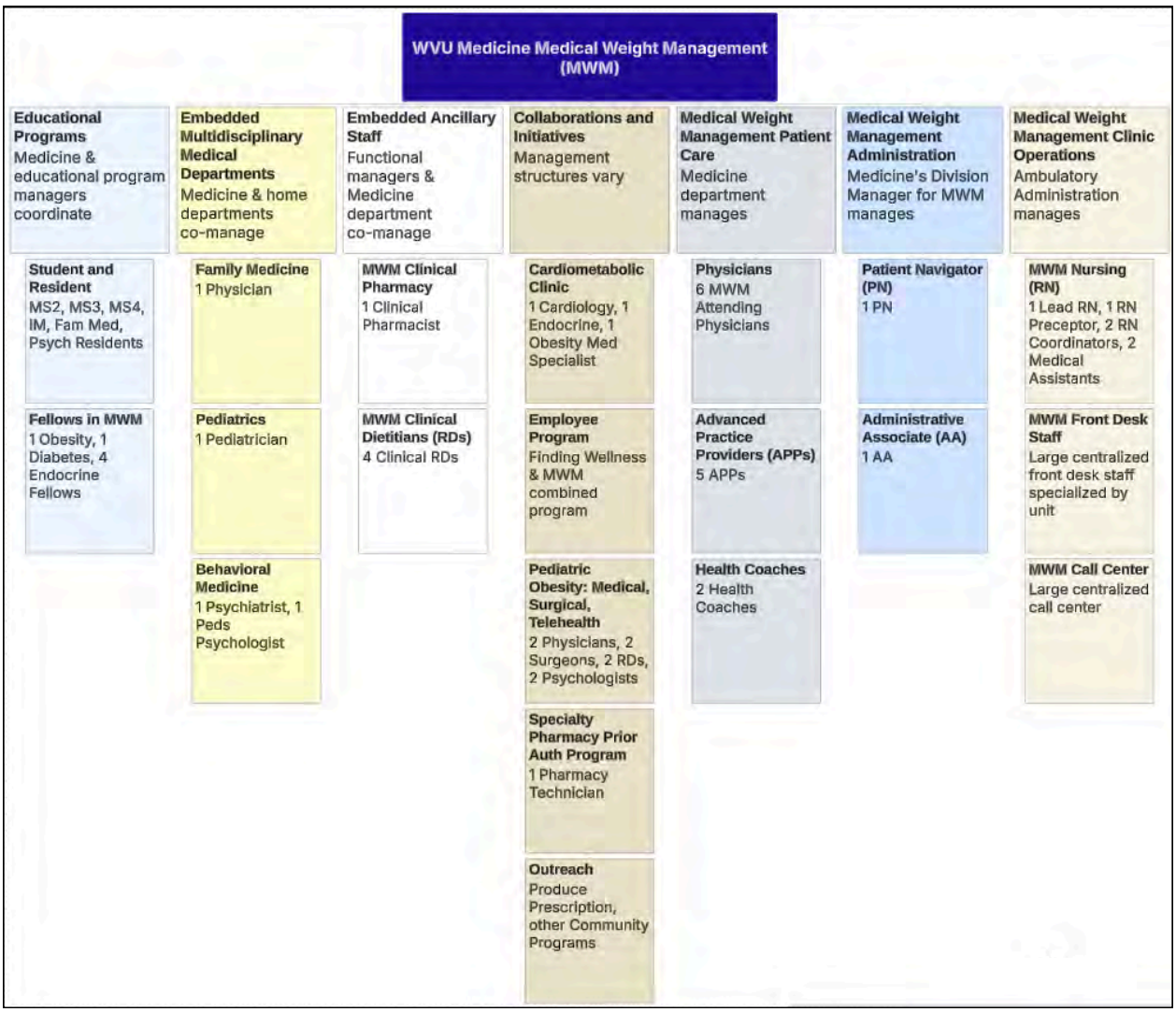
We are thrilled to announce the graduation of our third fellow, Dr. Areeba Altaf, in June 2025 who will be going into a combined endocrinology and obesity medicine private practice in Texas. Dr. Stephanie Farah will be joining us as our next fellow in July 2024.

Fellow Placement

- 2022-2023 (Dr. Phani Surapaneni): Private Practice
- 2023-2024 (Dr. Luis Nieto): Advanced training in GI at Emory University
- 2024-2025 (Dr. Areeba Altaf) Private Practice Endocrinology/Obesity Medicine Dallas, Texas

MEDICAL WEIGHT MANAGEMENT ORGANIZATION & COLLABORATIONS

Medical Weight Management is organized using a matrix structure for staffing, scheduling, and supervision to share resources with collaborative partners to foster innovative initiatives while providing seamless patient care.



PUBLICATIONS, PRESENTATIONS, AND AWARDS

Publications

Davisson L, Moore K, Tabone L, Haggerty T. ***Building a medical-surgical obesity center: Updates and quality outcomes after five years***. Bariatric Surgical Practice and Patient Care, 1/2025. PMID: 19396065.

Haggerty T, Dekeseredy P, Bailey J, Cowher A, Baus A, Davisson L. ***Navigating Coverage: A Qualitative Study Exploring the Perceived Impact of an Insurance Company Policy to Discontinue Coverage of Anti-Obesity Medication***. Obesity Pillars, 7/2024. PMID: 39161945.

Presentations

Obesity Medicine Association National Meeting panel, Washington, D.C., ***Bridging the Gap: Building Seamless, Multidisciplinary Obesity Care Across the Lifespan***, 2025 (LD, TH)

Obesity Medicine Association National Meeting panel, Washington, D.C., ***Advocacy in Action: Real-Life Perspectives and Strategies Advocacy Panel***, 2025 (LD)

ACP Annual Meeting lecture, New Orleans, LA, ***The Changing World of Obesity Management***, 2025 (LD)

Society for General Internal Medicine workshop, Florida. ***Training Tomorrow's Leaders: Building an Obesity Medicine Resident Track in Both Urban and Rural Settings***, 2025 (LD)

Nursing Theory Week. Panel Presentation, Virtual. ***Using the Purnell Model for Cultural Competence as a guide for practice and research in obesity care.*** March 2025 (RE)

WV Annual Podiatric Meeting, Stonewall Jackson Resort, Roanoke, WV. ***GLP 1 Agonists in the treatment of obesity: Mechanisms & challenges.*** March 2025 (RE)

Awards

Jonas nursing doctoral student award: Elkins
Rosalind Franklin Society Award in Science: Davisson
First place in APP Nursing Poster competition: Elkins
WV ACP Laureate award: Davisson

MEDIA COVERAGE

Television Interviews

NewsNation, ***On Balance***, by Leland Vittert, 12/23/2024

CBS Evening News, ***West-virginia-subsidy-program-ends***, Sarah Svoboda, 11/25/2024

Print Interviews

Washington Post, ***Patients navigate an 'absolutely insane' maze to afford weight-loss drugs***, column by Daniel Gilbert, 5/25/2025

Stateline, ***States consider high costs, possible savings of covering weight-loss drugs for their workers***, column by Shalina Chatlani, 1/22/2025

Associated Press, ***West Virginia Patients are left in limbo over changing insurance coverage of obesity medications***, column by Leah Willingham, 1/2/2025

Medscape, ***Should Patients with Thyroid Issues Take GLP-1? It Depends***, column by Alicia Gallegos, 12/19/2024

The Atlantic, ***The Ozempic Flip-Flop***, column by Sarah Zhang, 12/2024

WV Metronews, ***West Virginia Leaders Embrace Effects of Weight Loss Drugs While Also Considering Cost***, column by Brad McElhinny, 12/1/2024

Time, ***Patients are Suing Over Alleged Side Effects of Weight Loss Drugs,*** column by Jamie Ducherne, 11/4/2024

The Atlantic, ***Why People Are Breaking Open Their Mounjaro Pens***, column by Sarah Zhang, 8/15/2024

Wired, ***The Race for the Next Ozempic***, column by Emily Mullin, 7/24/2024

Forbes, ***Weight Loss Pills Intensify Obesity Drug Race--But Here's Why Experts Say Injections Aren't Going Anywhere***, column by Robert Hart, 7/18/2024

THANK YOU!

AMERICAN BOARD of OBESITY MEDICINE

Vision

The Medical Weight Management vision is to improve health in West Virginia and the populations served through outreach, education, research, and clinical management of obesity.

Future

In 2025, MWM will expand into a new, larger space at the POC to meet growing demand. This space will include additional exam rooms and a multipurpose conference room to support team-based care, education, and group activities.

An additional program initiative for 2025 is to expand the employee Weight Loss & Wellness program across state lines by having team members obtain licenses in additional states to be able to provide virtual care to more employees located outside of West Virginia.

Be looking for an announcement about another 2025 goal--the launch of a microcredentialing badge in obesity medicine. This is part of a larger plan to collaborate with other clinics providing obesity treatment, standardize care, and implement clinical protocols to optimize the quality of obesity care within the system.

Medical Weight Management
Physician Office Center
Morgantown, WV
304-598-4855
wvumedicine.org/weightmgmt

Find us on: facebook

WVUMedicine