

Aromatase Inhibitors

What Are Aromatase Inhibitors?

Aromatase inhibitors (AIs) are drugs used to treat advanced breast cancer, or to prevent breast cancer from returning after surgery. AIs are used in post-menopausal women who have tumors that express estrogen receptors.

How Do Aromatase Inhibitors Work?

In pre-menopausal women, the ovaries produce most of a women's estrogen. Yet, in post-menopausal women, estrogen is synthesized in the peripheral tissues from another hormone called androgen. AIs stop the enzyme aromatase from turning androgen into estrogen, which decreases the amount of estrogen produced in peripheral tissues. AIs do not block estrogen produced by the ovaries. Therefore, AIs are used primarily with post-menopausal women because the ovaries are no longer producing estrogen. Breast tumors can be "estrogen sensitive," which means estrogen can promote tumor growth. AIs can stop growth of these tumors by decreasing the level of estrogen produced in the body. AIs can only be used with tumors that have estrogen receptors.

The Types of Aromatase Inhibitors

Currently, there are three AIs used, which include exemestane (**Aromasin**), letrozole (**Femara**) and anastrozole (**Arimidex**). AIs are given to post-menopausal women who have tumors that express estrogen receptors. The U.S. Food and Drug Administration (FDA) approved these drugs to be used in the following ways:

- **Arimidex** has been approved for women with early-stage breast cancer following surgery. This is a Type 2 "non-steroidal inhibitors," which stops the activity of aromatase, but **not permanently**.
- **Aromasin** has been approved for women with early-stage breast cancer who have taken tamoxifen for two to three years. This is a Type 1 "steroidal inhibitor," which stops the activity of aromatase **permanently**.
- **Femara** has been approved for women with early-stage breast cancer following surgery, and for women with early-stage breast cancer who have finished five years of tamoxifen. This is a Type 2 "non-steroidal inhibitors," which stops the activity of aromatase, but **not permanently**.
- These three AIs are also approved for women with advanced breast cancer.

Side effects may occur from taking AIs. Therefore, your doctor may suggest you try another AIs with a different chemical structure. **Arimidex** and **Femara** are similar in structure, while **Aromasin** has a different chemical structure. Each form of AIs is taken by pill once a day for up to five years. However, women with advanced breast cancer may continue taking AIs, as long as it remains effective.

Who Can Take Aromatase Inhibitors?

AIs are prescribed to women who are post-menopausal. If a woman was pre-menopausal when diagnosed, then treated with chemotherapy, and stopped getting her periods by the end of treatment, then AIs might be considered. However, this would only take place if her period had stopped completely.

AIs used alone may not have an effect in pre-menopausal women because the ovaries can override the blocking of aromatase by producing a larger amount of aromatase. Therefore, clinical trials are now being done to test AIs in pre-menopausal women in combination with another drug that would suppress ovarian function.

What Are The Benefits of Aromatase Inhibitors?

Studies done have shown that AIs are more effective than tamoxifen when preventing the recurrence of estrogen sensitive breast cancer after surgery and treating advanced breast cancer. They are also less likely to cause blood clots, endometrial cancer or uterine sarcoma, which are side effects of tamoxifen.

What Are Risks of Aromatase Inhibitors?

Estrogen helps to protect bones by preventing them from thinning. However, since AIs block the production of estrogen this can lead to a greater loss of bone density, which can increase the risk for osteoporosis. Studies have indicated that AIs can cause a decrease in bone density and an increased risk for bone fractures.

Due to an increased risk for bone fractures, researchers recommend that women who are taking AIs get a bone density test every 12-18 months.

Studies have also shown that many women taking AIs develop myalgia, musculoskeletal pain and arthralgia, joint pain. Breast cancer patients were most likely to have joint pain in the hands, knees, hips, lower back, and shoulders. Morning stiffness was also a common complaint. Morning stiffness is often experienced in the feet, and can become very painful. If this is an issue, two treatments have been successful in decreasing pain. One, shoes with good arch support should be worn right after getting up in the morning. Two, gentle stretching, especially after waking up in the morning may also help relieve pain and stiffness. If needed see a podiatrist for custom orthotics.

Other side effects of AIs may include increased cholesterol, hot flashes and vaginal dryness.

Are Aromatase Inhibitors Different than Tamoxifen?

AIs act differently than tamoxifen. Tamoxifen **blocks** estrogen receptors, which stops aromatase from converting specific hormones into estrogen. While AI's stop the enzyme aromatase from turning androgen into estrogen, which **decreases** the amount of estrogen produced in peripheral tissues.

Tamoxifen has different side effects than AIs. Many women develop resistance to tamoxifen over time, which can lead to the recurrence of cancer. In addition, because tamoxifen binds to the estrogen receptor it may activate pathways it was supposed to block. Other side effects may include increased risk for blood clots, hot flashes, vaginal discharge, endometrial cancer and uterine sarcoma. Unlike AIs, tamoxifen has a protective effect on bones, which can protect the bones from thinning.

Since AIs are relatively new, less is known about other long-term side effects. More research is being done to know these effects. Therefore, it is important to weigh both the benefits and risks with your doctor before starting treatment.

Side Effects of Aromatase Inhibitors: Myalgias and Arthralgias

Side Effects Associated with Aromatase Inhibitors

Myalgia, musculoskeletal pain and arthralgia, joint pain, are both common side effects of AIs. The mechanism is unclear how AIs increase joint and muscle pain. However, one possible mechanism by which estrogen deprivation may increase arthralgias and myalgia is increased pain sensitivity, which is triggered by a decrease in estrogen.

How can Myalgia and Arthralgia Be Relieved?

Individuals may use over the counter pain medication as needed to control these symptoms. In rare instances, primary care physicians may prescribe medication to relieve continuous symptoms of pain. Additionally, there is on-going research about non-pharmacological treatments for these side-effects. Other treatments have been shown to effectively relieve the pain associated with AIs. Myalgia and arthralgia are often relieved through gentle stretching and exercise as well as movement therapies such as yoga, The Lebed Method, tai chi, qigong and The Feldenkrais Method. Acupuncture has been shown to control pain and alleviate symptoms associated with cancer treatments such as myalgia and arthralgia. **However, before beginning any type of therapy that involves movement of the joints and muscles individuals should talk to their doctor first.**

Physical Activity

Physical activity means more than just fitness. It can reduce the risk of heart disease, adult-onset diabetes and high blood pressure. It helps maintain strong bones and joints (protecting against osteoporosis) and guards against excess weight. It can increase energy levels, boost self-esteem, improve quality of sleep and reduce feelings of anxiety and depression. Exercise has also been shown to help relieve myalgia and arthralgia. It is recommended that individuals participate in a combination of both aerobic and strength training exercises. **Individuals should talk to their doctor before beginning any type of exercise routine.**

What is Acupuncture?

Acupuncture is a form of ancient Chinese medicine. The basis of acupuncture is an energy force known as qi (pronounced “chee”). Energy is believed to circulate through the body along pathways called channels or primary meridians. A person’s health is determined by the flow of qi throughout the body. If the flow is weak, unbalanced or interrupted then illness may occur. For example if flow of energy through a meridian is blocked due to a tumor, pain may occur as a result.

Acupuncture points are on specific locations of the body. These points are used for the placement of fine sterile needles, moxibustion or acupressure to stimulate qi or energy flow through the primary meridians. When energy is flowing through the meridians, the immune system is stimulated, which increases both a healing response and balance in the body. Therefore, one goal of acupuncture is to regain both balance and energy flow in the body, which can help control pain and decrease other symptoms associated with late effects.

Acupuncture and Cancer

Acupuncture is not used on its own as a treatment for cancer. Instead, it is combined with traditional cancer treatments to decrease symptoms of cancer or the side effects related to the treatment of cancer such as nausea, vomiting and stress. Acupuncture has also been found to relieve fatigue, pain and neuropathy related to cancer and its treatment. In the United States and Europe, acupuncture is generally used to control pain and alleviate symptoms of disease, but not cure the disease.

There have been many proposed scientific reasons related to acupuncture’s effect on pain. Acupuncture points are thought to stimulate the central nervous system (the brain and spinal cord) to release chemicals into the muscles, spinal cord and brain. When these chemicals are released it is thought that they change the experience of pain or release hormones that control different functions in the body. These changes may affect blood pressure, body temperature, increase immune system activity and cause endorphins (natural painkillers) to be released.

Are There Side Effects From Acupuncture?

There have been few side effects reported. Problems have been associated with using needles that were not sterile, placing a needle in the wrong place or movement of the patient. Other possible side effects may include soreness or pain during treatment, fatigue or lightheadedness and sleepiness. Chemotherapy and radiation weaken the immune system so it is very important to seek treatment from a qualified acupuncture practitioner who only uses disposable needles for each patient. **Before beginning any type of therapy individuals should talk to their doctor first.**

The Feldenkrais Method

The Feldenkrais Method is named after the doctor who developed this method, Dr. Moshe Feldenkrais, D.Sc. This is a form of somatic (refers to the body) education, that

involves slow gentle movements to help increase awareness of the body, improve mobility, correct poor posture and ineffective movement that can cause pain.

The sessions can be in group classes or private lessons, which can last from 30-60 minutes. During group sessions the teacher leads students through movements that are done sitting or lying on the floor, standing or sitting in a chair. Private lessons are specific to the students needs and the teacher will lead the student through each movement.

What is the Evidence to Support the Feldenkrais Method?

Many people have reported that they feel more relaxed and able to move with greater ease and less pain. However, there has been little research done on the Feldenkrais Method to show what positive effects it has because it is hard to set up a controlled study of bodywork. **Therefore, before beginning any type of therapy that involves movement of the joints and muscles individuals should talk to their doctor first.**

The Lebed Method

The Lebed Method, Focus on Healing Through Movement and Dance is based on physical therapy, and was developed by two medical doctors and a dance movement specialist for breast cancer survivors. It is a therapeutic exercise program originally designed for women who had breast surgery, node dissection, chemotherapy, radiation, Lymphoedema or chronic fatigue. The Lebed Method is a gentle approach to aerobic, strength training and stretching exercise. The exercises are gentle and slow with resistant movements. It can be done sitting or standing. All ages and fitness levels can participate.

This method takes traditional physiotherapy (physical therapy) movements and translates them into dance and exercise set to music, creating an environment of laughter and fun. It focuses on helping participants to recover both physically and emotionally, while addressing the mind, body and spirit.

The Lebed Method was designed to help with the following:

- Regain range of motion
- Increase flexibility of a frozen shoulder
- Reduce scar tissue
- Increase both energy and the immune system
- Heal physically and emotionally
- Decrease depression
- Reduce the onset of Lymphoedema or decrease swelling from Lymphoedema
- Increase sense of grace and femininity
- Improve balance
- Stabilize weight

The Lebed Method also benefits children with chronic illness, healthy seniors, and individuals with Parkinson's disease, Chronic Fatigue, Arthritis, Fibromyalgia, MS and all Cancers

What is the Evidence to Support The Lebed Method?

A clinical study published in Cancer Nursing (Vol. 28, No.4, 2005) found The Lebed Method, Focus on Healing had significant positive effects on quality of life, shoulder range of motion and body image in breast cancer survivors. **Before beginning any type of therapy that involves movement of the joints and muscles individuals should talk to their doctor first.**

What is Yoga?

The word yoga, is from Sanskrit, and means “union”. Yoga is a type of exercise that involves a series of postures, breathing exercises and meditation.

There are many types of yoga practiced in the United States today, most of which are based on hatha yoga. Hatha means willful or forceful. It can also be translated as *ha* meaning “sun” and *tha* meaning “moon.” This also corresponds to the balance of male features such as active, hot and sun, and female features such as receptive, cool and moon which may reside in all of us. Hatha yoga is a series of postures known as asanas, which are designed to align your skin, muscles and bones.

Yoga can help relieve symptoms associated with chronic diseases such as cancer and can result in increased relaxation, physical fitness and overall quality of life. Yoga facilitates a union of the mind, body and spirit. It can cultivate prana, or life force, which is similar to qi (pronounced “chee”) in Chinese medicine. Many people who participate in yoga say that it increases physical health, relaxation, happiness, peace and tranquility.

What is the Evidence to Support Yoga?

Research has shown that yoga can help to control blood pressure, heart rate, breathing, metabolism, body temperature, brain waves, and skin resistance. These can lead to increased physical fitness, decreased stress and greater relaxation.

While yoga is not recommended as a treatment for cancer, it has been shown to be helpful when combined with conventional treatment. There have been many studies done with cancer patients who report increased quality of life, less sleep disturbance, decreased stress and changes in cancer-related immune cells after participating in relaxation, meditation and yoga. **Before beginning any type of therapy that involves movement of the joints and muscles individuals should talk to their doctor first.**

What is Qigong?

Qigong is a Chinese form of medicine that increases the flow of energy, or qi (pronounced “chee”), throughout the body. Working towards a fluid flow of energy in the body is called gong. Qigong has been practiced for over 7,000 years to preserve

health and promote a long life. The primary goal of qigong is to promote the flow of energy throughout the body. There are two main forms of qigong. Internal, which is mostly meditation, physical movement, and breathing exercises that individuals can practice on their own. The other is external, which requires skilled practitioners who use their own qi to heal others.

An internal qigong session might involve a person quietly focusing on their qi, while practicing breathing and movement exercises. These movements are slow, focused and controlled. Specific areas of the body are often focused on during the session.

In the 1990s China made qigong a part of the Chinese health plan. In the United States it is generally practiced as a form of relaxation and meditation.

What is the Evidence to Support Qigong?

It has been suggested that internal qigong may help relieve stress, improve coordination, and enhance quality of life. One study showed that internal qigong reduced pain in the short-term, and anxiety in the long-term. Another study showed that qigong decreased blood pressure and reduced stress hormones. Few studies have been done on the benefits of external qigong. **Before beginning any type of therapy that involves movement of the joints and muscles individuals should talk to their doctor first.**

What is Tai Chi?

Tai Chi is a Chinese martial art based on the philosophy of Taoism. Taoism incorporates beliefs of qi or life force with yin and yang. Tai chi has been practiced as an exercise in China for many centuries. It incorporates both the mind and body through movement, meditation and breathing to improve overall health.

Tai chi is a series of gentle, deliberate movements or body positions called forms. The names of these forms are derived from nature such as “Wave Hands Like Clouds,” or “Grasping the Bird’s Tail.” Each form balances yin and yang by practicing the movements in opposites. For example, a movement to the right will be followed with a movement to the left. Each form has 20-100 movements, which can require up to 20 minutes to complete. While practicing these forms, special attention is paid to the breath. Tai chi focuses on technique of the forms rather than the strength or power of the forms.

What is the Evidence to Support Tai Chi?

Tai chi is thought to balance qi, or life force, which helps to prevent illness and improve overall health. Research has shown that tai chi can reduce stress, lower blood pressure, and reduce the risk of heart disease. Tai chi has also been shown to be helpful for older adults or those that are not physically strong or healthy.

Studies have also indicated that tai chi improves posture, balance, flexibility, muscle mass and tone as well as strength in older adults, which may prevent falls and fractures. One study looked at individuals over the age of 69 and compared those who participated in tai chi to those who participated in stretching exercise classes. The results found that after six months, the tai chi group had better balance and less falls than the stretching group.

Survivorship Clinic

Tai chi has also shown benefits for people with chronic diseases such as arthritis, osteoporosis, chronic obstructive pulmonary disease and peripheral artery disease. It has also been shown to reduce stress and provide many of the same cardiovascular benefits as moderate exercise such as reduced heart rate and blood pressure. **Before beginning any type of therapy that involves movement of the joints and muscles individuals should talk to their doctor first.**

Works Cited:

American Cancer Society

www.cancer.org

Bastyr Center for Natural Health

www.bastyrcenter.org

BreastCancer.org

www.breastcancer.org

National Cancer Institute

www.cancer.gov

Susan G. Komen for the Cure

www.cms.komen.org

The Lebed Method, Focus on Healing Through Movement and Dance

www.focusonhealing.net

Local Resources

Bastyr Center for Natural Health

3670 Stone Way N

Seattle, WA 98103

206-834-4100

www.bastyrcenter.org

Bastyr Center for Natural Health is a teaching clinic and offers **acupuncture** and Oriental medicine as well as many other services such as naturopathic medicine, nutrition, Chinese herbal medicine and counseling. You may be seen through the team-care approach, which includes a practitioner and two-three students or through practitioner care, where you are seen only by the practitioner.

Cancer Lifeline Seattle

Dorothy S. O'Brien Center

6522 Fremont Ave N

Seattle, WA 98103

206-297-2100

www.cancerlifeline.org

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Survivorship Clinic

Cancer Lifeline Eastside

15355 SE 30th Place
Bellevue, WA 98007
425-747-4367

www.cancerlifeline.org

Cancer Lifeline offers classes in the **Lebed Method, Focus on Healing, qigong, Feldenkrais Method and yoga** as well as many other classes.

The Lebed Method

14418 47th Place West
Lynnwood, WA 98087
877-365-6014

www.focusonhealing.net

Website about the Lebed Method, which also includes other locations where this exercise program is offered.

Embrace the Moon School for Taijiquan and Qigong

1716 NW Market
Seattle, WA 98107
206-789-0993

www.embracethemoon.com

Embrace the Moon offers a wide range of classes in **tai chi, qigong and yoga** for all levels.

Gilda's Club

1400 Broadway
Seattle, WA 98122
206-709-1400

www.gildasclubseattle.org

Gilda's club offers a variety of programs and classes including qigong and yoga for individuals with cancer and their family or friends.

Seattle Cancer Care Alliance

825 Eastlake Ave. E
PO Box 19023
Seattle, WA 98109-1023
206-288-7222

www.seattlecca.org

SCCA offers therapeutic **yoga** classes through their wellness center.

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Survivorship Clinic

Seattle Yoga Arts

109 15th Ave. East

Seattle, WA 98112

206-440-3191

www.seattleyogaarts.com

Seattle Yoga Arts offers a variety of **yoga** classes. Lisa Holtby, one of the yoga instructors, has written Healing Yoga for People Living with Cancer and teaches yoga at conferences for cancer survivors.

The Yoga Barn

660 NW Gilman Blvd., Suite C6

Issaquah, WA 98027

There are studios in Issaquah and Fall City

425.427.0038

www.yogabarn.com The Yoga Barn offers a wide range of **yoga** classes including, Introductory Level, Prenatal, Yoga for Kids, Yoga Conditioning, Meditation and Therapeutic Yoga.