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Obesity Education Strategies for Cancer Prevention in Women's Health

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Abstract

Obesity is the cause of up to one-third of all cancers affecting women today, most notably endometrial, colon and breast cancer. Women's health providers are poised to advise women on obesity's link to cancer development, but often lack resources or training to provide appropriate counseling. Here, we review obesity's role in increasing the risk of several common reproductive system conditions faced by women, including polycystic ovarian syndrome, infertility, gynecologic surgical complications, and pregnancy complications. These events can be used as teachable moments to help frame the discussion of weight management and promote cancer prevention. We also review national guidelines and existing tangible weight-loss strategies that can be employed within the outpatient women's health setting to help women achieve weight loss goals and affect cancer prevention.

Keywords

Obesity; Cancer Prevention; Teachable Moments; Obesity Education Strategies

Introduction

Discussing the influence of obesity on cancer risk and counseling women on weight management has not always been at the forefront of gynecologic care. Yet, both general and specialist obstetrician-gynecologists are uniquely positioned to promote obesity education

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Compliance with Ethics Guidelines

Human and Animal Rights and Informed Consent

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Conflict of Interest

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and facilitate weight loss in women through all aspects of their reproductive life. Today, endometrial cancer is the fourth-most common cancer in the United States, and the cancer most closely linked to obesity. Breast and colon cancer, currently the second- and third-most common cancers to affect women in the U.S., are also strongly associated with obesity. Obesity worsens cancer outcomes: women with a body mass index (BMI) > 40 have a 60% higher risk of dying from any cancer than women of normal weight [1]. Up to 15–20% of all cancer deaths are attributed to obesity, and obese women with endometrial cancer have a nine-fold higher mortality from all causes [2].

Fortunately, weight loss can prevent endometrial cancer, as well as reduce the risk for breast cancer [3], but with far too many opportunities missed, obesity is quickly replacing tobacco as the leading preventable cause of cancer in women. Thus, women's health care providers must play an increasingly active role in acknowledging and addressing obesity's consequences and guiding women to appropriate management.

In this article, we outline several teachable moments within a woman's lifespan with which to frame the discussion of weight management, and review tangible strategies that can be employed to help women achieve weight loss goals.

A. Assess, Advise and Refer: A framework for using teachable moments to link obesity-related women's health events to cancer risk

National organizations have endorsed obesity education and weight loss as priorities for effective cancer prevention and care. The American Society for Clinical Oncology (ASCO) recently released a position statement on obesity as a call to action for oncology providers [4]. The American Congress of Obstetricians and Gynecologists (ACOG) has begun to promote obesity education across a woman's lifespan [5]. The American Heart Association, the Society of Gynecologic Oncology and the Institute of Medicine have all issued guidelines and resources to facilitate obesity education [6]. Similar to smoking cessation counseling, ASCO's recommended approach of *Assess, Advise and Refer* is also quite practical for cancer prevention in obese women.

Assessing a patient's body mass index (BMI) is typically done and recorded at each office visit, and just like any other vital sign, an out-of-range BMI should be discussed objectively with each patient. Liking an out-of-range BMI to an out-of-range blood pressure can help objectify the topic for both provider and patient. Patients are categorized as overweight with a BMI 25; and obese with a BMI greater than 30. Obesity can be further classified as class I (low-risk, 30–34.9), II (moderate-risk, 35–39.9) and III (high-risk, 40). Waist size may not be a standard measurement in the office, but women with a waist size greater than 35 inches can be counseled that they have an increased risk of heart disease and type 2 diabetes.

Advising an obese patient on specific ways to lose weight can be difficult in a busy obstetrics and gynecology office. One helpful strategy may be to discuss how the patient's obesity is related to important events in their reproductive health. Obesity is associated with increased risks of several common gynecologic and obstetric conditions. This list includes polycystic ovarian syndrome, infertility, gynecologic surgical complications, hypertensive disorders of pregnancy, gestational diabetes, cesarean delivery, and postpartum weight

retention. Additionally, children born to obese mothers are at increased risk of all-cause mortality, underscoring the importance of maternal education and the potential impact for multiple generations.

While cancer is certainly not an inevitable downstream consequence of each of these events, women who remain obese following these reproductive life events have a higher risk of developing endometrial hyperplasia and cancer. Such reproductive life events, having occurred at a point in a woman's life when motivation for favorable health care outcomes is high (a pregnancy, a healthy baby, a good surgical outcome, etc.), serve as powerful *teachable moments*.

Teachable moments are classically demonstrated by a significant emotional or traumatic event (e.g. stressing importance of seat belts after a motor vehicle accident). These teachable moments can be facilitated by a trusting patient-physician relationship and used to convey important information that promotes risk-reducing health behavior. Thus, significant reproductive events present a good opportunity for providers to educate women on obesity's associated risks and affect their long-term health outcomes. Table 1 lists specific common obstetric and gynecologic diagnoses and their association with obesity. Assisting the patient in recognizing these events as at least partially related to obesity may be a helpful first step in increasing motivation and engagement in weight loss strategies.

While this can be a helpful framework to begin the discussion, providers must acknowledge their own practices' limitations in advising. Time constraints in the office may mean that advising is better done with office posters or handouts of the American Cancer Society's (ACS) Guidelines on Nutrition and Physical Activity for cancer prevention [38], or by incorporating questions about adherence to these guidelines into patient health history questionnaires. Still, these approaches will have better reach if providers stress their importance. In some cases, **referring** to weight management centers or a bariatric surgery practice may be the most appropriate strategy for a busy Obstetrics & Gynecology practice, especially in the setting of extreme obesity. Becoming familiar with the range of available resources to patients, both locally and online, can help providers make the most appropriate referrals.

B. Physician's Role

Balancing cancer prevention and obesity counseling with other more acute issues that patients bring to their office visits can be challenging, and at times even seem out of place in a visit's allotted time. However, several studies in the primary care setting have concluded that physicians can and should play an active role in encouraging weight management for their obese patients [39–42]. In 2006, the Obesity Prevention and Treatment Practices of U.S. Obstetrician–Gynecologists cross-sectional survey reported that over 82% of 900 practicing members of ACOG were using BMI to assess obesity, 80% reported counseling patient about weight control, 84% reported counseling about physical activity, 27% reported referring for behavioral therapy, and 35% reported ever prescribing weight loss medications [43]. Since this time, surveys continue to demonstrate both gaps in patients' knowledge of the obesity-cancer link and providers' lack of counseling, despite evidence to suggest utility. In a recent survey [44], only 50% of patients undergoing surgery for endometrial cancer

recognized that weight increases the risk of cancer, and only 36% noted any relation to surgical outcomes based on weight. In another survey of over 450 gynecologic oncology providers [45], only 50% of gynecologic oncology providers acknowledged providing any weight loss counseling, although >80% felt it was important. Over 90% of respondents believed weight loss surgery to be an effective option, more effective than self-directed diet or medical management. Few providers felt they had adequate preparation to counsel patients.

However, even a small amount of directed counseling can lead to significant change. Williams et al reported that a low-intensity intervention consisting of either 5 directed counseling sessions or a self-directed intervention both successfully caused weight loss in women over one year [46]. Studies have consistently shown that patients who receive counseling from physicians are more likely to lose weight and to use appropriate methods for doing so [47].

C. Physical Activity and Nutrition Guidelines

The American Cancer Society publishes Nutrition and Physical Activity Guidelines to aid health care professionals in promoting healthy diet and lifestyle to reduce cancer risk in their patients. These guidelines also acknowledge the community and policy efforts that must occur to support and sustain individual practices. For the purposes of imparting specific guidelines to patients in an outpatient clinical setting, we list the 4 individual strategies from the 2012 ACS recommendations in Table 2 [38], along with phrases that may be helpful in initiating a discussion regarding weight management. In a recent study, nonsmoking (both former and never smokers) U.S. men and women whose lifestyles were most consistent with the ACS Guidelines had a significantly lower risk of dying from cancer, cardiovascular disease, and all causes combined [48].

C.1 Physical Activity—Physical activity contributes to a reduced risk of cardiovascular activity, as well as a reduced risk and progression of breast, colon and endometrial cancer. For patients who are already overweight, physical activity—along with dietary interventions—is essential for achieving and then maintaining weight loss [52]. One simple starting point may be to encourage patients to monitor their steps. Pedometers and now newer models of fitness trackers have been shown to be particularly helpful in motivating women to increase activity, especially when a goal is set. Among all populations including multiethnic, low-income groups, attaining >9,000 steps a day is associated with a lower likelihood of being obese [53]. Online or smart-phone fitness trackers are gaining popularity, and may be a welcomed suggestion for those with access to these tools.

An additional talking point in the office is to inquire about sedentary time, particularly television viewing. Reductions in sedentary behavior are recommended for cancer reduction and improvement in overall mortality [54]. In fact, in a recent large U.S. cancer prevention cohort study led by the American Cancer Society, even after adjusting for physical activity and BMI, increased leisure-time spent sitting (≥ 6 hours) was associated with a higher risk of total cancer incidence in women, not men, and specifically with multiple myeloma, breast and ovarian cancers [55]. Sedentary behavior is becoming even more commonplace in our

modern society, where less physical activity is required and increased sitting is the norm. TV viewing and other screen-based behaviors have been associated with excess body weight among children and adults (particularly women), diabetes risk, cardiovascular risk and all-cause mortality [56]. Helping patients to quantify sedentary time and take specific steps to reduce it such as reducing TV viewing to less than the national average of 4 hours per day, may provide helpful, tangible suggestions.

Patients with Class III or extreme obesity present particular challenges. Knee and hip pain from chronic stress and osteoarthritis often prevent patients from pursuing physical activity. For these patients, water-based aerobic activity may be a helpful suggestion. Total knee or hip arthroplasty may be an appropriate option, but extreme obesity is associated with significantly increased risk of surgical site infections [57]. With increasing scrutiny from hospitals and insurance companies on postoperative morbidity, orthopedists may be increasingly deterred from performing total knee arthroplasty in morbidly obese patients. Appropriate referrals to weight management resources are particularly important in this cohort of women.

C.2 Nutritional Support—Education in healthy eating and nutritional support can be very effective, and several studies have indicated successful implementation of such support in an office-based setting. While a wide variety of interventions have been studied, dietitian-delivered group or web-based nutrition programs have been shown to be particularly effective at increasing fruit and vegetable consumption, reducing BMI, and increasing awareness among participants [58–60]. Fruit and vegetable intake has been used as a valid surrogate outcome for several nutrition studies. Thus, it follows that inquiring about and encouraging fruit and vegetable intake along with an increase in plant-based diet are two specific recommendations that could routinely be made in an office-based setting. Combining behavioral or psychosocial health counseling with nutrition education has been shown to be more effective than standard nutritional therapy alone [61]. Streamlining referrals for obese women to both nutritionists and behavioral health specialists can further strengthen any office-based recommendations.

Encouraging patients to keep records of food consumption is another practical way to promote significant weight loss. The Weight Loss Maintenance (WLM) trial, a multicenter study investigating alternative strategies for maintaining weight loss, demonstrated that keeping regular food records was associated with significant weight loss over a 6-month period, regardless of gender. Interestingly, weight loss also correlated with the number of log entries per week [49]. This evidence suggests that physicians should advise patients interested in weight management to keep regular meal consumption records. Reviewing these records could easily be incorporated into office visits and may help promote patient accountability. New, Internet-based tracking programs, such as Supertracker developed by the U.S. Department of Agriculture, are useful tools that can help maintain weight loss if used consistently [62]

Physicians should also ask patients about consumption of sugar-sweetened beverages (e.g. regular soft drinks, fruit drinks, fruit punch, prepared coffee drinks) and encourage them to minimize their intake. Chen et al. demonstrated that decreasing the number of liquid

calories, which have weak satiety, had a greater effect on weight loss than a reduction in solid calorie intake. They also provided evidence to suggest that decreasing intake of sugar-sweetened beverages, in particular, had a dose-dependent impact on weight loss [51]. Although successful weight loss involves multiple factors of diet and exercise, limiting consumption of added sugars can alone have a significant impact on health improvement and maintenance. Physicians should first try to gauge patients' understanding of the relationship between added sugar intake and obesity. Conveying the importance of minimizing these calories, as well as finding ways to replace these beverages with healthier options, can lead to clinically significant health improvements.

D. Weight Management Options

Community-based programs may provide an appropriate mix of consistency, accountability and affordability for motivated patients seeking weight loss opportunities. YMCAs across the U.S. provide nutrition consultations and education, along with weight loss fitness and education programs. For cancer survivors, Livestrong at the YMCA provides a 12-week, small-group program designed to help adult cancer survivors become more physically active. In 2002, the YMCA's Diabetes Prevention Program research study proved the effectiveness of a lifestyle intervention (16 core sessions with monthly follow up by trained lifestyle coaches) that yielded a 58% reduction in conversion to type 2 diabetes. More recently in partnership with UnitedHealth Group and Centers for Disease Control, they showed this to be a scalable and sustainable endeavor [63]. Routine, community-based delivery of evidence-based interventions for healthy lifestyle and cancer prevention will require appropriate information technology support and novel payment structures that incentivize efficiency and outcomes linked to better health and lower future costs.

Commercially available weight-loss programs have become ubiquitous and are heavily marketed directly to consumers. Patients often bring questions regarding such strategies, and being familiar with published results of these programs can help providers better encourage patients. The features and intensity of each specific weight-loss program vary. Well-known programs include Weight Watchers, Jenny Craig, the Atkins diet, Medifast, and many others. Weight Watchers provides a point system to quantify and restrict dietary intake that is coupled with counseling sessions to encourage healthy dietary choices and exercise. Jenny Craig provides similar counseling but instead of a point system, provides clients with pre-packaged meals. Less intensive diet programs focus exclusively on altering food choices. Prominent examples of less intensive diet programs include the Atkins and Ornish diets that focus on carbohydrate and fat restriction, respectively. Alternatively, other diets, like SlimFast, sell food products that reduce caloric intake by replacing meals.

Several commercial weight-loss programs have been evaluated in the setting of randomized control trials. Overall, studies have consistently shown a modest weight loss with commercial weight-loss programs. A 2015 systematic review of 45 studies on the efficacy of commercial weight-loss programs found a 2.9% greater weight loss with Weight Watchers and 4.9% with Jenny Craig compared to control education (no intervention, printed material only, or health education in less than 3 sessions) at 12 months [64]. Other programs that focus on low-calorie meal replacement including Health Management Resources, Medifast,

and OPTIFAST and the self-directed Atkins diet similarly achieved greater weight loss than control education but these studies used short-term follow-up of 6 months or less. Other self-directed diets including SlimFast have had mixed results [64]. In a randomized trial of multiple diets, all diet groups achieved a statistically significant change in baseline weight at 1 year following enrollment and there was no difference among the diet groups. Average weight loss ranged 2.1kg (4.6lbs) to 3.3 kg (7.3lbs) across the different diet groups [65]. Studies have failed to find statistical differences between different weight-loss programs, suggesting many effective options exist and convenience for the patient should be emphasized.

Although randomized trials have consistently shown a modest weight loss achieved with commercial weight loss programs, the rigid trial settings may overestimate weight loss in everyday life. In one study, 85–89% of participants attended at least 75% of all weight management classes, which may not reflect the true attendance outside of trial protocols [66]. Because most weight-loss programs have included components of nutritional and behavioral counseling with or without physical activity, determining which component has the biggest impact on weight loss is difficult to assess. Furthermore, few studies have included long-term weight loss greater than 12 months [64]. Additional research is needed to further determine the safety of the many weight-loss programs.

Intuitively, weight loss is closely tied to adherence rates and this point should be emphasized to patients [65, 67]. At 1 year, the average self-reported adherence was a 3 on a scale of 1 to 10 with 10 being perfect adherence. Only 25% of participants rated their adherence score 6 or more, which was considered clinically meaningful adherence [65]. When asked the reason for discontinuation, participants responded that the diet was too hard to follow or that there was not enough weight loss [65]. Therefore, setting reasonable patient expectations from the onset is crucial for patient adherence and thus, overall weight loss success. By establishing these expectations and providing positive reinforcement, physicians may better facilitate weight loss among overweight and obese patients. In addition, the variety of available commercial weight loss programs offers physicians a good opportunity to find the program best suited for each patient thereby maximizing adherence for a successful weight loss.

E. Pharmacologic Weight Loss Strategies

Currently, there are five pharmacologic agents that are FDA-approved for weight management: orlistat (Xenical™, Alli™), lorcaserin (Belviq™), phentermine/topiramate (Qsymia™), naltrexone/bupropion (Contrave™), and liraglutide (Saxenda™). All agents are approved for patients with a BMI ≥ 30 or ≥ 27 with one weight related co-morbidity such as hypertension, diabetes mellitus, or hyperlipidemia. These agents are available by prescription, with the exception of Orlistat (Alli™), which is available over-the-counter. Historically, anti-obesity drugs have had serious adverse effects, leading to the withdrawal of many of these agents [68], but these recent formulations show increased safety and promising results.

Anti-obesity drugs fall under two broad categories: central-acting appetite suppressants or satiety enhancers and peripherally acting agents. Orlistat acts purely peripherally, inhibiting

gastric and pancreatic lipases that block fat absorption from the gut. Patients taking this drug should avoid high-fat foods to decrease the common side effects of steatorrhea and fecal incontinence. Liraglutide was originally developed for the treatment of diabetes (Victoza®), but was FDA-approved for the treatment of obesity in December of 2014. It is a synthetic hormone that mimics glucagon-like peptide-1 (GLP-1), increasing the secretion of insulin from the pancreas, slowing absorption of glucose from the gut, and reducing the action of glucagon, all leading to reduction in glucose. Acting centrally, lorcaserin is a serotonin 2C (5-HT_{2C}) receptor agonist that leads to decreased appetite and an increased feeling of fullness. Phentermine/topiramate combines lower doses of two drugs which alone each have more side effects; phentermine as a nonselective sympathomimetic, and the anticonvulsant topiramate, which anecdotally produced substantial weight loss in epilepsy patients leading to its study as a weight loss drug. Naltrexone/bupropion combines an opioid receptor antagonist (naltrexone) with a dopamine and norepinephrine reuptake inhibitor (bupropion) in an extended-release tablet. Given the role of the brain in controlling appetite and evidence of high expression levels of 'obesity susceptibility genes' in the brain, centrally acting agents may hold the most promise [69].

In general, randomized controlled trials have shown that these agents lead to superior weight loss compared to placebo [70–80]. The reported weight loss varies depending on the agent, but weight loss as high as 10.2kg (22.5 lbs) has been reported [74]. Most studies focused on outcomes at 1 year, although some studies have shown continued effect at longer intervals. In diabetic patients, these agents produce similar weight loss and have favorable effects on metabolic profile parameters including significantly decreased hemoglobin A1c [74, 75, 81–84].

Although generally well tolerated, these drugs for weight management have gastrointestinal side effects including nausea, vomiting, and constipation [74, 77, 78, 81, 84]. Other drug-specific side effects also exist [72, 74–76, 80, 83]. Long-term post-marketing safety data are still being established and additional anti-obesity pharmacologic therapies are under development [85]. Overall, these agents may be considered in obese or overweight women in addition to lifestyle modifications by practitioners well familiar with these drugs' side effects and who have the ability to provide appropriate counseling and close surveillance.

F. Bariatric Surgery

Studies from bariatric surgery populations have provided possibly the best evidence that weight loss can impact the risk for and effects of cancer. In a Swedish study, Sjostrom et al. reported a decreased incidence of first-time cancers in the group of patients who underwent bariatric surgery compared to matched obese controls [86]. Moreover, a retrospective cohort study conducted in the U.S. showed a 60% decrease in death due to cancer with bariatric surgery [87]. Bariatric surgery has been proven effective in multiple studies evaluating a number of outcomes with both short-term and long-term follow-up. In addition to lowering all-cause mortality, bariatric surgery also improves cardiovascular and endocrine physiology resulting in fewer cardiovascular and diabetic complications [88–94]. Quality of life was also improved with bariatric surgery versus non-surgical management [88, 95]. Average weight loss ranges from 15–32%, depending on the type of bariatric surgery. Maximum

weight loss occurs 1–2 years after surgery with stable weight loss of 14–25% after 10 years [90]. Bariatric surgery may be offered to patients with BMI ≥ 40 kg/m² without co-existing medical problems or BMI ≥ 35 kg/m² and 1 or more severe obesity-related co-morbidity [96]. In patients with BMI 30–34.9 kg/m², evidence is limited for long-term benefit.

Despite the numerous health benefits of bariatric surgery, less than 1% of severely obese patients undergo bariatric surgery [97–99]. Many factors contribute to the ultimate patient decision to complete bariatric surgery including insurance coverage and concerns about the procedure itself. A systematic review by Funk et al found that patients were more likely to consider or receive bariatric surgery if a physician referred them [99]. Also of note, Funk et al found that females were more likely than males to do this. One study concluded that the majority of women favorably view a weight loss discussion with their gynecologic oncologist [100]. While oncologists, and specifically gynecologic oncologists, play an important role in initiating discussions about or providing referrals for bariatric surgery, this discussion would ideally be started in the morbidly obese patient as a part of cancer prevention earlier in life, possibly abating the need for a gynecologic oncologist in the future.

Conclusions

Obesity counseling presents a challenge to our current model of women's wellness care. Time constraints for practitioners, educational gaps for obese patients, patient/provider discomfort with the topic, and poorly aligned incentives for obesity counseling in women's health have all contributed to the lack of counseling and effective weight loss in obese women who remain at high-risk for cancer. However, as the incidence of obesity-related cancers rises, we must shift our practices and better emphasize the importance of weight control in cancer prevention. Likely, the most important role for a women's health provider is awareness of the link between obesity and cancer, then ensuring that this knowledge is clearly imparted to the patient. Bringing awareness to the issue and providing a framework for motivation for weight loss related to other reproductive life goals will help lead to cancer prevention. Multiple studies have shown patients' acceptance and even appreciation for direct, objective counseling on the subject, and the value of being a physician or practitioner champion for facilitating weight loss cannot be overestimated. Cancer prevention requires a sufficient evidence base, political will to fund programs to address the prevention potential, and a social strategy or plan by which we apply our knowledge to initiate or improve programs [101]. Current evidence would indicate that as women's health providers, we are poised to educate women on the obesity-cancer link, and guide our at-risk patients to the most fitting and successful strategies. Acknowledgement, encouragement, directed support if available, and appropriate referrals to nutritionists, behavioral health specialists and bariatric surgeons can all help to break down barriers to obesity management in the obstetrics and gynecology clinical setting.

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Table 1

Obesity-related obstetric and gynecologic events across a woman's lifespan

Condition	Role of Obesity	Teachable moment
Abnormal Uterine Bleeding (AUB)	<ul style="list-style-type: none"> - Increased risk of endometrial hyperplasia and cancer in those presenting with AUB [7–10] - Associated with increased risk of endometrial ablation failure for AUB [11] 	GYN visit, Well woman exam
Pregnancy	<ul style="list-style-type: none"> - Major risk factor for intra- and postpartum preeclampsia [12–15] - Major risk factor for gestational diabetes [16, 17] - Excessive weight gain during pregnancy may increase risk of future obesity [18] 	Initial OB visit, Postpartum visit
Polycystic ovary syndrome (PCOS)	<ul style="list-style-type: none"> - Important component in pathophysiology of PCOS [19] - Exacerbates insulin resistance and worsens reproductive manifestations of PCOS [20] 	GYN visit, Well woman exam
Menopausal symptoms	<ul style="list-style-type: none"> - Increased reports of hot flushes and night sweats [21–23] - Improvement of hot flushes with weight loss intervention [24] 	Well woman exam
Surgical complication	<ul style="list-style-type: none"> - Increased risk of conversion to open surgery during minimally invasive surgery [25] - Increased operative time, blood loss, wound infection, intra- and postoperative complications, and length of hospital stay [25–28] 	Preoperative planning, postoperative check
Urinary incontinence	<ul style="list-style-type: none"> - Increased risk of urinary incontinence of all types including postpartum [29–31] - Associated with severity of urinary incontinence [32, 33] 	Gyn visit, Well woman exam
Pelvic organ prolapse (POP)	<ul style="list-style-type: none"> - Independent risk factor [34] - Associated with progression of POP [35, 36] 	Gyn visit, Well woman exam
Breast-related issues (pain, benign mass, breast cancer screening)	<ul style="list-style-type: none"> - Cause of at least 9% of breast cancer [37] - 50% reduction in breast cancer in women losing >10 kg after menopause [3] 	Gyn visit, Well woman exam
Colon cancer screening	<ul style="list-style-type: none"> - Cause in up to 11% of colon cancers [37] 	Gyn visit, Well woman exam

Table 2

Approach to a Weight Management Discussion based on American Cancer Society (ACS) Nutrition and Physical Activity Guidelines

ACS Recommendations [38]	Physician Recommendations	Sample Questions for Patients
Achieve & maintain a healthy weight throughout life.	Avoid excess weight gain at all ages	<ul style="list-style-type: none"> - Are you currently hoping to gain, lose or maintain weight right now? - Do you feel like you have gained too much weight recently? - If so, why do you think you have gained weight?
	Track food consumption and exercise [49]	<ul style="list-style-type: none"> - Have you considered logging your eating or exercise habits? - Are you aware of free tracking tools (e.g. USDA Supertracker)?
Adopt a physically active lifestyle.	Encourage 150 min of moderate or 75 min vigorous exercise per week	<ul style="list-style-type: none"> - Do you think you get enough exercise? - Are there any barriers that make it difficult to exercise (e.g. access to facilities, time constraints, self-consciousness)?
	Limit sedentary behaviors, such as sitting, lying down, screen-based entertainment	<ul style="list-style-type: none"> - How do you spend most of your time at work? At home? - Are there ways you could incorporate more activity into your routine (e.g. "standing" desk, watching television while on treadmill)
Consume a healthy diet, with an emphasis on plant foods.	Eat 2.5 cups of vegetables and fruits every day	<ul style="list-style-type: none"> - Do you know how much 2.5 cups of fruits/vegetables is? - Does this seem like something you can do every day?
	Encourage meal preparation at home [50]	<ul style="list-style-type: none"> - How many meals do you prepare at home per week? - How many are made from scratch?
	Limit consumption of added sugars, particularly in beverages [51]	<ul style="list-style-type: none"> - Do you regularly drink any soft drinks, fruit drinks, fruit punch, or sweetened caffeinated beverages? - Did you know that high-sugar beverages can lead to weight gain? - Could you replace some of these with lower-calorie drinks (e.g. water, unsweetened coffee)?
If you drink alcoholic beverages, limit consumption.	Drink no more than 1 drink per day for women	<ul style="list-style-type: none"> - How many alcoholic beverages do you consume per week? - Did you know that consuming alcohol can contribute to weight gain?

Adapted from Kushi, L.H., et al., *American Cancer Society Guidelines on nutrition and physical activity for cancer prevention: reducing the risk of cancer with healthy food choices and physical activity*. CA Cancer J Clin, 2012. 62(1): p. 30–67. USDA = United States Department of Agriculture.