

Exciting News about the advances in cancer in 2012

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Cancer affects all our families, friends, workers, and the worst part is it can happen almost from the first year of life. At one time cancer was considered to be just one disease, but it may be the most complex disease man suffers from. Not long ago cancer was considered a death sentence. Considering discoveries about cancer have come in the past 50 years, it is hard to believe how far we have advanced, and yet there are exciting new findings almost every month. 68% of survivors are living after the diagnosis of cancer for at least 5 years (in 1960 it was 38%). There are 13 million American cancer survivors thanks to the advances we are enjoying today. The emphasis is to prevent, to diagnose early, and treat with success. In the current decade we have added concerns of the survivor after treatment and the effects on caregivers.

2012 has been a phenomenal year because there have been so many advances in immune and genetic treatments that have given us a better understanding of how we can kill cancer cells with less effect on normal cells. Patients with advanced disease have more hope for extending their lives because of these new advances.

New discoveries are allowing the oncologist to subcategorize cancers depending on hormonal influence, genetic mutations, ability to respond to multiple drugs, preventing fewer recurrences and the occurrence of second cancers. These recent advances have given hope to more and more cancer survivors. In the end, these research findings have customized the treatments saving many patients from additional treatments allowing a more rapid recovery. In fact, the American Cancer Society and other organizations have come to compare cancer to a chronic disease model. Can cancer be a chronic disease? YES! That is how far we have come.

Surgery was the mainstay in treatment when I began my surgical training in the 1970s. Radiation and chemotherapy were just beginning to add to the cure rate of cancer. Radiation therapy was performed mostly by radiologist and chemotherapy by hematologists. Now the specialties of radiation and medical oncology are so sophisticated.

Robotic surgery is now commonplace for prostate, brain, and other cancers. Refined, less invasive endoscopic surgery has spared loss of major tissue, and surgery has been made easier by shrinking larger tumors before surgery with chemo-radiation. In the 1960s, my head and neck specialty began sophisticated plastic and reconstructive repair of large defects created by excision of cancers restoring functional and cosmetic restoration, reconstructing the facial skeleton, the removed larynx being replaced with voice restoring surgery. Another amazing advance has been in esophageal cancers, which require removal of most of the esophagus, and bringing the stomach up into the chest, reconnecting to the very upper esophagus so that swallowing is re-established. New bladders can be reconstructed out of a piece of bowel, just to name another surgical advance.

Radiation therapy used to be performed exclusively with an external beam. Today, with advanced computer technology, the X-ray beams can be better focused on the cancer and from different angles. Seeds of radiation (brachytherapy) can be implanted in cancers directly, particularly in prostate cancer. This allows much higher amounts of radiation to kill cancer cells. The latest innovation uses proton beams instead of x-ray beams, being used in prostate cancer and other cancers.

Chemotherapy has been added to radiation (chemo-radiation) before surgery. The radiation shrinks the local cancer as does the chemo, but chemo also attacks any possible cells anywhere in the body, sometimes making the surgery unnecessary or less invasive..

Research is also concentrating on post-treatment effects of cancer treatment which is still a great concern. Today with more refined techniques, some of the vascular and other organ side effects are lessened, but careful monitoring of the survivors the rest of their life is necessary to catch any side effects, recurrence, or second cancers early.

The more exciting news comes from the field of medical oncology. We now know there are “oncogenes**”, which are genes in normal cells that can be kept turned off or turned on by other genetic and environmental factors that turn these cells into cancer. Some of these factors are tobacco, pollutants in the air and water, pesticides and hormones in our foods. It is well known that cancer cells grow much faster than normal cells, and that is why treatments are more effective. Rapidly growing cancer cells require more nutrition with increased blood supply by stimulating more blood vessels to grow to the tumor. There are proteins in the cancer cell that stimulate this process. **Targeted** therapies are currently being used to starve the cancers by limiting blood vessel formation. The cancer cell’s own immune system can turn off our immune system and keep our bodies from fighting the cancer. It has been discovered that there are **growth (epidermal)** factors that can be stimulated or inhibited by cancer cells. This allows these targeted therapies to focus on these receptors. Other examples are drugs that fight certain receptors in breast cancer, especially if the cancer is estrogen sensitive. It is also known that these same receptors are shared in some ovarian cancers. It has recently discovered there are common genetic traits between breast, ovary, and colorectal cancers. There are 5 new targeted drugs now approved just recently to treat cancers of the ovary, kidney, lung, sarcomas, liver, and the brain.**

****Vaccines** are being produced using the patient’s own T- lymphocyte cells to be used against the cancers. **Stem-cell** transplants are common today to treat certain blood cancers. Drugs called **immune-****

modulators have been developed to program death in cancer cells. There are **antibody** drugs that are frequently used in combination with other chemotherapies. Two new drugs have just been developed to fight metastatic melanoma by attacking a genetic mutation called **BRAF** and showing great promise.

In the past it was thought that cancer was not contagious. That is still true, but it is now known that sexually transmitted viruses cause the majority of cervical cancer and most recently some of the oral and throat cancers. Certain strains of **HPV** (human papilloma) **viruses** cause these cancers. It can be prevented with the HPV vaccine recommended in adolescents (boys and girls) twelve to eighteen. That won't help adults, but with these vaccinations they can reduce the incidence of oral, throat, and cervical cancer in our children as they grow to adults. Unfortunately, the CDC recently announced that a mere 6% of young girls are getting this vaccine, and I suspect it is very low for boys too. Doctors and parents need to get more proactive.

There is a new simple office oral rinse test that dentists and doctors can offer to detect a HPV virus infection, which is silent. If this test is positive, it would alert a person that they are at risk for these cancers and closer observation would be indicated.

Smoking cause 40% of cancer deaths, and 30% by obesity and lack of exercise. If parents get more responsible about the HPV vaccine, and our government controls the use of hormones, pesticides and antibiotics in food, it will impact the incidence of cancer greatly in America. Stiffer regulations on the tobacco and food industry are needed if we want to get serious about preventing cancer.

Finally, I have to comment on individual responsibility for our own health. It is not the doctor's responsibility alone to see that we stay healthy. Americans should not smoke, limit alcohol consumption, and follow the American Dietary Association guidelines for a healthy diet (eating 5 servings of fruits and vegetables each day with less red

meat, eat more fish, and stop sugary sodas and processed deli meats, maintain a normal weight for your height, and exercise 30 minutes 5 times a week). Go to www.myplate.com for help with a diet and recommendations for maintaining a healthy diet. Screening guidelines for cancer can be found at www.cancer.org

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For cancer information, contact The American Cancer Society at www.cancer.org