

## What can I do to reduce my risk of developing cancer?

*Updated November 2019*

We see many patients due to their concerns about hereditary cancer risks. However, only ~5%-10% of all cancers are due to a hereditary cause. It has been estimated that ~50% of all cancers are preventable through lifestyle modifications and many of these same choices reduce the risk of other diseases including stroke, heart disease, and diabetes.<sup>1,2</sup> It is not clear if or how these lifestyle modifications will affect risk in individuals with a hereditary predisposition to cancer, but several studies suggest that some may also reduce risks in high risk individuals.<sup>3,4</sup>

### **Tobacco**

Many people are aware of the link between cigarette smoking and lung cancer, but are unaware that tobacco use increases the risk of a wide variety of cancers and chronic diseases. Tobacco use increases the risk of leukemia, oral, laryngeal, esophageal, pancreatic, liver, stomach, colon, cervical, kidney, and bladder cancers.<sup>1,2</sup> The potential association between smoking and breast cancer risk is more controversial.<sup>1</sup> It is estimated that tobacco use causes ~90% of all lung cancers, ~30% of all cancers, and ~30% of all cancer-related deaths in developed countries.<sup>1,2</sup>

Smoking is also associated with a higher risk of heart disease, stroke, lung disease, osteoporosis, and pregnancy complications.<sup>2</sup> The dangers of tobacco use exist not only for cigarette smoke, but also for cigar, pipe, chewing tobacco and second-hand smoke.<sup>1,2</sup> Quitting smoking will improve health no matter how long an individual has smoked or how old they are and many of the smoking-associated risks decrease rapidly after quitting. There are several smoking cessation programs and resources available to help individuals quit.

The National Cancer Institute has a free national information service with smoking cessation counselors available to answer questions at 1-877-44U-QUIT (1-877-448-7848). There is also a free service to connect individuals to specific counseling and information resources within their state at 1-800-QUITNOW (1-800-784-8669). Additional resources and information can be found at [www.smokefree.gov](http://www.smokefree.gov), [www.lungusa.org/stop-smoking/](http://www.lungusa.org/stop-smoking/) and [www.quitnet.com](http://www.quitnet.com).

### **Excess Body Weight**

Obesity is well known to be associated with an increased risk of stroke and heart disease, but it is also an important risk factor for cancer risk. Obesity and excess weight are associated with an increased risk of colon, endometrial, postmenopausal breast, kidney, and esophageal cancers.<sup>1,2</sup> Obesity may also play a role in other cancers including prostate, liver, gallbladder, stomach, pancreas, thyroid, multiple myeloma, and non-Hodgkin's lymphoma.<sup>1,2</sup> It is estimated that obesity may account for ~14% of cancer deaths in men and ~20% in women.<sup>2</sup>

Body Mass Index (BMI) is one way to determine if your body weight is higher than recommended. Go to <http://www.nhlbi.nih.gov/guidelines/obesity/BMI/bmicalc.htm> to calculate your BMI. A BMI > 30 is considered obese and a BMI between 25 and 29.9 is considered overweight.

### **Physical Activity**

Being physically active is well-known to be a healthy lifestyle choice, decreasing the risks of heart disease, diabetes, high blood pressure, osteoporosis and even depression and anxiety. There is now building evidence that decreased physical activity also increases the risk of a number of cancers and that this effect is independent of body weight.<sup>1,2</sup> The most compelling evidence exists for colon and breast cancer.<sup>1,2,5</sup> However, there is also evidence that suggests a link between physical inactivity and endometrial, lung, and prostate cancers.<sup>1,2,5</sup> It is estimated that physical inactivity may account for ~5% of cancer deaths.<sup>1</sup>

Physical activity appears to decrease the risk of colon cancer by ~20-25%, breast cancer by ~25%, endometrial cancer by ~20-30%, lung cancer by ~20-40%, and prostate cancer by ~10-20% when comparing risk between the most active and least active individuals.<sup>5,6</sup> Although data is limited, there is some evidence that physical activity may also be associated with a lower risk of recurrence, an increase in survival, and better quality of life for cancer survivors.<sup>7</sup> It is estimated that 30-60 minutes of daily moderate to vigorous intensity physical activity may be required for risk reduction although there is still uncertainty about the ideal timing, duration, intensity, and frequency of activity.<sup>5</sup>

The benefit of physical activity for cancer risk reduction may be more pronounced in certain subsets of individuals and/or cancers. For example, physical activity appears to decrease the risk of colon but not rectal cancer and in terms of breast cancer risk the effect appears to be stronger in postmenopausal women.<sup>6</sup> Start small – park your car a bit further from work each day, use part of your lunch hour to walk around the block, take the stairs, add physical activities you enjoy (like dancing or walking) to your family and social life, or do some physically active yard work (e.g. gardening or raking). We encourage you to discuss appropriate exercise plans with your healthcare providers.

### **Diet**

A variety of specific dietary factors, vitamins and supplements have been studied with regard to their possible association with either increased or decreased cancer risk. However, most have not been consistently shown to affect risk.<sup>1,2</sup>

### **Aspirin Use**

A recent report from the US Preventative Services Task Force recommended initiating daily low-dose aspirin use for the prevention of colorectal cancers in adults aged 50-59 who are not at increased risk for bleeding. The same, daily, low-dose aspirin use for adults aged 60-69 should

be an individual decision based on the benefits vs. possible side effects of taking daily aspirin. The same task force report sites insufficient evidence to assess the benefits vs harms of daily aspirin use in adults under 50 and over 70.<sup>8</sup> Any decision to begin medication should first be discussed with a physician.

### **Sun and Tanning Bed Exposure**

Radiation from sun exposure is the primary cause of melanoma and non-melanoma (basal cell carcinoma and squamous cell carcinoma) skin cancers.<sup>1,2</sup> Total lifetime sun exposure increases the risk of both melanoma and non-melanoma skin cancers and melanoma risk, in particular, may be associated even more significantly with repeated blistering sunburns.<sup>1</sup> In addition, UV exposure from tanning beds significantly increases the risk of melanoma with a 75% increase in risk in individuals who started using tanning beds before age 35.<sup>1</sup> Therefore, all individuals are encouraged to avoid tanning bed use, limit their sun exposure, wear hats, sunglasses, and protective clothing and use a broad-spectrum, water-resistant sunscreen (which protects against UVA and UVB rays) with a Sun Protection Factor (SPF) of at least 30 on a year-round daily basis.

### **Alcohol Use**

Excess alcohol use has been shown to increase the risk of multiple cancers including oral, esophageal, laryngeal, liver, breast, and colorectal.<sup>1</sup> Some data suggests that even moderate alcohol use may increase cancer risk offsetting the potential benefits in terms of decreased heart disease risk.<sup>1</sup> Individuals are encouraged to limit their alcohol intake to <1 drink/day (on average for women) and less than 2 drinks per day (on average) for men.<sup>2</sup>

### **Limiting Infection by Cancer-Associated Viruses**

An estimated ~17% of all cancers are due to infections.<sup>2</sup> Many associations between specific infections and specific cancers have been established including human papillomavirus (HPV) with cervical, other anogenital, and head and neck cancers; hepatitis B and C (HBV and HCV) with liver cancer (hepatocellular carcinoma); and human immunodeficiency virus (HIV) with Kaposi sarcoma and non-Hodgkin lymphoma.<sup>2</sup> Most of these infections are spread through blood or bodily fluids and are thus often spread through sexual contact (including oral sex).<sup>1</sup> Therefore, methods of prevention include always following safer sex practices (i.e. using latex condoms for vaginal, oral, and anal intercourse and limiting the number of sexual partners), needle exchange programs, and regulation of tattooing.<sup>1</sup>

In addition, vaccinations for HPV and hepatitis are available and a quadrivalent HPV vaccine is recommended for girls and boys age 11-12 but can be given as early as age 9.<sup>1</sup> Catch-up HPV vaccinations should be offered to girls and women aged 13 to 26, boys and men aged 13 to 21 who have not been previously vaccinated.<sup>1</sup>

## **References**

1. Wolin K and Colditz GA. Cancer prevention (June 2013). Up to Date. Available at <http://www.uptodate.com/contents/cancer-prevention> Retrieved September 19, 2013.
2. Stein C and Colditz GA. Modifiable risk factors for cancer. *British Journal of Cancer* 2004; 90:299-303.
3. Manders P, Pijpe A et al. Body weight and risk of breast cancer in BRCA1/2 mutation carriers. *Breast Cancer Res Treat* 2011; 126:193–202.
4. Pijpe A, Manders P et al. Physical activity and risk of breast cancer in BRCA1/2 mutation carriers. *Breast Cancer Res Treat* 2010; 120:235-244.
5. Friedenreich CM, Neilson HK and Lynch BM. State of the epidemiological evidence on physical activity and cancer prevention. *European Journal of Cancer* 2010; 46:2593-2604.
6. Bernstein L, Lu Y, and Henderson KD. Physical Activity and Cancer. In Berger NA (ed.), *Cancer and Energy Balance, Epidemiology and Overview* (pp. 201-217). New York: Springer.
7. Speed-Andrews AE and Courneya KS. Effects of exercise on quality of life and prognosis in cancer survivors. *Curr Sports Med Rep*. 2009; 8(4):176-81.
8. Bibbins-Domingo K. Aspirin Use for the Primary Prevention of Cardiovascular Disease and Colorectal Cancer: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med*. doi:10.7326/M16-0577