October is National Breast Cancer Awareness Month (NBCAM). NBCAM month is an annual international health campaign organized by major breast cancer charities to raise awareness about this disease. It also raises funds for research related to the cause, prevention, diagnosis, treatment and cure. Breast cancer is the most common cancer diagnosed in USA women and is the second leading cause of death after lung cancer (American Cancer Society ACS). The risk of breast cancer increases with age.

The breast is made up of glands called lobules that produce milk and tubes called ducts that carry milk from the lobules to the nipple. Breast tissue also contains fat, connective, lymph nodes and blood vessels. The most common type of breast cancer begins in the ducts and is called ductal carcinoma. Ductal carcinoma in situ is a condition in which the abnormal cells remain in the duct. Breast cancer can also begin in the cells of the lobules and in other tissues in the breast (National Cancer Institute). Invasive breast cancer occurs when the cancer has spread from where it began (cancer.org)

STATISTICS

- About 1 in 8 U.S women will develop invasive breast cancer
- In 2021 it is estimated that 281,550 new cases of invasive breast cancer and 49,290 new cases of non-invasive breast cancer will be diagnosed
- It is expected that in 2021 about 2,650 new cases of invasive breast cancer will be diagnosed in men. Breast cancer is rare in men, but there is a lifetime risk of 1 in 833

- In 2021 breast cancer became the most commonly diagnosed cancer in the world with 12% of all new annual cancer cases worldwide (World Health Organization)
- About 85% of breast cancers occur in women without a family history of this disease. This is due to genetic mutation as part of the aging process.
- Effective January 2021 there are more than 3.8 million women with history of breast cancer in the U.S
- Death rates have been steady in women under 50 since 2007, but have continued to drop in women over 50. The decrease could be related to treatment advances and earlier detection through screening
- The most significant risk factors for breast cancer are sex (being female) and age (growing older) (breastcancer.org)

The breast cancer mortality rate is about 40% higher among Black women compared to White women. Black women are more likely to be diagnosed with more advanced stage breast cancer. Black women are more likely to be diagnosed with breast cancer at a younger age than white women. The tumors of black women tend to be larger and more likely spread to the axillary lymph nodes on diagnosis (healthline.com). There are over 3.8 million breast cancer survivors the USA. Approximately every 2 minutes a woman is diagnosed with breast cancer (national breast cancer foundation.org).

Signs and symptoms of breast cancer – the most common symptom of this disease is a new lump or mass. This could be a painless, hard mass that has irregular edges and is more likely to be cancerous. Also cancers can be regular shaped and soft. Inflammatory breast cancer - the breast looks red swollen and feels warm (cancer.org). Sometimes the disease is without signs or symptoms and is detected incidentally.

Additional possible breast cancer symptoms include

- Swelling of breast (part or all)
- Skin irritation or dimpling
- Breast or nipple pain that does not go away
- Nipple retraction (nipple is turned inward)
- Redness, or thickening of the nipple or breast
- Nipple discharge that's not milk

Additional symptoms (Cancer.Net)

- Warm, red, swollen breast with or with out a rash with dimpling resembling the skin of an orange referred to as peau d'orange.

IMPORTANCE OF SELF DETECTION

Healthline.com states the earliest symptoms of breast cancer are easier to feel than see. Performing a monthly self-exam of breast will allow you to be familiar with the normal look and feel of your breasts.

- Breast lump or thickening – there is no evidence that self examination can detect cancer earlier but this will help you to notice any changes in breast tissue and size
- Nipple discharge – a milky discharge is common if you are breast feeding. Unusual discharge from nipples can be a symptom of breast cancer. The discharge can be clear or bloody
- Changes in size and shape of nipple – normal changes in size and shape of breast around menstrual cycle is expected. If you notice swelling of breasts other than during menstrual cycle or if one breast is larger speak with your doctor
- Inverted nipple – nipple changes happen over time. If you notice an inverted nipple contact your doctor
- Peeling, scaling or flaking of skin – of breast or nipples can be a sign of breast cancer but can be a symptom of eczema, atopic dermatitis or another skin disorder. The doctor may run tests to rule out Paget's disease which is a type of breast cancer affecting the nipples and can cause these symptoms
- Skin rash on the breast – a rash can be an early symptom of breast cancer
- Pitting breast skin – dimpling or pitting on the surrounding skin may begin to look like orange peel may be due to underlying inflammation.

The ACS recognizes women who at high risk for cancer as:

- Have a known BRCA1 or BRCA2 gene mutation. These genes are best known for their link to breast cancer. It features risk mutation in the genetic code of a gene that affects its function. Inherited gene mutations are passed from parent to child
- Have a lifetime risk of breast cancer of about 20% to 25% or greater
- Have a first-degree relative (parent, brother, sister, or child) with a BRCA1 but have not had genetic testing.
- Had radiation therapy to the chest between the ages of 10 – 30 years
- Have Li-Fraumeni syndrome, Cowden syndrome, or Bannayan-Riley-Ruvalcaba syndrome or have first-degree relatives with one of these syndromes.

Additionally, Cancer.Net recognizes a male relative who develops breast cancer.

Screening refers to tests and examinations used to find a disease in people without symptoms. The goal of screening is to detect cancers before symptoms are experienced. Screening exams can find breast cancers when they are small and occupy the breast. The size and how far it has advanced are important factors in predicting the prognosis and treatment for these women.

Breast cancer risk is very low for women in their 20s but gradually increases with age until the seventh decade. Women should immediately report any changes in their breast to their health care provider. The ACS recommends the following screening.

- Women ages 40 to 44 should be given the choice to start annual breast cancer screening with mammograms (x-ray of the breast) if they desire.
- Women age 45 to 54 should get annual mammograms
- Women 55 and older should switch to mammograms every 2 years or can continue yearly screening
- Screening should continue as long as a woman is in good health and expected to live 10 more years or longer
- All women should be familiar with the benefits limitations and potential harms associated with screening

- Mammogram – evidence supporting the use of mammogram is even stronger than before. Especially for women in the 40 year of age group it offers substantial benefits. Limitations are also noted as mammograms do miss some cancers. Mammograms for older women should be based on their health additional serous illnesses age alone should not be a factor to stop having regular mammogram. Information is key and women should be told of their limitation and effectiveness
- Digital mammograms – also known as full field mammogram is like a standard mammogram in that x-rays are used to produce an image of the breast and these are stored on a computer. After the exam the doctor can look at the pictures and adjust the sixe, brightness or contrast to better evaluate the test. The pictures can be sent electronically
- Ultrasound of the breast used to assess breast changes such as lumps that are felt but not seen on a mammogram or changes with dense tissues. It can also identify fluid filled cysts. Ultrasound uses sound waves to make a computer picture of the inside of the breast
- Breast tomosynthesis (3-D mammography) - an extension of a digital mammogram. The breast is compressed once and a machine takes many low dose xrays as it moves over breast.

- MRI - should be used for women at high risk for breast cancer in additional to a regular mammo

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Environmental Factors

Chemicals in the environment - ACS states a great deal of research has been done and being done to understand possible environmental influences on breast cancer. Compounds in the environment like estrogen-like properties are of special

interest. Substances found in some plastic, certain cosmetics, personal care products and pesticides seem to have such properties.

Tobacco smoke – remain unclear, studies state evidence is suggestive that potential health consequences exist but it is not enough to say it is a cause. More studies in recent years have found that long-term heavy smoking carries a higher risk of breast cancer. Although evidence exists that cigarette smoking is the cause of some cancers. The risk between secondhand smoking and breast cancer remains controversial.

Night work – several studies suggested that women who work at night have a greater chance of developing breast cancer.

According to ACS women with BRCA gene mutations, prior radiation therapy to the chest or a very strong family history for breast cancer should consider alternating mammography and MRI.

Treatment – whatever treatment is decided this should be thoroughly discussed with your healthcare provider. Treatment will depend on the type, stage, size and location of cancer. Additional factors like age, health, are reviewed. The goal of treatment is to identify and remove the cancer, reduce complications and provide quality of life for the individual. The ACS main categories of treatment are:

- Surgery – focuses on removing the cancer
- Radiation – use of radiation to kill cancer cells.
- Chemotherapy – cancer killing drugs which may be taken by mouth or injected into a vein
- Hormone therapy – use as an adjuvant therapy to reduce the risk of cancer returning after surgery or spreading to other parts of the body
- Target therapy – drugs that focus on specific gene changes which cause cancer
- Bone directed therapy – focuses on cancer which has spread to the bones

If you receive a diagnosis of breast cancer write down your questions and discuss them with your health care provider. Below are some questions from Cancer.Net

Who would you recommend for a second opinion?

When do I need to make a treatment decision?

Who will be apart of my health care team and what does each member do?

Who will be coordinating my overall treatment?

What is the goal of each treatment?

Who can I call if I have a problem or question about my treatment or side effects?

Remember cancer is costly emotionally and financially. Education is key. Cancer affects the individual and their family so early detection and education are important factors that should be implemented. Eat healthy, fruits, vegetable, water, reduce alcohol intake and exercise. As always, check with your health care provider before starting any exercise program. Support groups are available. The National Breast Cancer Foundation states breast cancer death rates declined 40% from 1989 to 2016 in women. It further states this decline is related to improvements in early detection.