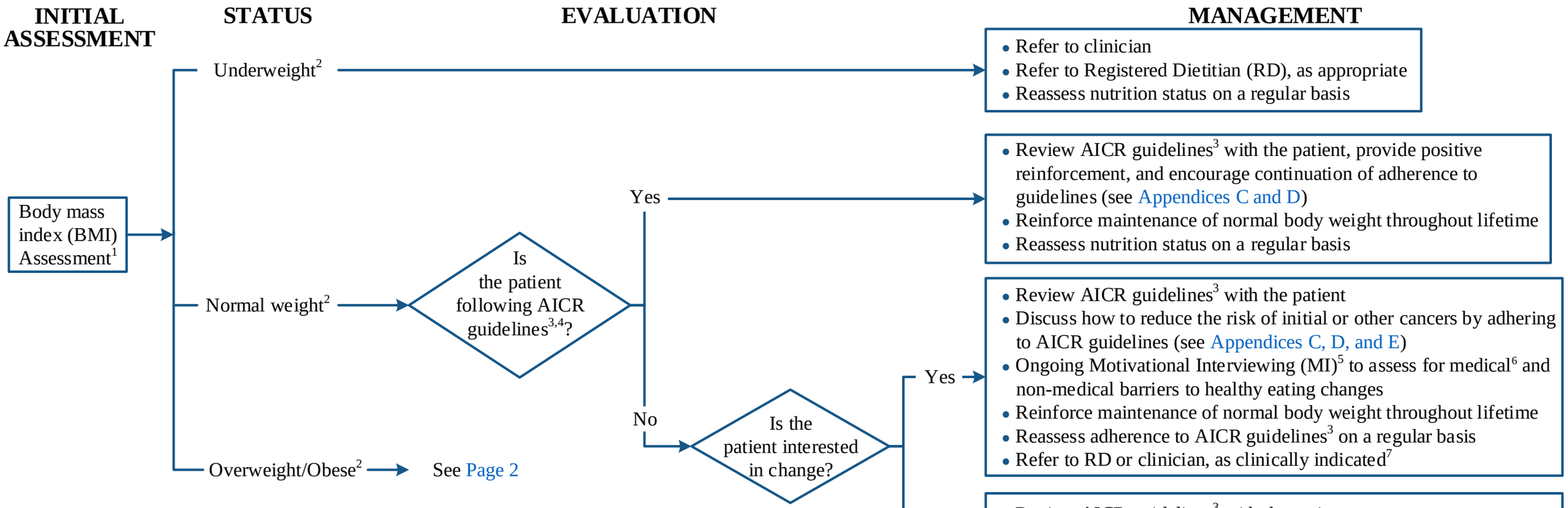
Nutrition - Adult

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.*



[1] BMI = weight (in pounds) x 703 / height (in inches)^2 (see Appendix A)

[2] The weight categories are as follow:
- Underweight (BMI less than 18.5 kg/m^2)
- Normal weight (BMI 18.5-24.9 kg/m^2)
- Overweight (BMI 25-29.9 kg/m^2)
- Obese (BMI greater than or equal to 30 kg/m^2)

[3] American Institute for Cancer Research (AICR) guidelines (see Appendix B)

[4] In addition, perform physical activity assessment based on the Physical Activity (PA) - Adult algorithm

[5] If MI is not conducted, encourage and counsel patient on importance of meeting AICR guidelines

[6] Assess for medical barriers such as:
- Gastrointestinal dysmotility
- Swallowing issues/dysphagia
- Bowel dysfunction
- Dental health
- Oropharyngeal anatomic changes
- Digestive enzyme insufficiency
- Gastrointestinal tract reconstruction/anastomoses

[7] The following conditions may necessitate further evaluation by RD or clinician:
- Diabetes
- Cardiovascular disease
- Concerns regarding medication or supplement use
- Renal disease
- Gastrointestinal disease
- Mood disorders (*e.g.*, anxiety, depression)
- Liver disease
- Thyroid dysfunction
- Possible risk of malnutrition (see Consensus Statement under Appendix G)

Department of Clinical Effectiveness V2
Approved by the Executive Committee of the Medical Staff on 03/26/2019

Nutrition - Adult

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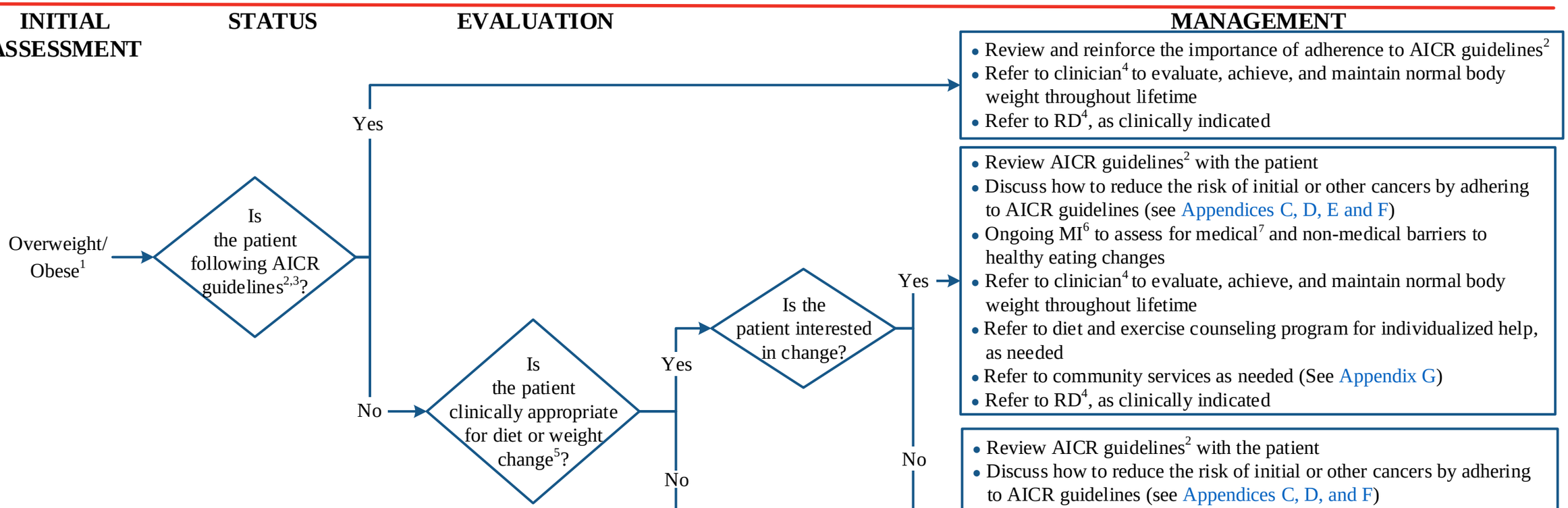

[1] The weight categories are as follow:
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- Liver disease
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- Possible risk of malnutrition (see Consensus Statement under Appendix G)

[5] Modest weight loss of 5-10% of total body weight can produce health benefits such as improvements in blood pressure, cholesterol, and sugars. However there may be short-term situations where weight loss should be temporarily delayed (*e.g.*, starting radiation therapy, post-operative setting).

[6] If MI is not conducted, encourage and counsel patient on importance of meeting AICR guidelines

[7] Assess for medical barriers such as:
- Gastrointestinal dysmotility
- Swallowing issues/dysphagia
- Bowel dysfunction
- Dental health
- Oropharyngeal anatomic changes
- Digestive enzyme insufficiency
- Gastrointestinal tract reconstruction/anastomoses

Nutrition - Adult

APPENDIX A: Body Mass Index (BMI)

	Weight in Pounds																																				
Height	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265
4' 10"	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
4' 11"	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	53	54
5'	17	18	19	20	21	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
5' 1"	16	17	18	19	20	21	22	23	24	25	26	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	43	44	45	46	47	48	49	50
5' 2"	16	16	17	18	19	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33	34	35	36	37	37	38	39	40	41	42	43	44	45	46	47	48	48
5' 3"	15	16	17	18	19	19	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33	34	35	35	36	37	38	39	40	41	42	43	43	44	45	46	47
5' 4"	15	15	16	17	18	19	20	21	21	22	23	24	25	26	27	27	28	29	30	31	32	33	33	34	35	36	37	38	39	39	40	41	42	43	44	45	45
5' 5"	14	15	16	17	17	18	19	20	21	22	22	23	24	25	26	27	27	28	29	30	31	32	32	33	34	35	36	37	37	38	39	40	41	42	42	43	44
5' 6"	14	15	15	16	17	18	19	19	20	21	22	23	23	24	25	26	27	27	28	29	30	31	31	32	33	34	35	36	36	37	38	39	40	40	41	42	43
5' 7"	13	14	15	16	16	17	18	19	20	20	21	22	23	23	24	25	26	27	27	28	29	30	31	31	32	33	34	34	35	36	37	38	38	39	40	41	42
5' 8"	13	14	14	15	16	17	17	18	19	20	21	21	22	23	24	24	25	26	27	27	28	29	30	30	31	32	33	33	34	35	36	36	37	38	39	40	40
5' 9"	13	13	14	15	16	16	17	18	18	19	20	21	21	22	23	24	24	25	26	27	27	28	29	30	30	31	32	32	33	34	35	35	36	37	38	38	39
5' 10"	12	13	14	14	15	16	16	17	18	19	19	20	21	22	22	23	24	24	25	26	27	27	28	29	29	30	31	32	32	33	34	34	35	36	37	37	38
5' 11"	12	13	13	14	15	15	16	17	17	18	19	20	20	21	22	22	23	24	24	25	26	26	27	28	29	29	30	31	31	32	33	33	34	35	36	36	37
6'	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	22	22	23	24	24	25	26	26	27	28	28	29	30	31	31	32	33	33	34	35	35	36
6' 1"	11	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	22	22	23	24	24	25	26	26	27	28	28	29	30	30	31	32	32	33	34	34	35
6' 2"	11	12	12	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	22	23	24	24	25	26	26	27	28	28	29	30	30	31	31	32	33	33	34
6' 3"	11	11	12	12	13	14	14	15	16	16	17	17	18	19	19	20	21	21	22	22	23	24	24	25	26	26	27	27	28	29	29	30	31	31	32	32	33
	Underweight (18.4 or lower)													**Normal weight (18.5-24.9)**										**Overweight (25-29.9)**							**Obese (30 or higher)**						

APPENDIX B: AICR Guidelines

These ten recommendations for cancer prevention are drawn from the World Cancer Research Fund (WCRF)/American Institute for Cancer Research (AICR) Second Expert Report:

- Be as lean as possible without becoming underweight.
- Be physically active for at least 30 minutes every day. Limit sedentary habits.
- Avoid sugary drinks. Limit consumption of energy-dense foods.
- Eat more of a variety of vegetables, fruits, whole grains and legumes such as beans.
- Limit consumption of red meats (such as beef, pork and lamb) and avoid processed meats.
- If consumed at all, limit alcoholic drinks to 2 for men and 1 for women a day.
- Limit consumption of salty foods and foods processed with salt (sodium).
- Don't use supplements to protect against cancer.
- It is best for mothers to breastfeed exclusively for up to 6 months and then add other liquids and foods.*
- After treatment, cancer survivors should follow the recommendations for cancer prevention.*

* Special Population Recommendations

APPENDIX C: Cancer Risk Reduction with Nutrition Benefits

- Eating a balanced diet provides nutrients to help your body work better. This lowers your chance of getting certain diseases, including some cancers.
- Research has shown that eating a plant-based diet can lower your cancer risk. A plant-based diet can include meat, but is mostly made up to:
  - Vegetables
  - Seeds
  - Whole grains
  - Fruits
  - Nuts
  - Beans
- Vegetables like spinach, cauliflower, cucumbers, zucchini, artichokes, and bell peppers and fruits like berries, kiwi, cherries, peaches, nectarines, apples, and grapes help lower your chance of getting the following cancers:
  - Head and neck
  - Rectal
  - Esophageal
  - Ovarian
  - Lung
  - Liver
  - Stomach
  - Pancreatic
  - Colon
  - Endometrial
- A balanced diet also helps you maintain a healthy weight and lose fat. Extra body fat can lead to the following cancers:
  - Esophageal
  - Pancreatic
  - Endometrial
  - Colon
  - Kidney
  - Rectal
  - Liver
  - Breast (postmenopausal)
- A balanced diet may lower your chance of other health problems, such as:
  - Heart disease
  - Diabetes
  - High blood pressure

APPENDIX D: Cancer Risk Reduction through Nutrition

Following the five steps below may reduce your risk of a cancer diagnosis or a cancer recurrence. These guidelines come from a comprehensive, evidence-based literature review led by the American Institute for Cancer Research (AICR). If you have questions about your nutrition needs, ask your health care provider to schedule an appointment with the dietitian.

1. **Eat a variety of vegetables, fruits, whole grains and beans.**
   - Fill at least ⅔ of your plate with vegetables, fruits, whole grains, beans, nuts and/or seeds.
   - Eat at least 2 ½ cups of non-starchy vegetables and fruits a day. Aim for more vegetables than fruits.
   - Aim for eating a variety of colorful vegetables and fruits.
2. **Eat less red meat (such as beef, pork and lamb) and avoid eating processed meats.**
   - Limit animal foods to no more than ⅓ of your plate.
   - Eat no more than 18 ounces of red meat per week. Keep in mind that 3 ounces (1 serving) of red meat is about the size of a deck of cards.
   - Avoid processed meats as much as possible. This includes sandwich meats, ham, bacon, pastrami, salami, hot dogs and sausages.
   - Processed meats are preserved by smoking, curing or salting or have added chemical preservatives. Cancer-causing substances (carcinogens) can form when meats are preserved.
3. **Eat less salty foods and foods processed with salt (sodium).**
   - Limit your daily intake of salt to less than 2,400 milligrams (1 teaspoon).
   - Foods that do not taste "salty" such as processed foods, soups, pizza, breakfast cereals, breads, frozen meals, canned foods, sweets and desserts can contain sodium.
   - Check the nutrition label for sodium content information. For more information, see the handout "Nutrition Facts: Reading Food Labels."
4. **Avoid drinking sugary drinks and limit your daily intake of high calorie, low nutrient foods.**
   - Sugary drinks include soft drinks, energy drinks, juice flavored drinks, sports drinks, fruit juice and coffee or tea with added sugar.
   - High calorie foods (candy, cakes, pies, cookies, ice cream, chips and fast foods) have added sugar and fat to improve their taste.
   - In excess, high-calorie foods and sugary drinks can lead to weight gain and increase your cancer risk.
5. **Drink less Alcohol**
   - AICR currently recommends not drinking alcohol.
   - If consumed, limit alcohol to no more than two drinks per day for men and no more than one drink per day for women(one drink is equal to 12 ounces of beer, 5 ounces of wine, or 1 ½ ounces of liquor).

APPENDIX E: Goal Setting for a Healthy Lifestyle

You are ready to improve your health with nutrition and exercise. Goal-setting is an important step to a healthy lifestyle. Use the tips below to help create a goal for your nutrition and/or exercise plan in order to reach your desired results. A good goal-setting strategy is the SMART goal checklist.

- Specific: Be specific. Describe exactly how and what you want to do. A SMART goal has specific details and is not vague.
  - Example of a goal: Eat healthy food.
  - Example of a SMART goal: Eat at least 2 ½ cups of non-starchy vegetables and fruits a day.
- Measurable: If you can measure a goal, then you can determine how successful you are at meeting the goal.
  - Example of a goal: Exercise more.
  - Example of a SMART goal: Walk 30 minutes a day, 5 days a week.
- Attainable: This is a goal that can work in your lifestyle.
  For example, if your schedule doesn't allow you to go to a gym 7 days a week, don't make going to the gym 7 days a week a goal. Try alternative days or weekends. Set an attainable goal for yourself based on your schedule.
- Realistic: Everyone is different. Each person has different abilities, likes/dislikes, and schedules. Set a goal that is realistic for you.
  If you are not physically capable of running, a goal of walking or swimming may be more realistic. Setting a realistic goal can help avoid potential failure.
- Time-bound: For a goal that has a measureable end, it is important to set a deadline. Goals without deadlines lend themselves to being put off until another day.
  - Example of a goal: Join a gym.
  - Example of a SMART goal: Join a gym this Saturday morning.

It is important to evaluate your goals often and adjust them as needed to maintain your healthy lifestyle.

Diet and Exercise Setbacks and Slips

Certain situations may tempt your healthy eating or exercise habits. These times may be during the holidays, social gatherings or even after a long day of work. You might indulge or postpone exercise and find yourself feeling guilty. If you associate slips with failure, consider the following:

- A slip does not undo all the success you have had so far.
- A slip does not mean that you are weak or a failure.

Use the slip as a learning experience. Learn what triggers your unhealthy eating and inactive behaviors. Come up with a plan to help balance your lifestyle with your current health goal when you encounter these triggers.

- Explore your motivation. Take a closer look at your reasons to pursue a healthier lifestyle through diet and exercise. Do these reasons outweigh the reasons to eat unhealthy and not exercise?
- Does your goal work for you in your current situation? Take time to evaluate your goal. Goals can be changed. Think about what will work for you. For example, if your work schedule doesn't allow you to exercise for an hour, try for 30 minutes.
- If you slip, try to get back on track right away. Life happens and everyone can be tempted to eat unhealthy or avoid a workout day. Don't quit just because you slipped.
- Keep going. If you have had a major setback or just haven't reached your goal, keep going. A healthy diet and exercise is the best thing you can do to reduce your cancer risk.
- Talk with a professional. The Healthy Living Clinic would like to support you on your journey of optimizing your health. If you have any questions or would like to schedule an appointment, call 713-745-8040.

APPENDIX F: Weight and Your Health

Why is your health care provider concerned about how much you weigh?

- **Higher chances for disease:** A higher weight on the scale may indicate that you have more body fat than recommended. Evidence shows that people with a higher percentage of body fat are at greater risk of cancer, as well as other diseases such as heart disease and diabetes.
- **Quality of life:** Carrying too much body fat can limit your ability to participate in activities with family and friends. Extra weight also puts stress on your back and joints, causing aches and pains that can restrict activity even more.
- **What affects your weight and body fat?**
  - Diet: If you take in more calories than you burn, you will gain weight.
  - Physical activity: Your body burns more calories when you're moving. It's important to exercise most days of the week to prevent weight gain.
  - Genetics: Your genes influence your body shape. Genes also influence your metabolism, which is the rate at which you burn calories.
  - Life stage: Your body may burn fewer calories as you age, either because you are less active and/or because your metabolism changes. If you eat the same amount of food you ate when you were younger, your body will store the extra calories as fat. Physical limitation such as arthritis may make physical activity more difficult. Hormonal changes, such as menopause, can cause your body to store extra fat and distribute fat to different parts of your body.
  - Illness and medications: Being ill can make you feel tired, leading you to be less active. Some medications can have a similar effect on your body. Certain medical conditions, such as hypothyroidism and diabetes, can increase your body's tendency to store fat. Some medications, such as steroids, can increase your appetite and cause weight gain.

What can you do to reduce your body fat?

Of all the factors affecting weight and body fat, there are two factors you can change: **diet** and **physical activity**. You can improve your weight and body fat by changing what you eat and exercising more often. **Even if you don't lose a significant amount of weight, you will enjoy improved health and energy, and decreased cancer risk.** Lifestyle change does make a difference!

Benefits of lifestyle change include:

- Reduced risk of cancer and other diseases
- Improved quality of life
- Improved energy
- Improved mood
- Reduced need for medications (for some people)

APPENDIX G: Resources

- Academy of Nutrition and Dietetics: http://www.eatright.org/
- American Institute for Cancer Research: http://www.aicr.org/
- Centers for Disease Control and Prevention (CDC): https://www.cdc.gov/healthyweight/losing_weight/
- Consensus Statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition http://journals.sagepub.com/doi/abs/10.1177/0148607112440285
- National Institute of Diabetes and Digestive and Kidney Diseases https://www.niddk.nih.gov/health-information/health-topics/weight-control/choosing-safe-successful-weight-loss-program/Pages/choosing-safe-successful-weight-loss-program.aspx
- Overeaters Anonymous: https://oa.org/
- United States Department of Agriculture (USDA) Choose My Plate: https://www.choosemyplate.gov/
- Weight Watchers: https://www.weightwatchers.com/us/
- Young Men's Christian Association (YMCA): http://www.ymca.net/

SUGGESTED READINGS

American College of Sports Medicine., & Irwin, M. L. (2012). *ACSM's Guide to Exercise and Cancer Survivorship*. Champaign, IL: Human Kinetics.

Centers for Disease Control and Prevention (CDC). (2018) Losing Weight. Retrieved from https://www.cdc.gov/healthyweight/losing_weight/index.html

Marmot, M., Atinmo, T., Byers, T., Chen, J., Hirohata, T., Jackson, A., … Mann, J. (2007). Food, nutrition, physical activity, and the prevention of cancer: A global perspective. Retrieved from http://www.aicr.org/assets/docs/pdf/reports/Second_Expert_Report.pdf

Motivational Interviewing Network of Trainers Incorporated. (2018) Retrieved from: http://www.motivationalinterviewing.org/

National Comprehensive Cancer Network. (2018). *Survivorship* (NCCN Guideline Version 2.2018). Retrieved from https://www.nccn.org/professionals/physician_gls/pdf/survivorship.pdf

White, J. V., Guenter, P., Jensen, G., Malone, A., Schofield, M., Academy Malnutrition Work Group, … ASPEN Board of Directors. (2012). Consensus statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: Characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). *Journal of Parenteral and Enteral Nutrition*, *36*(3), 275-283.

DEVELOPMENT CREDITS

This screening algorithm is based on majority expert opinion of the Nutrition work group at the University of Texas MD Anderson Cancer Center.
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