Breast Cancer Awareness

Types of Breast Cancer

- **Ductile Carcinoma**
  Ductile carcinoma is cancer which begins in the ducts which carry milk from the bulbs which produce milk to the nipples. This is the most common type of breast cancer.

- **Lobular Carcinoma**
  Lobular carcinoma is cancer which begins in the lobes or lobules which contain the bulbs which produce milk. Lobular carcinoma is more likely to develop in both breasts than other types of breast cancer.

- **Inflammatory Breast Cancer**
  Inflammatory breast cancer is a relatively rare form of breast cancer in which the breast becomes red, swollen and warm to the touch.

Risk Factors

- **Risk Factors That Can't Be Controlled**
  - Age over 60.
  - Beginning menstruation before age 12
  - Beginning menopause after age 55
  - Never giving birth
  - Older age when first giving birth
  - Family history of breast cancer (especially mother, sister or daughter)
  - Genetic changes, especially in the BRCA 1 and BRCA 2 genes.
  - Radiation treatment of the chest or breast
  - Dense breast tissue
  - Caucasian race
  - Breast disease or previous breast cancer

- **Controllable Risk Factors**
  - Taking estrogen or progesterone
  - Drinking alcohol
  - Obesity after menopause
  - Not getting enough exercise or physical activity

Warning Signs

- A lump in the breast or armpit
- Sore or tender nipple
- A change in the size and/or shape of the breast
- An inverted nipple (turned into the breast)
- Scaly, red, swollen, ridged or pitted skin of the breast, nipple or areole
- Fluid discharge from the nipple
- Breast pain (Seldom - but occasionally - a breast cancer warning sign)

Screening

- **Self Examination**
  All women should do a monthly breast self-exam. The ideal time is a few days after the end of the
Breast Cancer Awareness

menstrual period, when the breasts are not swollen or tender. There are five parts to a breast self examination:

a. **Look in the mirror with shoulders straight and hands on hips.**
   - Check to see if breasts are their usual size, shape and color.
   - Check for distortion or swelling.
   - Dimpled, puckered or bulging skin
   - Inverted nipple (point in instead of out)
   - Redness or rash

b. **Look in the mirror with arms raised.**
   - Do the same visual checks as with arms down.

c. **Squeeze each nipple and check for milky or yellowish discharge or blood.**

d. **Lie down and feel the breasts**
   - Check the left breast with the right hand and the right breast with the left hand.
   - Feel with fingers flat and together.
   - Feel each breast completely (armpit to breastbone, collarbone to ribs) using a circular pattern from the nipple out or a series or vertical rows.
   - Examine every area with a soft touch to feel for lumps near the surface, then with a progressively firmer touch to feel for lumps deeper down.

e. **Stand up and feel breasts**
   - Repeat the checks done lying down.

f. **Tell the doctor**
   Women should tell their doctors about any changes that last more than one menstrual cycle or become more pronounced over time.

**Screening Mammogram**
All women over 40 should have screening mammograms every year or two. Women under 40 with breast cancer risk factors may also be advised to have screening mammograms. Mammograms can detect breast lumps before they are big enough to feel. The lumps may be either benign or possibly cancerous.

The certified technologists at Thompson Comprehensive Breast center perform 12,000 mammograms annually. Each one is read by a board-certified diagnostic radiologist and by an R2 image checker, which is like having a second opinion on every mammogram. The R2 marks areas that need closer examination to prevent false negative readings.

**Breast MRI**
Magnetic resonance imaging (or MRI) scans uses magnetism, radio waves and computer image manipulation to produce an extremely detailed image without radiation. Because of the extremely powerful magnetism of MRI scanners they cannot be used on patients with any metal implants or pacemakers. Although they are not appropriate for all women, breast MRIs provides accurate imaging for women with implants or extremely dense breasts.

**Clinical Breast Examination**
A clinical breast examination is similar to a breast self examination. Having a physician or other healthcare professional perform a regular clinical breast examination is an important double-check for possible irregularities.

**Genetic Counseling**
Thompson's genetics clinic identifies women who are likely to have a hereditary predisposition to breast and/or ovarian cancer. Women who are identified as at risk are offered additional counseling on the
Breast Cancer Awareness

Genetics of hereditary cancer, genetic testing options and risk reduction. Indications for a breast/ovarian cancer genetics evaluation include:

- Women or close relatives of women who have had breast cancer before age 50, who have had bilateral breast cancer, or who have had ovarian cancer at any age.
- Women who have had breast cancer at any age and with two or more close relatives who have also had breast cancer at any age.
- Any male patient who has had breast cancer or a close relative of a male with breast cancer at any age.
- Women of Ashkenazi Jewish descent who have had breast or ovarian cancer.
- Anyone who has a close relative with an identified BRCA1 or BRCA2 mutation.

Diagnosis and Staging

When screening detects a suspicious breast mass diagnostic examination and/or testing are needed to determine if the mass is caused by cancer or some other condition.

- **Diagnostic Imaging**
  Additional images of the suspected mass may be needed for diagnosis.
  - **Diagnostic Mammogram**
    Diagnostic mammograms are clearer, more detailed X-rays that give a sharper picture of the area identified on a screening mammogram.
  - **Breast Ultrasound**
    Breast ultrasound bounces sound waves off the suspected mass and uses the echoes to form a picture that helps physicians determine if the mass is solid, which may be cancer, or filled with fluid, which would be a sign of a non-cancerous cyst. Ultrasound is often used in addition to mammography to evaluate dense glandular and cystic breast tissue more completely. Ultrasound can also be used to identify a specific breast mass for biopsy.
  - **Breast MRI**
    MRIs are often used along with X-rays for more detailed images of breast tissue and masses.

- **Biopsy**
  A biopsy is the removal of cells or fluid for microscopic examination by a pathologist to determine if cancer is present.
  - **Surgical Biopsy**
    A surgical biopsy is a procedures in which a sample of a suspected mass is removed by a surgeon. The sample is analyzed by a pathologist while the surgery is proceeding, and all - or as much as possible - of the mass is usually removed during the operation A surgical biopsy is performed under anesthetic in a hospital operating room.
  - **Fine-Needle Aspiration**
    Fine-needle aspiration of a breast cyst is a minimally invasive diagnostic procedure that uses ultrasound to guide a small needle that removes fluid from the cyst. This fluid can be sent for cytology examination. Fine-needle aspiration is an outpatient procedure performed with a local anesthetic.
  - **Core Biopsy**
    Core Biopsy is a minimally invasive procedure which frequently eliminates the need for a surgical biopsy. In a core biopsy a fine needle is inserted into the suspected mass and a small sample is withdrawn for examination. Thompson Comprehensive Breast Center was the first area facility to
Breast Cancer Awareness

offer stereotactic-guided core biopsies in 1993. Thompson now offers stereotactic- or ultrasound-guided, vacuum-assisted needle biopsy. This simple outpatient biopsy requires only a local anesthetic. There is virtually no scarring or patient discomfort, women can return to their usual activities the next day, and the cost is about half that of a surgical biopsy.

- **Staging**
  Determining the extent of breast cancer growth and/or spread is essential in planning treatment of the disease.
  - **Stage 0**
    Stage 0 breast cancer has not spread beyond either the nodule or milk duct.
    - *Lobular Carcinoma In Situ* - Lobular cancer, in the lobes or lobules, frequently does not spread to other organs or other parts of the body, but having it in one breast increases the chances of getting it in the other.
    - *Ductal Carcinoma In Situ* - Ductal Carcinoma, cancer in the ducts which carry milk from the lobules to the nipple, can become invasive if not treated promptly.
  - **Stage I**
    Stage I is early invasive breast cancer which has not spread beyond the breast. Stage one tumors are no more than ¾ inch in diameter.
  - **Stage II**
    Stage II breast cancer can have one of three characteristics:
    - A tumor no larger than ¾ inch which has spread to the lymph s in the armpit.
    - A tumor between ¾ and 2 inches which may have spread to the lymph nodes in the armpit.
    - A tumor of 2 inches or more which has not spread to the lymph nodes.
  - **Stage III**
    Stage III breast cancer is a large, locally-advanced, tumor which has not spread beyond the breast and lymph nodes under the arm.
  - **Stage IIIA**
    Stage IIIA cancer is either:
    - A tumor smaller than 2 inches which has spread to the under-arm lymph nodes and is attached to other body structures.
    - A tumor larger than 2 inches which has spread to the underarm lymph nodes.
  - **Stage IIIB**
    Stage IIIB cancer can have one of three characteristics:
    - The tumor has grown into the chest wall or the skin of the breast.
    - The cancer has spread into the lymph nodes behind the breast bone.
    - Inflammatory breast cancer, the rare breast cancer which causes the breast to become red, swollen and warm.
  - **Stage IIIC**
    Stage IIIC breast cancer which has spread to:
    - The lymph nodes behind the breast bone and under the arm.
    - The lymph nodes around the collarbone.
  - **Stage IV**
    Stage IV breast cancer is cancer which has spread beyond the chest to other parts of the body.
  - **Recurrent Breast Cancer**
    Recurrent breast cancer is cancer which comes back after being (or seeming to be) eliminated. Recurrent breast cancer can come back in the breast, chest wall or any other part of the body.
Breast Cancer Awareness

Treatment Planning

Several different types of treatment are usually used to treat breast cancer. The specific treatment plan is chosen based on the stage of the cancer, the patient's age and physical condition and other factors. A number of specialists are consulted to develop a treatment plan with the best probability of success for each patient. The consultation process can take weeks, or it can be done in a day at Thompson's Multidisciplinary Breast Clinic/Conference.

- **Multidisciplinary Breast Clinic/Conference**

At Thompson's Multidisciplinary Breast Clinic/Conference, a team of physicians and other medical professionals reviews each case.

After the conference the patient may meet with individual specialists one at a time. In just one afternoon a course of treatment can be agreed upon and scheduled. Participants may include:

- Medical oncologist
- Radiation oncologist
- Surgeon
- Radiologist specializing in women's imaging
- Pathologist
- Licensed clinical social worker
- Nutritionist
- Genetic counselor
- Clinical trial nurse
- Multidisciplinary cancer care coordinator

Throughout the process a multidisciplinary cancer care coordinator helps make sure each patient understands the plan of care. At the conclusion of the multidisciplinary clinic, the multidisciplinary care coordinator helps schedule the planned care.

Treatment

Breast cancer is usually treated with a combination of therapy types. Treatment may be local (such as surgery and radiation) which treat only a specific part of the body, or systemic (such as chemotherapy and hormone therapy) which work throughout the body.

- **Surgery**
  - *Breast-Sparing Surgery*
    Breast-sparing surgery is often chosen for Stage 0 Ductal Carcinoma In Situ and Stage I and Stage II breast cancer. In this procedure the surgeon removes the tumor, and, frequently the lymph nodes under the arm and the chest lining under the tumor.
  - *Mastectomy*
    Mastectomy is often chosen for Stage I, Stage II, Stage IIIA and operable Stage IIIC breast cancer. In a simple mastectomy the surgeon removes the entire breast and, possibly, some lymph nodes under the arm. In a radical mastectomy the entire breast, most of the lymph nodes under the arm and, often, the lining over the chest muscle and the muscle over the lymph nodes are removed.
Breast Cancer Awareness

- **Bilateral Mastectomy**
  Bilateral mastectomy is the removal of both breasts. This may be done because both have cancer. In some cases women with lobular carcinoma In Situ, the breast cancer of the lobes or lobules, choose bilateral mastectomy because of the increased chance of developing cancer in both breasts.

- **Breast Reconstruction**
  Some women who have mastectomies chose to have the breast surgically rebuilt. The reconstruction surgery can be done at the same time as the mastectomy or later. In either case, the plastic surgeon who will do the breast reconstruction surgery should be part of the original treatment-planning team.

- **Radiation Therapy**
  Radiation therapy is used along with or in place of after surgery. Occasionally radiation therapy replaces surgery entirely.

  - **Breast Conservative Treatment**
    The radiation therapy for breast conservation treatment of early-stage breast cancer fights cancer as effectively as a total mastectomy and preserves the breast. The treatment is more accurate and effective with 3-D treatment planning in which 3-D computer models are used to predict and reduce possible uncomfortable or unattractive skin reactions before treatment begins.

  The three-dimensional treatment planning technique was pioneered at Thompson in 1996. Since then Thompson physicians and physicists have generated more than 5,000 3-D treatment plans, and have helped improve the accuracy of 3-D treatment planning software.

- **TomoTherapy**
  The TomoTherapy Hi-Art2® hybrid CT/linear accelerator system combines treatment planning, patient positioning and treatment delivery in a single unit.

  The TomoTherapy Hi-Art System's® on-board CT scanner precisely maps the tumor immediately before each dose is delivered to determine any changes in the patient's position or the position or shape of the tumor. Then the system adjusts the planning to get an ideal match.

  TomoTherapy's helical delivery system delivers radiation in literally thousands of precise beams in a 360° spiral pattern around the patient. So the tumor receives the planned dosage with minimum damage to surrounding healthy tissue.

  TomoTherapy is a new radiation therapy technology which has pioneered at Thompson downtown. The world's first breast cancer patient treated with TomoTherapy was treated at Thompson.

- **IMRT**
  Thompson Cancer Survival Center was one of the first facilities in the world to treat patients with intensity modulated radiation therapy. Since 1998 more than 1,000 patients have received IMRT treatment at Thompson. Now both Thompson Downtown and Thompson at Methodist offer this treatment. In IMRT the multileaf collimator reshapes
Breast Cancer Awareness

the treatment field between individual doses of radiation, so the beam is matched to the shape of the tumor from all angles.

• **MammoSite®**
  Thompson Cancer Survival Center is the only facility in the area credentialed by the Radiation Therapy Oncology Group for MammoSite® partial breast irradiation. This post-lumpectomy outpatient procedure minimizes radiation to healthy tissue and has achieved good or excellent cosmetic results in 88% of patients.

• **Chemotherapy**
  Chemotherapy sometimes used for virtually all breast cancer. It is frequently used to prevent the spread of lobular cancer in situ, to shrink tumors before surgery and for stage IIIB, inoperable stage IIIC and stage IV breast cancer.

The newest cancer-fighting drugs are generally available in clinical trials. Thompson is currently participating in clinical trials of seven breast cancer treatments.

<table>
<thead>
<tr>
<th>Trial Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSABP/RTOG B-39/R0413</td>
<td>Conventional whole breast versus partial breast irradiation.</td>
</tr>
<tr>
<td>NSABP B-38</td>
<td>Node positive; adjuvant therapy. TAC; DD AC?P; DD AC?PG.</td>
</tr>
<tr>
<td>CALGB C40101</td>
<td>Adjuvant therapy in women with 0-3 positive axillary nodes: CA (4 vs. 6 cycles) versus Taxol (4 vs. 6 cycles). Dose Dense.</td>
</tr>
<tr>
<td>NSABP B-42</td>
<td>Postmenopausal women, hormone receptor positive: efficacy of 5 years letrozole compared to placebo.</td>
</tr>
<tr>
<td>GlaxoSmithKline EGF103659 (Tykerb™)</td>
<td>ErbB2+, Locally advanced or metastatic. Tykerb™ + Capecitabine.</td>
</tr>
<tr>
<td>ECOG PACCT-1</td>
<td>Assigning individualized options for treatment, early stage breast cancer.</td>
</tr>
</tbody>
</table>

• **Hormone Therapy**
  Some breast cancer needs the hormones estrogen and progesterone in order to grow. When laboratory tests show that a breast tumor has hormone receptors treatments to block the body's production of hormones may be considered.

• **Drugs**
  Drugs such as tamoxifen block estrogen production. Aromatase inhibitors block the production of estradiol, a form of estrogen.

• **Surgery**
  Since estrogen is principally produced in the ovaries, women who have not gone through menopause may have their ovaries surgically removed to stop estrogen production.

• **Biological Therapy**
  Breast tumors with high levels of the protein HER2 may be given a monoclonal antibody to bind to cancer cells and use the body's immune system to fight them.

Information received from thompsoncancer.com
Male Breast Cancer

Although breast cancer does strike men, it is rare. Less than 1% of all breast cancer patients are men.

- **Types of Breast Cancer in Men**
  Men get some, but not all, of the types of breast cancer which women get. The effects of the diseases and staging are like those for breast cancer in women.
  - Infiltrating ductal carcinoma is the most common breast cancer in men.
  - Ductal carcinoma in situ also occurs in men.
  - Inflammatory breast cancer also occurs in men,
  - Lobular carcinoma has not been reported in men.

- **Risk Factors**
  - Age. Most men diagnosed with breast cancer are between 60 and 70.
  - Exposure to radiation.
  - Disease which causes high levels of estrogen in the body, such as cirrhosis.
  - Having several female relatives who have had breast cancer.
  - Having one male relative who has had breast cancer.
  - Prior breast cancer.

- **Screening**
  Self-examination is as effective for early detection in men as in women.

- **Diagnosis, Staging and Treatment**
  Male breast cancer is diagnosed, staged and treated almost exactly like breast cancer in women.

Information received from thompsoncancer.com