CANCERcare Connect®

Report From the 2007 San Antonio Breast Cancer Symposium

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Learn about:

- Personalizing breast cancer treatment
- Treating early-stage breast cancer
- Treating metastatic and locally advanced breast cancer
- Predicting treatment response and recurrence

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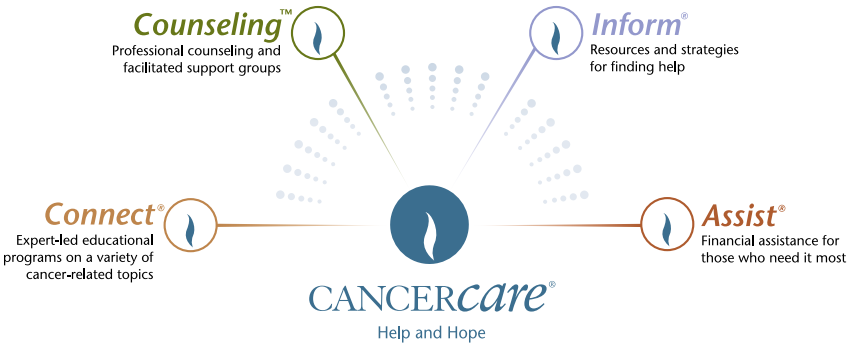

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This Cancer*Care* Connect® booklet was made possible by:

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This special edition of the Cancer*Care* Connect® booklet series presents cutting-edge research highlights from the 2007 San Antonio Breast Cancer Symposium, which took place December 13–16 in San Antonio, Texas.

This guide, which has been reviewed for accuracy by a recognized expert in the field, includes information on advances in the treatment of breast cancer, as well as other promising treatments that researchers continue to study in clinical trials. Some of these treatments are still in the earliest phases of research and may not be available to the general public outside of a clinical trial. Your doctor can help guide you as to which medications could be right for you and whether you are eligible to take part in the clinical trials of these new treatments.

As you read through the booklet, you may notice these themes in the research described:

- **Identifying Genetic Patterns** A number of researchers are focusing on the genetic makeup of breast cancer tumors in women. Such genetic testing of tumors may help doctors to select the treatment that has the best chance of success for a particular person. Genetic testing of tumors may also help doctors predict whether breast cancer is likely to return after treatment or spread to different parts of the body. Identifying gene patterns that are specific for certain types of breast cancer is one of the fastest growing areas of cancer research.
- **Using Aromatase Inhibitors** A new generation of aromatase inhibitors—drugs used to treat breast cancer—was the focus of a number of scientific papers presented at the San Antonio conference. These medications interfere with the body's production of the female hormone estrogen. This is important because the growth of some tumors is fueled by estrogen.
- **Offering Newer Treatment Combinations** Advanced breast cancer often becomes resistant to existing treatments,

so researchers are always studying new medications that may prove effective. Many new drug combinations have been the focus of recent clinical trials, and several appear promising.

Personalizing Treatment

In a new approach to treating breast cancer, doctors are moving away from one-size-fits-all treatments. Today, researchers are trying to determine the best approach for each patient based on her tumor's **genes**, or genetic make-up. As the following studies show, the more doctors can learn about the patterns and characteristics of genes that are specific to certain types of breast cancer, the better they will be able to predict which treatment has the best chance of success for a particular patient.

Choosing the right treatment for a woman with breast cancer also depends on knowing whether she has a **hormone receptor-positive** or **hormone receptor-negative tumor**. Although hormone receptor-positive breast cancer can spread to other parts of the body, it tends to grow more slowly than hormone receptor-negative cancer. Hormone receptor-positive breast tumors usually respond to hormonal treatments, such as tamoxifen (Nolvadex and others) and the newer **aromatase inhibitors** such as anastrozole (Arimidex), exemestane (Aromasin), and letrozole (Femara).

PREDICTING RECURRENCE OF BREAST CANCER WITH ONCO*TYPE* DX

For women with hormone receptor-positive breast cancer that *has not spread* to the lymph nodes, a new test can now tell how

What's New, What's Important

- The Onco*type* DX Recurrence Score can predict a woman's chance of her hormone receptor-positive breast cancer recurring and her tumor's response to tamoxifen. This test may suggest which treatment she would benefit from—hormone therapy alone or in combination with chemotherapy.
- Women with recurrent breast cancer who have certain biomarkers may go longer without their cancer growing than women who do not have these genes. Genetic testing of tumors may help doctors select the treatment with the best chance of success for a particular person.
- Identifying patterns of genes that are specific to certain types of breast cancer is one of the fastest growing areas of cancer research and may help doctors better diagnose and treat women with these tumors.
- Women with metastatic breast cancer who have high levels of the *HER2* and/or *TIMP-1* genes may require additional targeted treatments along with hormone therapy than would women who have normal levels of one or both of these genes.

their tumor will respond to treatment. Based on whether or not the tumor has certain genes, the test, called the Oncotype DX Recurrence Score (RS), can predict whether the tumor will respond to chemotherapy and/or the hormone drug tamoxifen. Ultimately, the test might also be able to predict who will benefit most from treatment among women whose hormone receptor-positive breast cancer *has spread* to the lymph nodes.

In a large clinical trial conducted by the Eastern Cooperative Oncology Group, researchers studied more than 750 women with early-stage breast cancer who had been treated with standard chemotherapy. For this analysis, researchers focused on the medical records of 465 patients who had hormone receptor-positive tumors and cancer in zero to three lymph nodes. In this group, almost 200 women had a low RS, about 140 had an intermediate RS, and 125 had a high RS.

The risk of cancer recurrence was much higher for those with an intermediate or high RS than for those with a low RS. Researchers found that the RS was a good way to predict recurrence in women with hormone receptor-positive cancer. RS added useful information to the standard methods of estimating risk of recurrence, especially among women whose tumors were less likely to return.

In another recent clinical trial conducted by the Southwest Oncology Group, postmenopausal women were treated for their node-positive—meaning tumor cells in the lymph nodes—hormone receptor-positive breast cancers. Treatment consisted of a chemotherapy combination followed by tamoxifen. Researchers used the Onco*type* DX test to analyze the more than 350 tissue samples that were obtained from breast tumors in some of the 1,500 women taking part in a previous clinical trial.

Forty percent of the samples had a low RS, 28 percent had an intermediate RS, and 32 percent had a high RS. Ten years after treatment, more women with a low RS were cancer free than women with a high RS (60 percent versus 43 percent).

Results from these test samples also suggested that certain tumors might benefit more and others less from the combination of chemotherapy with tamoxifen. This study suggested that women whose tumors had a high RS might receive a real benefit from chemotherapy in terms of longer survival, whereas women whose tumors had a low RS would probably not benefit.

A recent study performed at cancer centers in California, Illinois, and Michigan showed that information learned from the Onco*type* DX test actually did change the decision-making of some doctors and their patients being treated for breast cancer. Nearly 90 women with breast cancer took the Onco*type* DX test at these centers. Not only were 95 percent of the women glad they took the test, more than 80 percent said that the test results influenced their treatment choice.

The most common change was going from a combination of chemotherapy and hormone therapy to hormone therapy alone.

BIOMARKERS HELP PREDICT BREAST CANCER METASTASIS

Biomarkers are certain genes that can be used to measure the spread of a cancer and to help predict how well a person might respond to a particular treatment for that cancer.

In a recent study conducted at George Mason University in Manassas, Virginia, and at Erasmus Medical Center in the Netherlands, researchers looked for biomarkers in more than 10,000 tumor cells from nearly 40 women who were treated with tamoxifen for recurrent breast cancer.

They found that women who had certain biomarkers in their tumor cells (such as the genes *Bcl-2 S70* and *Src Y527*) went longer without their cancer growing. They also lived longer after their cancer returned than did women who did not have these genes. Researchers also discovered that higher levels of Bcl-2 may actually make the cells more sensitive to the anticancer effects of certain treatments.

GENE TESTS SHED MORE LIGHT ON "MIXED" HORMONE-RECEPTOR TUMORS

Researchers from Baylor College of Medicine in Houston, Texas, and two cancer centers in the Netherlands studied more than 1,000 tumor samples from five previously completed clinical trials in women with breast cancer. They found that a specific gene pattern was common in tumors that are hormone-receptor positive—that is, **estrogen-** and **progesterone-receptor positive**. These types of tumors depend on the female hormones estrogen and progesterone for their growth.

A different gene pattern was found for tumors that are estrogen- and progesterone-receptor negative—that is, tumors that do not depend on these hormones for their growth.

Researchers were surprised to find that tumors that were mixed—that is, estrogen-receptor *positive* and progesterone-receptor *negative*—seemed to share gene patterns with hormone receptor-positive types of breast cancer tumors. These mixed hormone-receptor tumors also appeared to have certain genetic traits characteristic of more aggressive tumors.

Researchers hope that, one day, some of the genes they are studying could be used to help doctors diagnose and better treat these mixed hormone-receptor tumors.

In some breast cancers, a gene called *HER2* makes a protein, also called HER2, which controls cell division. If a cancer cell has too much HER2—that is, if it is **HER2 positive**—it tends to grow more rapidly. HER2-positive breast cancer tends to respond better than HER2-negative breast cancer to certain treatments such as trastuzumab (Herceptin). So, the presence or absence of *HER2* is used as a way to predict how well a patient may respond to treatment for metastatic breast cancer.

Now, researchers have learned that the combination of HER2 and another gene called *TIMP-1* is even better at predicting response to treatment than just *HER2* alone. *TIMP-1* is a gene that has been found to promote the growth of tumor cells in several cancers, including those in the lung and stomach. In previous studies, women with breast cancer who had an increased level of *TIMP-1* did not respond as well to hormone treatment.

More than 500 women with metastatic breast cancer took part in a clinical trial at Penn State/Hershey Medical Center. Their levels of both *HER2* and *TIMP-1* were measured before they received hormone treatment with either letrozole or tamoxifen.

Women who had normal levels of both *HER2* and *TIMP-1* went longer without their tumors growing than did women who had a normal *HER2* level and an increased *TIMP-1* level (more than 11 months versus about 6 months). Also, women who had normal levels of both genes lived longer from the start of treatment than did women in the following groups:

- those who had high *TIMP-1* and normal *HER2* levels;
- those who had normal *TIMP-1* and high *HER2* levels;
- those who had increased levels of both genes.

From this genetic information about the tumor, researchers concluded that women who have increased levels of *HER2* and/or *TIMP-1* may require additional targeted treatment along with hormone therapy for their metastatic breast cancer.

Early-Stage Breast Cancer

Breast cancers are diagnosed by stages that distinguish the size and extent of their spread. "Early-stage" breast cancer refers to smaller tumors that have not spread to distant parts of the body.

CHEMOTHERAPY FOR OLDER WOMEN

Research has shown that chemotherapy can help women with early breast cancer live longer. Although some doctors have been concerned that older patients (those over age 70) might have difficulty coping with chemotherapy and its side effects, new research supports the idea that age alone does not determine how well a person handles treatment.

The results of a recent study conducted at the University of Florida in Jacksonville suggest that older women with early-stage breast cancer may benefit from chemotherapy just as much as younger women with early-stage breast cancer. This clinical trial included more than 50 women with early-stage breast cancer whose average age was 74. They all had surgery

and then were treated with chemotherapy. Ninety percent of the women completed the planned chemotherapy. The most common side effects were fatigue (experienced by 85 percent of the women), nausea (80 percent), and **neutropenia** (50 percent)—a low white blood cell count that can increase the risk of infection. Thirty-seven of the women also received medications called growth factors that increase the body's own defenses against infection.

Researchers concluded that chemotherapy for older women with early-stage breast cancer is safe. The side effects are similar to those experienced by younger women with early-stage breast cancer who are treated with chemotherapy. Larger clinical trials of chemotherapy and growth factors may be conducted with older patients to confirm these preliminary results.

ANASTROZOLE (ARIMIDEX) VERSUS TAMOXIFEN IN PREVENTING RECURRENCE OF BREAST CANCER

Researchers have now confirmed the early results of the landmark clinical trial known as ATAC (Arimidex or Tamoxifen Alone or in Combination). After more than eight years of follow-up, anastrozole still appears to be more effective than tamoxifen in preventing cancer from returning in postmenopausal women treated for hormone-sensitive early-stage breast cancer.

The ATAC study included more than 6,000 postmenopausal women with **invasive breast cancer** from more than 20 countries. (Invasive breast cancer has spread outside the milk ducts into the fatty tissues of the breast or other parts of the body.) More than 5,000 of these women had hormone

What's New, What's Important

- Older women with early-stage breast cancer seem to benefit from chemotherapy as much as younger women with early-stage breast cancer, with similar side effects.
- Anastrozole (Arimidex) might be a better option than tamoxifen (Nolvadex and others) in preventing recurrence in postmenopausal women treated for hormone-sensitive early-stage breast cancer.
- The new drug denosumab may become a bone-strengthening option for women being treated with aromatase inhibitors for breast cancer.

receptor-positive breast cancer. Women in the study were treated for five years with either anastrozole or tamoxifen.

During the five years on treatment, the risk of breast cancer returning (recurrence) was 23 percent lower with anastrozole than with tamoxifen. During the next four years, the risk of recurrence was 25 percent lower in the group that received anastrozole. In addition, less than three percent of the women who were treated with anastrozole developed breast cancer in their other breast, compared with more than four percent of the women treated with tamoxifen.

In terms of side effects, 10 percent of the women taking anastrozole experienced a bone break during the five years of treatment. This rate was roughly 50 percent higher than in the tamoxifen group. Once the women finished treatment, however, the rate of bone breaks was similar for both groups. In other words, this side effect disappeared after the treatment had been completed.

Anastrozole belongs to a new generation of aromatase inhibitors—drugs that help prevent estrogen from forming. Clinical trials have been comparing tamoxifen with aromatase inhibitors in the hope that they can figure out which type of medication is best for women with early-stage breast cancer.

DENOSUMAB STRENGTHENS BONE IN WOMEN WITH BREAST CANCER

Aromatase inhibitors have been associated with a loss of bone and an increase in the risk of bone breaks. But a recent clinical trial has shown that a bone-strengthening drug called denosumab may become a useful option for women with breast cancer who are being treated with aromatase inhibitors such as letrozole, anastrozole, or exemestane.

More than 250 women took part in the HALT Breast Cancer clinical trial. These women were being treated with aromatase inhibitors for breast cancer that had not spread from its original site to other parts of the body. The women were also taking calcium and vitamin D supplements to promote bone health.

Half of the women in the clinical trial received an injection of denosumab every six months. The other half received placebo—in this case, an injection containing no active ingredient. Researchers used a measurement of bone strength and health called **bone mineral density** (BMD) to compare the two groups. This test works by measuring the density of calcium and other minerals in a specific bone or bones, usually the spine, hips, and wrists.

One year after treatment, women who received denosumab had an almost five percent increase in BMD in their lower spine. Women who received the placebo experienced a nearly one percent drop in BMD in their lower spine.

Increases in cortical bone, which is the dense outer shell of the skeleton, were also seen in the denosumab group. In addition, denosumab produced improvements in BMD at the top of the

thigh bone and the lower part of the arm, near the wrist.

By the two-year mark, which was six months after the final injection of denosumab, the researchers were still seeing these positive results in the women who had received denosumab. Their lower-spine BMD was up more than six percent; the women who had received the placebo injection had BMD measurements that were down by nearly one-and-a-half percent.

The encouraging results with denosumab did not seem to be affected by how long the women had been treated with aromatase inhibitors.

Metastatic and Locally Advanced Breast Cancer

Metastatic breast cancer is the most advanced stage (stage IV) of breast cancer. Cancer cells have spread past the breast and nearby lymph nodes to other areas of the body, where they continue to grow and multiply. The most common parts of the body breast cancer spreads to are the bones, lungs, and liver.

Locally advanced cancer is a term that indicates one of two situations: the tumor is confined to the breast but is too large to be effectively removed, or the tumor has spread to nearby areas outside the breast such as lymph nodes in the armpit, neck, or chest wall.

LETROZOLE (FEMARA) BEFORE SURGERY FOR BREAST CANCER

A recent study conducted at several U.S. cancer centers suggests that hormonal treatment with letrozole before surgery may be beneficial for postmenopausal women who have advanced breast cancer.

Researchers from the University of Chicago, Cleveland Clinic, and University of North Carolina at Chapel Hill tested letrozole in more than 100 postmenopausal women with advanced

What's New, What's Important

- Hormonal treatment with letrozole (Femara) before surgery may make it possible for postmenopausal women with estrogen receptor-positive breast cancer to have a lumpectomy, which conserves the breast, rather than a mastectomy, which removes the breast.
- Recent findings suggest that rather than focusing on treating tumors that had developed elsewhere in the body, surgery to remove tumors *within* the breast might help women with advanced breast cancer live longer.
- The combination of pertuzumab and trastuzumab (Herceptin) may benefit women with metastatic breast cancer whose cancer has continued to grow after previous treatment with trastuzumab and chemotherapy.
- High doses of fulvestrant (Faslodex), a hormonal treatment, may be more effective than standard doses in shrinking tumors in postmenopausal women with locally advanced breast cancer.

estrogen receptor-positive breast cancer. These patients received four to six months of letrozole before surgery to treat their breast cancer. Tissue samples, or biopsies, were taken before and during treatment with letrozole and at the time of surgery.

According to the early results, letrozole was able to shrink the tumors enough that more women could have **lumpectomy** (a surgery that removes the tumor but conserves the breast) rather than **mastectomy** (a surgery that removes one or both breasts).

Researchers concluded that women whose tumors shrank with letrozole probably did not need to go on to chemotherapy, whereas those whose tumors did not shrink with letrozole likely needed a different hormone treatment or chemotherapy.

SURGERY FOR ADVANCED BREAST CANCER

In the past, women with metastatic breast cancer were not treated with surgery for tumors in their breast. At the time, doctors believed it was better to focus on treating the tumors that had formed elsewhere in the body. But recent findings suggest that surgery to remove tumors in the breast may in fact help these women live longer.

Researchers at Brigham and Women's Hospital in Boston studied approximately 175 women with advanced breast cancer who were diagnosed between 1998 and 2005. Nearly half of the women had breast surgery—either a mastectomy or lumpectomy. These women lived longer than those who had not had breast surgery (about four years versus a little more than two years).

This is not the first or only such study to show that surgery benefits women with metastatic breast cancer. For instance, researchers at Northwestern University in Chicago studied more than 16,000 women with metastatic breast cancer in the early 1990s. More than half of these women had breast surgery. Of the women who had surgery, more were alive three years after treatment than those who did not have breast surgery (35 percent versus 26 percent).

These are encouraging findings for women with metastatic breast cancer. However, further study is needed to discover the best time to perform this breast surgery and the best way to incorporate surgery with the standard treatments used in women with advanced breast cancer.

PERTUZUMAB AND TRASTUZUMAB FOR METASTATIC BREAST CANCER

Because metastatic breast cancer can become resistant to treatment, researchers continue to search for different approaches. A new combination of medications may benefit women whose advanced breast tumors have stopped responding to treatment.

In a clinical trial conducted in Europe and Canada, researchers studied the combination of pertuzumab, the first in a new class of targeted treatments, and trastuzumab. These two medications seem to complement each other; when used together, they seem to be more effective.

Researchers studied the combination of pertuzumab and trastuzumab in more than 30 women who had HER2-positive metastatic breast cancer that grew after previous treatment with trastuzumab and chemotherapy. Early findings show that tumors shrank by at least half in almost 20 percent of the women. Six months after treatment with the combination, the cancer had neither grown nor shrunk in another 20 percent of the patients. The most common side effect was diarrhea, which occurred in nearly 60 percent of the women treated. No heart complications, which can be a concern with trastuzumab, were noted. No women withdrew from the study because of treatment-related side effects.

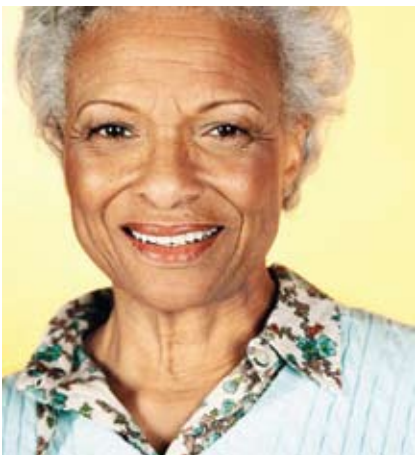
Further studies of this encouraging combination are planned for women with metastatic and early-stage breast cancers.

FULVESTRANT (FASLODEX) FOR LOCALLY ADVANCED BREAST CANCER

In a clinical trial called NEWEST, researchers are studying another promising option, this one for postmenopausal women with estrogen receptor-positive breast cancer that is locally advanced. For these women, high doses of the hormonal therapy called fulvestrant (Faslodex) may be able to shrink their tumors.

Fulvestrant is approved for postmenopausal women with advanced hormone receptor-positive breast cancer that has recurred or grown after treatment with chemotherapy. However, NEWEST is the first study to compare standard and high doses of fulvestrant in women who had not already received treatment for their cancer. The study is being conducted in more than 35 centers in six different countries—Brazil, Austria, India, Germany, the United States, and the United Kingdom.

More than 200 women were treated with fulvestrant for 16 weeks to shrink their tumors before they had surgery. The women in the study received either the standard dose of fulvestrant (250 milligrams [mg] in a single monthly injection) or a higher dose (500 mg injected once a month plus a 500-mg injection on day 14 of the first month).



Preliminary results showed that tumors shrank in more women who were treated with the higher dose of fulvestrant than those treated with the standard dose (20 percent versus 13 percent). Fatigue was typical for this type of hormonal treatment. In the high-dose group, 14 percent of the women felt tired as a result of treatment, whereas in the standard-dose group, five percent of the women felt tired as a result of treatment.

The early news with high-dose fulvestrant is favorable, and further results are expected in the future. Researchers are also studying this treatment in women with metastatic breast cancer. In these women, fulvestrant is likely to be given for a longer time than it was in the NEWEST trial.

COMBINATION CHEMOTHERAPY WITH BEVACIZUMAB (AVASTIN) FOR BREAST CANCER

Sometimes, when two cancer treatments are used together, they are more effective or safer than either treatment alone. In a clinical trial called E2104, conducted by the Eastern Cooperative Oncology Group, researchers from several U.S. cancer centers tested a combination of the targeted treatment bevacizumab (Avastin) with a standard group of medications that contained an anthracycline. **Anthracyclines** are a type of chemotherapy that is highly effective against breast cancer.

Bevacizumab works by zeroing in on cell mechanisms that supply blood to tumors and promote their growth. (Because normal tissues have an established blood supply, they are not affected by this drug.)

More than 225 women with breast cancer took part in the E2104 clinical trial. All of the women had breast cancer that had spread to the lymph nodes—that is, it was locally advanced. These nodes are a linked system of small bean-shaped structures throughout the body that helps filter out and destroy bacteria and other toxic substances. Breast cancer cells can spread by moving into blood vessels or lymph vessels—a series of connections among the lymph nodes.

All of the women received combination chemotherapy consisting of the anthracycline doxorubicin (Adriamycin and others), and cyclophosphamide (Cytoxan and others), followed by paclitaxel (Taxol and others). Approximately 100 women received bevacizumab at the same time as doxorubicin and cyclophosphamide; the other women received bevacizumab at the same time they were treated with paclitaxel.

Although this study is ongoing, early findings suggest that adding bevacizumab to treatment containing an anthracycline is safe, and the hope is that it may be beneficial.

COMBINATION CHEMOTHERAPY FOR METASTATIC BREAST CANCER

Two other drug combinations are now being studied to treat metastatic breast cancer. One combination treatment pairs the common anticancer drug docetaxel (Taxotere) with gemcitabine (Gemzar). This combination is called GD. The other combination treatment is called CD, for the oral chemotherapy capecitabine (Xeloda) plus docetaxel.

More than 300 women with previously treated metastatic breast cancer took part in clinical trials in France, Germany, Spain, and the United Kingdom. Researchers divided the women into two groups. One group of women was treated with GD, and the other group was treated with CD. Both groups received an average of six treatments with either GD or CD.

The two treatment combinations produced similar results. In each group, the cancer did not grow for approximately eight months. However, women seemed to experience fewer side effects when treated with GD than with CD. For example, more women who received CD had diarrhea (18 percent versus 8 percent); mouth sores (15 percent versus 4 percent); and numbness and tingling in the hands and feet, also called hand-foot syndrome (26 percent versus 0 percent).

COMBINATION TREATMENTS WITH IXABEPILONE (IXEMPRA) FOR METASTATIC BREAST CANCER

In October 2007, the FDA approved a drug called ixabepilone for metastatic and locally advanced breast cancer. This medication belongs to a new class of drugs known as epothilones, which treat breast cancer that is resistant to other chemotherapy. Ixabepilone is designed to interfere with the growth of cancer cells. Tumors do not appear to be resistant to this drug.

What's New, What's Important

- Combining the targeted drug bevacizumab (Avastin) with anthracycline-containing treatment may be beneficial for women with breast cancer that has spread to the lymph nodes.
- Combination treatments with docetaxel (Taxotere) and either gemcitabine (Gemzar) or capecitabine (Xeloda) both keep metastatic breast cancer from growing. But the combination of docetaxel and gemcitabine seems to cause fewer side effects.
- The newly approved drug ixabepilone (Ixempra) seems to be an effective treatment when used in combination with capecitabine (Xeloda) or other anticancer drugs for metastatic breast cancer.

A clinical trial conducted in cancer centers in the United States, Philippines, Argentina, and the United Kingdom studied the combination of ixabepilone and capecitabine. More than 750 women with drug-resistant metastatic breast cancer took part in the study. Half of the women were treated with ixabepilone plus capecitabine. The other half were treated with capecitabine alone.

Women who received the combination treatment of ixabepilone plus capecitabine went longer without their cancer growing than women who received just capecitabine. The combination also seemed to shrink tumors more effectively. With ixabepilone plus capecitabine, tumors shrank in 35 percent of participants. With capecitabine alone, tumors shrank in 14 percent of participants.

These positive results also applied to a subgroup of nearly 100 patients who had what's called **"triple-negative" breast cancer**. This type of breast tumor lacks the receptors, or entryways, for the hormones estrogen and progesterone as well as the HER2 protein, which means that there are fewer

treatment options for this cancer. Tumors that do not depend on these hormones for their growth tend to grow more quickly.

According to the early findings of another clinical trial, ixabepilone in combination with other anticancer drugs also appears to benefit women who have not had prior chemotherapy. Researchers from the M. D. Anderson Cancer Center in Houston tested the combination of ixabepilone with trastuzumab and carboplatin (Paraplatin and others) in nearly 60 women with metastatic breast cancer. All of these women had HER2-positive breast cancer, and about half of them were estrogen receptor-negative.

In more than 40 percent of the women treated with the combination, tumors shrank in size by at least 50 percent, a significant decrease. Six months after treatment, the tumors had still not grown in more than 20 percent of the treated women.

In both clinical trials, the most common side effect associated with the ixabepilone combinations was neutropenia—a low white blood cell count that can increase the risk of infection.

Your Support Team

When you are diagnosed with breast cancer, you're faced with a series of new questions and choices that will have a major effect on your life, and maybe you're not sure where to turn. Treatment may affect you in a number of ways such as how you feel about yourself and your body. It can also be challenging to manage practical matters, such as finances, health insurance, and child care. But help is available. Your most important resources are your health care team, family members, and friends. You can also turn to these resources:

Oncology social workers Often, when people are coping with cancer, they need someone to talk with who can help them and their families sort through the complex emotions and issues that arise. These health care professionals can provide

emotional support, help you cope with treatment and its side effects, and guide you to resources. Cancer*Care*® offers free counseling from professional oncology social workers on staff.

Support groups can reduce the feeling that you are going through cancer alone. These groups provide reassurance, suggestions, insight—a safe haven where you can share similar concerns with your peers in a supportive environment. Cancer*Care,* which has a program that focuses on women's cancers, offers telephone and online support groups for women with breast cancer. We also have support groups for caregivers, family members, friends, and loved ones.

Financial help is offered by a number of organizations, including Cancer*Care,* to help cover the cost of transportation to treatment, child care, or help needed around the home. Cancer*Care* can also refer you to other resources in your community that can provide assistance.

To learn more about how Cancer*Care* helps, call 1-800-813-HOPE (4673) or visit us online at *www.cancercare.org*.

Glossary

anthracyclines A class of chemotherapy drugs that is highly effective against breast cancer.

aromatase inhibitors A class of drugs used to treat hormone-sensitive breast cancer. They help to prevent estrogen from forming. So tumors that depend on estrogen, also called estrogen receptor-positive tumors, are deprived of the "fuel" they need to grow.

biomarkers Substances, often certain genes or proteins, used to measure the spread of a disease like cancer. They are also used to predict how well a person might respond to a particular treatment.

bone mineral density A test used to measure bone health in a specific bone or bones, usually the spine, hips, and wrists. Bone health is a concern in women whose breast cancer is being treated with aromatase inhibitors.

estrogen receptor-positive breast cancer The female hormone estrogen serves as a fuel for the growth of some breast tumors. Such tumors are said to be estrogen receptor-positive. The receptor sites, which work like doorways to the tumors' cells, allow the hormone to enter.

genes The basic unit of heredity. There are approximately 30,000 genes in each cell of the human body. The combination of all genes makes up the blueprint for the human body and its functions.

HER2-positive breast cancer HER2 is a gene that makes a protein, also called HER2, that controls cell division. If a breast cancer cell has too much HER2—that is, if it's HER2 positive—it tends to grow more rapidly.

hormone receptor-negative tumors Breast cancer tumors that lack receptors, or entryways, for female hormones. Such tumors do not depend on hormones for their growth. These breast tumors tend to grow more quickly than hormone receptor-positive tumors.

hormone receptor-positive tumors Breast cancer tumors that depend on female hormones for their growth. These tumors tend to grow more slowly than hormone receptor-negative tumors and respond better to hormonal treatments.

invasive breast cancer Any breast cancer that has spread outside the milk ducts, where it originated, into the fatty tissues of the breast or other parts of the body.

locally advanced breast cancer This term indicates one of two situations: the tumor is confined to the breast but is too large to be effectively removed, or the tumor has spread to nearby areas outside the breast such as lymph nodes in the armpit, neck, or chest wall.

lumpectomy Surgery to remove a tumor and conserve the breast.

lymph nodes A linked system of small bean-shaped structures throughout the body that helps filter out and destroy bacteria and other toxic substances.

mastectomy Surgery to remove one or both breasts.

metastases/metastatic Cancer that has spread from its original tumor site to other parts of the body.

neutropenia A low white blood cell count that can increase the risk of infection. Neutropenia is a complication of chemotherapy experienced by some patients.

progesterone receptor-positive breast cancer Cancer cells that have receptors, or doorways, on their surface that allow the female hormone progesterone to enter and stimulate their growth.

triple-negative breast cancer Women are said to have triple-negative breast cancer when they lack the receptors, or entryways, for the hormones estrogen and progesterone as well as the HER2 protein. Tumors that do not depend on these hormones for their growth tend to grow more quickly than hormone receptor-positive tumors.

Resources

Cancer*Care*
1-800-813-HOPE (4673)
www.cancercare.org

American Cancer Society
1-800-227-2345
www.cancer.org

Cancer.Net
(Patient website of the American Society of Clinical Oncology)
www.cancer.net

National Cancer Institute
1-800-422-6237
www.cancer.gov

National Library of Medicine (MedlinePlus)
www.medlineplus.gov

breastcancer.org
www.breastcancer.org

Susan G. Komen for the Cure
1-877-465-6636
www.komen.org

Y-ME National Breast Cancer Organization
1-800-221-2141
www.y-me.org

To find out about clinical trials:

Coalition of Cancer Cooperative Groups
www.CancerTrialsHelp.org

National Cancer Institute
www.cancer.gov/clinicaltrials

The information presented in this patient booklet is provided for your general information only. It is not intended as medical advice and should not be relied upon as a substitute for consultations with qualified health professionals who are aware of your specific situation. We encourage you to take information and questions back to your individual health care provider as a way of creating a dialogue and partnership about your cancer and your treatment.

All people depicted in the photographs in this booklet are models and are used for illustrative purposes only.

This booklet was edited and produced by Elsevier Oncology.