The Problem:

As the second leading cause of death for all age groups in the U.S., the American Cancer Society estimates 1.6 million new cancer cases and 577,190 cancer related deaths in 2012. Is cancer preventable?

Most cancer-related epidemiologists believe that cancers are preventable. Certain cancers associated with cigarette smoking and and alcohol use are completely preventable. The American Cancer Society estimates that in 2012 nearly 173,000 cancer deaths will be caused by tobacco use! In addition, studies suggest that approximately one-third of the 577,000 cancer deaths forecasted in 2012 will be related to obesity, physical inactivity, and poor eating habits; thus could also be prevented. Some cancers are related to infections, such as hepatitis B virus, human papillomavirus, human immunodeficiency virus, Helicobacter pylori, to name a few, and could be prevented through changes in behavior, vaccines, or antibiotics. In addition, the simple act of avoiding indoor tanning and/or protecting skin from prolonged sun exposure can prevent more than 2 million skin cancer cases diagnosed annually.

Research shows that regular screening (exams) for various cancers (cervical, colorectal, breast, skin, etc.) can result in the detection and removal of precancerous growths, as well as the early-stage diagnosis of cancer (when it's most treatable). Aside from professional intervention, simply being aware of changes in your body, such as breast or skin, can also result in the early detection of problems. Generally, cancer treatment is more effective when the disease is found early.

Be pro-active in your approach to health and chronic disease. Learning about cancer is a great place to start!

Know the Terms:

1. **Benign:** Refers to noncancerous growth; harmless.
2. **Biopsy:** The removal of a small piece of tissue for laboratory examination.
3. **Cancer:** Group of diseases characterized by the uncontrolled growth of abnormal cells.
4. **Carcinogens:** Cancer-causing agents.
5. **Chemotherapy:** Use of toxic drugs to kill cancerous cells.
6. **Computed Tomography Scan (CT):** Machine that uses radiation to scan and view internal organs not normally visible on X-ray images.
7. **Immunotherapy:** The treatment of disease by inducing, enhancing, or suppressing an immune response. Cancer immunotherapy uses the body’s immune system to fight cancer cells.
8. **Magnetic Resonance Imaging (MRI):** Device using magnetic fields, radio waves, and computers to create images of internal soft tissues of the body; does not use of radiation.
9. **Malignant:** Cancerous growth or tumor; refers to dangerous or harmful.
10. **Metastasis:** Cancer cells spreads from one area to different areas of the body.
11. **Mutant Cells:** Cells that differ in form or function from normal cells; changes in a cell.
12. **Neoplasm:** A tumor or abnormal mass of tissue. Greek term meaning “new growth”.
13. **Oncogenes:** Gene that has the potential to cause cancer.
14. **Radiotherapy:** The use of radiation to kill cancer cells.
15. **Tumor:** An abnormal growth of body tissue. Tumors can be cancerous (malignant) or noncancerous (benign).
1. **Defining Cancer**
   - Latin word meaning "crab"
   - Cancer is a term used for diseases characterized by the uncontrolled growth of abnormal cells.
     - Caused by changes in a cell's DNA or genetic "blueprint."
     - Cancer cells can spread to other parts of the body through the blood and lymph systems.
   - Cancer is not just one disease but many diseases; more than 100 different types of cancer.
   - Most cancers are named for the organ or type of cell in which they start; example, cancer that begins in the colon is called colon cancer; cancer that begins in basal cells of the skin is called basal cell carcinoma.
   - Cancer types can be grouped into broader categories. The main categories of cancer include:
     - **Carcinoma** - cancer that begins in the skin or in tissues that line or cover internal organs.
     - **Sarcoma** - cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue.
     - **Leukemia** - cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and enter the blood.
     - **Lymphoma and Myeloma** - cancers that begin in the cells of the immune system.
     - **Central Nervous System Cancers** - cancers that begin in the tissues of the brain and spinal cord.

2. **Cancer, The Wild Cell:**
   - The body is made up of many types of cells. These cells grow and divide in a controlled way to produce more cells as they are needed to keep the body healthy.
   - When cells become old or damaged, they die and are replaced with new cells. However, sometimes this orderly process goes wrong.
   - The genetic material (DNA) of a cell can become damaged or changed, producing mutations that affect normal cell growth and division.
   - When this happens, cells do not die when they should and new cells form when the body does not need them.
   - The extra cells may form a mass of tissue called a tumor.
   - Not all tumors are cancerous; tumors can be benign or malignant.
     - **Benign Tumors:**
       - Non-cancerous mass.
       - They can often be removed, and, in most cases, they do not come back.
       - Cells in benign tumors do not spread to other parts of the body, and cannot become cancerous.
     - **Malignant Tumors:**
       - Cancerous mass.
       - Cells in these tumors can invade nearby tissues and spread to other parts of the body.
       - The spread of cancer from one part of the body to another is called metastasis.
   - Some cancers do not form tumors. For example, leukemia is a cancer of the bone marrow and blood.
   - The process that occurs when cancer cells detach and spread to other parts of the body is called Metastasis.

3. **Cancer Risk:**
   - Factors known to increase cancer risk:
     - **Genetic Predisposition or Heredity:**
       - Scientists believe about 5 percent of all cancers are strongly hereditary.
       - Suspected cancer-causing genes are referred to as oncogenes.
     - **Smoking and Tobacco Use**
       - Estimated to cause 30% of all cancer deaths in the United States.
     - **Infections:** (15 percent of new cancers worldwide in 2007 were attributable to infection).
       - Human papillomavirus (HPV) increases the risk for cervical cancer.
         - Virtually all cervical cancers are caused by HPV infections.
         - They also cause most anal cancers and some vaginal, vulvar, penile, and oropharyngeal cancers.
- 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.

### Radiation Exposure
- Ultraviolet radiation from sunlight: This is the main cause of non-melanoma 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.

### Immunosuppressive Medicines
- High Fat, High Sugar Diet
- Alcohol Consumption
- Physical Inactivity
- Obesity

### Environmental Factors (carcinogens)
- Indoor Air Pollution including out-gassing of construction products such as new carpet, plywood, etc.
- Outdoor Air Pollution
- Secondhand Tobacco Smoke,
- Asbestos Exposure
- Drinking Water and Food Chemicals
- Pesticides

### Chronic Stress

4. Treating Cancer:
- **Surgery:**
  - Surgery can be used to diagnose, treat, or even help prevent cancer in some cases.
- **Chemotherapy:**
  - Chemotherapy (chemo) is the use of medicines or drugs to treat cancer.
  - Chemo kills cancer cells, and is often used to fight cancers that have spread to other parts of the body (metastasized).
  - These drugs can affect normal cells, too, however most normal cells can repair themselves.
- **Radiation Therapy:**
  - Radiation therapy is the use of radiation to destroy or damage cancer cells and can be administered in several different ways.
    - External-Beam Radiation Therapy:
      - The radiation is delivered by a machine outside the body
    - Internal Radiation Therapy
      - Radioactive material placed in the body near cancer cells, also referred to as brachytherapy.
- **Targeted Therapy:**
  - Targeted therapy is a newer type of cancer treatment that uses drugs or other substances to more precisely identify and attack cancer cells, usually while doing little damage to normal cells.
- **Immunotherapy:**
  - Immunotherapy is treatment that uses your body’s own immune system to help fight cancer.
- **Hyperthermia:**
  - Hyperthermia is a type of cancer treatment in which body tissue is exposed to high temperatures (up to 113°F) to damage and kill cancer cells.
  - Hyperthermia is almost always used with other forms of cancer therapy, such as radiation therapy and chemotherapy.
- **Stem Cell Transplant** (Peripheral Blood, Bone Marrow, and Cord Blood Transplants).
- **Photodynamic Therapy:**
  - Photodynamic therapy or PDT is a treatment that uses special drugs, called photosensitizing agents, along with light to kill cancer cells.
  - The drugs only work after they have been activated or "turned on" by certain kinds of light.
5. Cure Versus Remission:
   - Cure:
     - Oncologists are usually hesitant to say that someone is cured of cancer, because there is always a chance the cancer can come back. Even if all the cancer seems to be gone, there may be some undetected cells still in the body. These cells can multiply over time and lead to relapse.
     - If someone is described as cured, it usually means that he or she has been cancer-free for 5 years; known as the 5-year Survival Rate.
   - Remission:
     - Remission is the period of time when symptoms of the cancer reduce or disappear.
       - A partial remission is when there has been a significant improvement in the cancer.
       - A complete remission is when there is no evidence of active disease.
       - Remission does not necessarily mean that the cancer is cured.

Talk’n Stats:

Statistics from the American Cancer Society:

- The American Cancer Society estimates 35,790 New Cases of Cancer for Washington State in 2012
- The American Cancer Society 2012 National Estimates:
  - 1,638,910 New Cases of Cancer
    - Female: 790,740
    - Male: 848,170
  - 577,190 Cancer Deaths
    - Male: 301,820
    - Female: 275,370
- American Cancer Society estimates that in 2012 almost 173,200 cancer deaths will be caused by tobacco use.
Lung cancer is the leading cause of cancer death in the United States for both men and women.

In the United States, tobacco use is responsible for nearly 1 in 5 deaths; this equals about 443,000 early deaths each year.

- Cigarette smoking among adults age 18 and older went down 50% between 1965 and 2009; from 42% to 21%; but nearly 47 million Americans still smoke.
- Between 2000 and 2004, smoking caused more than $193 billion in annual health-related costs in the United States, including smoking-attributable medical costs and productivity losses.

One-third of the 577,190 cancer deaths expected to occur in 2012 will be related to obesity, physical inactivity, and poor nutrition or eating habits.

About 77% of all cancers are diagnosed in persons 55 years of age and older.

On average, mammography will detect about 80%-90% of breast cancer patients has improved from 63% in the early 1960s to 90% today.

Skin cancer is the most common of all cancers; it accounts for nearly half of all cancers in the United States.

Know Your Numbers:

1. Breast Cancer:
   - Yearly mammograms are recommended starting at age 40.
     - A mammogram is an X-ray of the breast.
   - Clinical breast exam (CBE) about every 3 years for women in their 20s and 30s and every year for women 40 and over.
     - A clinical breast exam is an examination by a doctor or nurse, who uses his or her hands to feel for lumps or other changes.
   - Breast self-exam (BSE) can be done at any age, but is recommended for women starting in their 20s.
     - Be aware of any change in your breast or underarm area, including: (from the Susan G. Koman for the Cure Foundation)
       - Lumps, knots or thickening inside the breast or underarm area
       - Swelling, warmth, redness or darkening of the breast
       - Physical change in size or shape of the breast
       - Dimpling or puckering of the skin
       - Itchy, scaly sore or rash on the nipple
       - Pulling in of the nipple or other parts of the breast
       - Nipple discharge that starts suddenly
       - New pain in one spot that does not go away

2. Colorectal Cancer:
   - Regular screening, beginning at age 50.
   - The U.S. Preventive Services Task Force (USPSTF) recommends screening for colorectal cancer using high-sensitivity fecal occult blood testing, sigmoidoscopy, or colonoscopy beginning at age 50 and continuing until age 75.

3. Cervical Cancer:
   - Regular Pap tests should begin at age 21, or within three years of the first time you have sex; whichever happens first.
   - Women between ages 21 and 29 should have a Pap test every 3 years.
   - Women between the ages of 30 and 65 should have a Pap test plus an HPV test (called “co-testing”) every 5 years.
     - The HPV test looks for the virus (human papillomavirus) that can cause these cell changes.
   - Women over age 65 who have had regular cervical cancer testing with normal results should not be tested for cervical cancer.
   - Women with a history of a serious cervical pre-cancer should continue to be tested for at least 20 years after that diagnosis, even if testing continues past age 65.
A woman who has had her uterus removed (and also her cervix) for reasons not related to cervical cancer and who has no history of cervical cancer or serious pre-cancer should not be tested.

A woman who has been vaccinated against HPV should still follow the screening recommendations for her age group.

4. **Prostate Cancer:**
   - It is recommended at age 45-50 to discuss Prostate Testing Options with your healthcare provider.
   - **Two Primary Exams:**
     - *Digital Rectal Exam (DRE):* A doctor or nurse will insert a gloved, lubricated finger into the rectum to feel the prostate. This allows the examiner to estimate the size of the prostate and feel for any lumps or other abnormalities.
     - *Prostate Specific Antigen Test (PSA):* The PSA test is a blood test that measures the level of PSA in the blood. PSA is a substance made by the prostate. The levels of PSA in the blood can be higher in men who have prostate cancer. The PSA level may also be elevated in other conditions that affect the prostate including certain medical procedures, certain medications, an enlarged prostate, or a prostate infection.

5. **Skin Cancer:**
   - Annual Full Body Skin Exams by a Dermatologist is recommended for all adults.
   - **Self-Check:**
     - A: for Asymmetry One half is different than the other half.
     - B: for Border Irregularity The edges are notched, uneven, or blurred.
     - C: for Color The color is uneven. Shades of brown, tan, and black are present.
     - D: for Diameter Diameter is greater than 6 millimeters.

**Thoughts for Living:**

1. **Live Tobacco Free:**
   - Smoking is the cause of more than 80 percent of all lung cancer cases and the cause of 30 percent of all cancer deaths.

2. **Focus on Eats and Drinks:**
   - Limit alcohol intake
   - Limit intake of red meats and processed meats
     - Prepare meats at lower temperatures (avoid pan frying or grilling at high temperatures)
   - Reduce your intake of Processed Foods
     - Focus on ingredients - if you cannot pronounce it, don't eat it!
   - Get colorful with your fruits and veggies
     - Dark leafy greens (spinach and kale)
     - Brightly colored fruits and veggies.
     - Add a little broccoli or cauliflower to your meals (cruciferous veggies pack an powerful anti-cancer punch)

3. **Get Moving:**
   - Moderate exercise (at least 3-5 days a week) can make a huge difference a person's health and well-being.
   - Studies have shown that physical activity reduces risk of colon cancer by about 50 percent, as well as lowering risk of other cancers.

4. **Get Screened Regularly (see above)**
   - Regular cancer screening exams can discover early-stage cancers, along with prevention of certain cancers through the discovery and removal of precancerous spots, growths, or polyps.

5. **Go Tan-Less:**
   - Skin cancer is the most common type of cancer among men and women, and accounts for almost half of all cancer diagnoses.
   - Limit sun exposure
     - Sunscreen that blocks both UVA and UVB radiation
   - Stop the Tanning Booths
   - Australian Campaign: Slip Slop Slap Seek Slide (Slip on a shirt, slop on sunscreen, slap on a hat, seek shade, and slide on the sunglasses!)

6. **Drop Some Pounds:**
o Obesity or being overweight is one of the main risk factors for uterine, colon, breast, esophageal and kidney cancers.
o Both ovarian and pancreatic cancers have also been linked to excess body weight.

7. **Know Your Environment:**
o Be proactive in your approach to possible carcinogens (cancer causing agents) in your home or work.

8. **Know Your Family Medical History:**
o Research has found that certain gene mutations increase the chances of a person to develop certain kinds of cancers, depending on family history. However, cancer is not inherited, only the gene that increases the risk factor of developing cancer.
o Family history often determines cancer screening exams; what type, how often, and at what age.