Strang Cancer Prevention Institute
Dedicated to Promote Cure by Early Detection and Research to Prevent Cancer since 1933

Prevention

National Cancer Prevention Month February 2017

CANCER PREVENTION AWARENESS MONTH

What is PREVENTION?

Cancer prevention is action taken to reduce the chance of getting cancer. Worldwide there are about 15 million cases of cancer diagnosed each year; this is projected to rise to 24 million a year by 2035. About 20 million people have died of cancer over the past 15 years. In 2016 about 1.7 million people were diagnosed with cancer in the United States. In addition to the physical problems and emotional distress caused by cancer, the high costs of care are also a burden to patients, their families, and to the public. It is estimated that 50% of cancer is preventable. By preventing cancer, the number of new cases of cancer is lowered which will reduce the burden of cancer and lower the number of deaths caused by cancer.

Cancer is not a single disease but a group of related diseases. Many factors in our genes, lifestyle, and the environment around us may increase or decrease our risk of getting cancer.

Scientists are studying many different ways to help prevent cancer, including the following:

Ways to avoid or control factors known to cause cancer.
Changes in diet and lifestyle.
Early detection of precancerous conditions. Precancerous conditions are conditions that may become cancer.
Chemoprevention (medicines to treat a precancerous condition or to keep cancer from starting).

Carcinogenesis

Carcinogenesis is the process in which normal cells turn into cancer cells.

Carcinogenesis is the series of steps that take place as a normal cell becomes a cancer cell. Cells are the smallest units of the body and they make up the body's tissues. Each cell contains genes that guide the way the body grows, develops, and repairs itself. There are many genes that control whether a cell lives or dies, divides(multiplies), or takes on special functions, such as becoming a nerve cell or a muscle cell.

Changes (mutations) in genes occur during carcinogenesis.

Changes (mutations) in genes can cause controls in normal cells to break down. When this happens, cells do not die when they should and new cells are produced when the body does not need them. The buildup of extra cells may cause a mass (tumor) to form. Tumors can be benign (harmless) or malignant (cancerous). Malignant tumor cells can invade nearby tissues and spread to other parts of the body (metastasize). Benign tumor cells do not invade nearby tissues or spread.

Risk Factors

Factors Known to Increase the Risk of Cancer

Cigarette Smoking and Tobacco Use
Infections
Radiation
Immunosuppressive Medicines

Factors That May Affect the Risk of Cancer

Diet
Alcohol
Physical Activity
Obesity
Diabetes
Environmental Risk Factor

Scientists study risk factors and protective factors to find ways to prevent new cancers from starting.

Anything that increases the chance of developing cancer is called a cancer risk factor; anything that decreases your chance of developing cancer is called a cancer protective factor.
Some risk factors for cancer can be avoided, but many cannot.

For example, both smoking and inheriting certain genes are risk factors for some types of cancer, but only smoking can be avoided. Risk factors that a person can control are called modifiable risk factors.

Many other factors in our environment, diet, and lifestyle may cause or prevent cancer.

This summary reviews only the major cancer modifiable risk factors and protective factors that can be controlled or changed to reduce the risk of cancer.

Risk factors that are not described in the summary include certain sexual behaviors, the use of estrogen, and being exposed to certain substances at work or to certain chemicals.

Factors Known to Increase the Risk of Cancer

Cigarette Smoking and Tobacco Use

Tobacco use is strongly linked to an increased risk for many kinds of cancer. Smoking cigarettes is the leading cause of the following types of cancer:

Acute myelogenous leukemia (AML)
Bladder cancer
Esophageal cancer
Kidney cancer
Lung cancer.
Oral cavity cancer
Pancreatic cancer
Stomach cancer

Not smoking or quitting smoking lowers the risk of getting cancer and dying from cancer. Scientists believe that cigarette smoking causes about 30% of all cancer deaths in the United States.

Infections

Certain viruses and bacteria are able to cause cancer. Viruses and other infections cause more cases of cancer in the developing world (about 1 in 4 cases of cancer) than in developed nations (less than 1 in 10 cases of cancer). Examples of cancer-causing viruses and bacteria include:

Human papillomavirus (HPV) increases the risk for cancers of the cervix, penis, vagina, anus, and oropharynx. Hepatitis B and hepatitis C viruses increase the risk for liver cancer. Epstein-Barr virus increases the risk for Burkitt lymphoma. Helicobacter pylori increases the risk for gastric cancer.

Two vaccines to prevent infection by cancer-causing agents have already been developed and approved by the U.S. Food and Drug Administration (FDA). One is a vaccine to prevent infection with hepatitis B virus. The other protects against infection with strains of human papillomavirus (HPV) that cause cervical cancer (see Strang's PREVENTION Newsletter January Issues). Scientists continue to work on vaccines against infections that cause cancer.

Radiation

Being exposed to radiation is a known cause of cancer. There are two main types of radiation linked with an increased risk for cancer:

Ultraviolet radiation from sunlight: This is the main cause of nonmelanoma skin cancers.
Ionizing radiation including: Medical radiation from tests to diagnose cancer such as x-rays, CT scans, fluoroscopy, and nuclear medicine scans.
Radon gas in our homes.

Scientists believe that ionizing radiation causes leukemia, thyroid cancer, and breast cancer in women. Ionizing radiation may also be linked to myeloma and cancers of the lung, stomach, colon, esophagus, bladder, and ovary. Being exposed to radiation from diagnostic x-rays increases the risk of cancer in patients and x-ray technicians.

The growing use of CT scans over the last 20 years has increased exposure to ionizing radiation. The risk of cancer also increases with the number of CT scans a patient has and the radiation dose used each time.

Immunosuppressive Medicines

Immunosuppressive medicines are drugs that decrease the body's immune response. For example, they may be used to keep a patient from rejecting an organ transplant. Immunosuppressive medicines are linked to an increased risk of cancer because they lower the body's ability to keep cancer from forming.

FACTORS THAT MAY AFFECT THE RISK OF CANCER

Diet

The foods eaten on a regular basis make up the diet. Diet is being studied as a risk factor for cancer. It is hard to study the effects of diet on cancer because a person's diet includes foods that may protect against cancer and foods that may increase the risk of cancer. It is also hard for people who take part in the studies to keep track of what they eat over a long period of time. This may explain why studies have different results about how diet affects the risk of cancer.

Some studies show that fruits and non-starchy vegetables may protect against cancers of the mouth, esophagus, and stomach. Fruits may also protect against lung cancer. Some studies have shown that a diet high in fat, proteins, calories, and red meat increases the risk of colorectal cancer, but other studies have not shown this.

It is not known if a diet low in fat and high in fiber, fruits, and vegetables lowers the risk of colorectal cancer.

Alcohol

Studies have shown that drinking alcohol is linked to an increased risk of the following types of cancers:
Oral cancer, Esophageal cancer, Breast cancer, Colorectal cancer (in men). Drinking alcohol may also increase the risk of liver cancer and female colorectal cancer.

Physical Activity

Studies show that people who are physically active have a lower risk of certain cancers than those who are not. It is not known if physical activity itself is the reason for this.

Studies show a strong link between physical activity and a lower risk of colorectal cancer. Some studies show that physical activity protects against postmenopausal breast cancer and endometrial cancer.

Obesity

Studies show that obesity is linked to a higher risk of the following types of cancer:
Postmenopausal breast cancer, Colorectal cancer, Endometrial cancer, Esophageal cancer, Kidney cancer, Pancreatic cancer. Some studies show that obesity is also a risk factor for cancer of the gallbladder. It is not known if losing weight lowers the risk of cancers that have been linked to obesity.

Diabetes

Some studies show that having diabetes may slightly increase the risk of having the following types of cancer:
Bladder cancer, Breast cancer in women, Colorectal cancer, Endometrial cancer, Liver cancer, Lung cancer, Oral cancer, Oropharyngeal cancer, Ovarian cancer, Pancreatic cancer.

Diabetes and cancer share some of the same risk factors. These risk factors include the following:
Being older, Being obese, Smoking, Not eating a healthy diet, Not exercising.

Because diabetes and cancer share these risk factors, it is hard to know whether the risk of cancer is increased more by diabetes or by these risk factors. Studies are being done to see how medicine that is used to treat diabetes affects cancer risk.

Environmental Risk Factors

Being exposed to chemicals and other substances in the environment has been linked to some cancers:

Links between air pollution and cancer risk have been found. These include links between lung cancer and secondhand tobacco smoke, outdoor air pollution, and asbestos.

Drinking water that contains a large amount of arsenic has been linked to skin, bladder, and lung cancers.

Studies have been done to see if pesticides and other pollutants increase the risk of cancer. The results of those studies have been unclear because other factors can change the results of the studies.

INTERVENTIONS

Interventions that are known to Lower Cancer Risk

An intervention is a treatment or action taken to prevent or treat disease, or improve health in other ways. Many studies are being done to find ways to keep cancer from starting or recurring (coming back).

Chemoprevention is being studied in patients who have a high risk of developing cancer.

Chemoprevention is the use of substances to lower the risk of cancer, or keep it from recurring. The substances may be natural or made in the laboratory. Some chemopreventive agents are tested in people who are at high risk for a certain type of cancer. The risk may be because of a precancerous condition, family history, or lifestyle factors.

Some chemoprevention studies have shown good results. For example, selective estrogen receptor modulators (SERMS) such as tamoxifen or raloxifene have been shown to reduce the risk of breast cancer in women at high risk. Finasteride and dutasteride have been shown to lower the risk of prostate cancer, but it is not known if these drugs lower the risk of death from prostate cancer.

New ways to prevent cancer are being studied in clinical trials.
Chemoprevention agents that are being studied in clinical trials include COX-2 inhibitors. They are being studied for the prevention of colorectal and breast cancer. Aspirin is being studied for the prevention of colorectal cancer.

Interventions That Are Not Known to Lower Cancer Risk

Vitamin and dietary supplements have not been shown to prevent cancer
An intervention is a treatment or action taken to prevent or treat disease, or improve health in other ways.
There is not enough proof that taking multivitamin and mineral supplements or single vitamins or minerals can prevent cancer.
The following vitamins and mineral supplements have been studied, but have not been shown to lower the risk of cancer:

Vitamin B6
Vitamin B12
Vitamin E
Vitamin C
Beta carotene
Folic acid
Selenium
Vitamin D

The Selenium and Vitamin E Cancer Prevention Trial (SELECT) found that vitamin E taken alone increased the risk of prostate cancer. The risk continued even after the men stopped taking vitamin E. Taking selenium with vitamin E or taking selenium alone did not increase the risk of prostate cancer.
Vitamin D has also been studied to see if it has anticancer effects. Skin exposed to sunshine can make vitamin D. Vitamin D can also be consumed in the diet and in dietary supplements. Taking vitamin D in doses from 400-1100 IU / day has not been shown to lower or increase the risk of cancer.

The **Vit**amin D and Omega A-3 Tri**al** (VITAL) is under way to study whether taking vitamin D (2000 IU/ day) and omega-3 fatty acids from marine (oily fish) sources lowers the risk of cancer. The Physicians' Health Study found that men who have had cancer in the past and take a multivitamin daily may have a slightly lower risk of having a second cancer.

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SOURCES: National Institutes of Health National Cancer Institute, International Agency for Research on Cancer (IARC) Globocan statistics.

For further information please visit www.strang.org.

The Strang Cancer Prevention Cookbook

Indian Spiced Vegetable Stew

Reduce your Risk for Cancer by Eating a Healthy Diet!

4 servings—Add Chicken to make a Protein Rich Meal

2 teaspoons olive oil.
1 medium red onion peeled and sliced.
4 small carrots, peeled and sliced 1/4 inch thick.
1/2 small jalapeno pepper, seeded & diced.
1 garlic clove, peeled and crushed.
1/4 teaspoon cumin seeds.
1 teaspoon curry powder.
1 teaspoon turmeric.
1 medium cauliflower, washed, core removed, and broken into medium-size florets.
2 medium white potatoes (preferably Yukon Gold), peeled and cut into 1 1/2 –inch cubes.
1 medium sweet potatoes peeled and cut into 1 1/2 inch cubes.
14 1/2 ounces canned stewed tomatoes.
1 cup canned chickpeas, drained.
1 cup frozen peas.

Heat the olive oil in a heavy 4 -quart saucepan (preferably non stick).
Add the onion, carrots, jalapeno, and garlic. Sauté over medium- high heat until the onion slices are limp, about 10 minutes.
Add the cumin and spices, stirring for about 1 minute to combine and released their flavors.
Add the cauliflower, white and sweet potatoes, stewed tomatoes, add 3/4 cup water.
Season with salt and stir to combine all ingredients.
Bring to a boil, then reduce the heat and simmer for 20 minutes, covered, until all the vegetables are tender but firm.
Add the chickpeas and peas 2 to 3 minutes before serving and adjust the seasoning with salt if necessary.

One serving provides more than 100 % of the DV's for Vitamins C and A.
Cauliflower belongs to the cruciferous family of vegetables and has protective phytochemicals
Curry and turmeric contain curcumin, a plant polyphenol that may provide many protective benefits.
High in fiber-40 percent of the DV serving.

Calories 262, Protein 10g, Carbohydrates 47g, Fat 4 g, Cholesterol 0 mg, Dietary fiber 10g, Saturated fat 0g

Major sources of Potential Cancer fighters:
Phytochemicals: allium compounds, capsaicin, glucosinolates, indoles, plant polyphenols, (flavonoids, phenolic acids), plant sterols, terpenes (carotenoids, monoterpenes).

Recipe by Laura Pensiero, R.D. Owner, Gigi Trattoria, Rhinebeck, New York

THIS NEWSLETTER IS DEDICATED TO FRANCIS OSBORNE

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