PATHWAYS

A Study of Breast Cancer Survivorship

A NEWSLETTER FOR STUDY PARTICIPANTS SUMMER 2025

Breast Cancer and Bone Health: Pathways Study Findings and Clinical Considerations

On March 6, 2025, the 5th Pathways Forum, "Breast Cancer and Bone Health: Pathways Study Findings and Clinical Recommendations," was hosted by Zero Breast Cancer at Collaborative for Health & Environment (CHE), and Kaiser Permanente Northern California Division of Research. Pathways' Co-Investigator Marilyn Kwan, Ph.D. (Kaiser Permanente Northern California Division of Research), shared Pathways study findings and endocrinologist Amber Wheeler, MD (Kaiser Permanente San Francisco), spoke about bone health. Lianna Hartmour, MA (Zero Breast Cancer at CHE), hosted the Forum and led the Q & A with the two speakers, along with Pathways' Principal Investigator Larry Kushi, ScD (Kaiser Permanente Northern California Dfivision of Research).

You can view the Forum online at https://zbclink.org/PathwaysWebinars and read the highlights below.

Amber Wheeler, MD

Marilyn Kwan, Ph.D.

The Pathways Bone Health Study

In 2012, the Pathways Bone Health Study began with funding from the National Cancer Institute to examine bone health outcomes in postmenopausal women with estrogen receptor (ER) positive breast cancer. Women were included if they initially had at least one hormonal therapy prescription dispensing of an aromatase inhibitor (like anastrozole, letrozole, exemestane) for treatment of their breast cancer. Complete prescription data were obtained through December 2017. The final study population was 2,152 women.

Hormone Therapies and Bone Side Effects

Aromatase inhibitors and tamoxifen are both hormonal therapies used to treat ER-positive breast cancer. Aromatase inhibitors work by blocking the production of estrogen through the enzyme aromatase, which is responsible for converting androgens into estrogens. Tamoxifen works by blocking estrogen from binding to cancer cells.

Aromatase inhibitors are typically used in postmenopausal women and can also be used in men. While extremely effective in substantially improving survival in women with breast cancer, aromatase inhibitors can also cause bone loss and fractures, joint and muscle pain, and other side effects. Compared with those treated with tamoxifen, which is protective against bone loss, women treated with aromatase inhibitors have been found to be at increased risk of fracture.

Aromatase Inhibitors and Physical Activity for Bone Health

Recently, Dr. Marilyn Kwan and colleagues investigated the association of lifestyle factors on risk of osteoporosis

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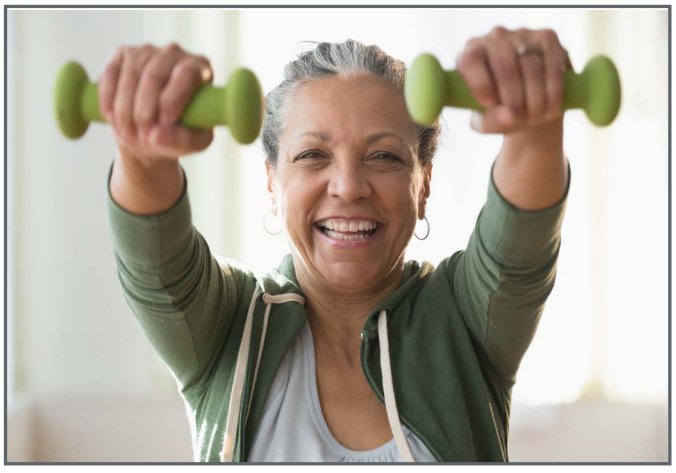
and major fractures (humerus, wrist, hip, or spine) in the Pathways Bone Health Study. A primary focus of this research was the impact of physical activity on bone health.

Over an average follow-up of 6.1 years after starting an aromatase inhibitor, 165 women experienced an osteoporotic fracture and 243 women had osteoporosis. Dr. Kwan found that women who did not meet the national physical activity guidelines of engaging in at least 150 minutes per week or more of aerobic exercise in the 6 months after their breast cancer diagnosis had nearly 2.5 times higher risk of fracture compared with women who met the physical activity guidelines. Risk of fracture was also nearly 2 times higher for those who never or occasionally participated in aerobic exercise. Also, women who never or occasionally participated in overall moderate-vigorous physical activity in the six months before breast cancer diagnosis had 2 times higher risk of osteoporosis.

These Pathways findings suggest that aerobic exercise during the immediate period after breast cancer diagnosis can be protective against risk of major fractures in women on aromatase inhibitors.

Clinical Recommendations for Keeping Your Bones Strong

Taking care of your bones is important at every age, but especially for breast cancer survivors and as you get older when the risk of osteoporosis increases. Fortunately, there are many steps you can take to protect your bone health when you have a history of breast cancer.



Exercise

Regular physical activity is crucial for bone health. Weight-bearing exercises like walking, dancing, and strength training help build and maintain bone density. Aim for at least 30 minutes of weight-bearing or muscle-strengthening activity on most days of the week. Activities that improve balance and posture, such as tai chi or yoga, can also help prevent falls and fractures.

Calcium and Vitamin D

Calcium is essential for building and maintaining strong bones. Most adult women need about 1,200 mg of calcium per day once they are over 50 years old. Dairy products like milk, yogurt, and cheese are considered to be good sources of calcium. Other foods such as most leafy green vegetables, almonds, and fortified foods like orange juice can be a good source of calcium. So can tofu when made with calcium sulfate. If you're not getting enough from your diet, your provider may recommend a supplement.

Vitamin D helps your body absorb calcium. Many women need 800 to 1,000 IU of vitamin D daily after age 50. A primary source of vitamin D is exposure to sunlight, as that helps to produce vitamin D in the skin. Since sunscreen is recommended for sun protection, it can be hard to get enough vitamin D from the sun. Natural dietary sources of vitamin D include fish with relatively high oil content, such as salmon, trout, or sardines. Some foods are also fortified with vitamin D, such as some dairy foods and milk alternatives like soy or almond milks; check the nutrition facts label to see if they include vitamin D. However, it can be challenging to get enough vitamin D from dietary sources, and supplementation might be recommended. Talk with your provider about whether you need a supplement.

Maintain a Healthy Weight

Keeping your body weight in a healthy range is important for your bones. Being underweight can increase your risk of bone loss and fractures. Focus on balanced nutrition and regular exercise to support both your bone health and overall well-being.

Avoid Tobacco and Limit Alcohol

Smoking weakens your bones, making fractures more likely. If you smoke, quitting is one of the best things you can do for your bones—and your overall health. Alcohol can also affect bone health. Limit alcohol to no more than one drink per day, according to the current Dietary Guidelines for Americans, to reduce your risk of bone loss.

Get Routine Screening

Bone density testing (also called a DEXA scan) helps assess your risk for fractures. Women should have a bone density test at age 65 or younger if they have risk factors such as early menopause, a history of fractures, or certain medical conditions. Talk to your healthcare provider about when you should start screening.

Take Medication if Recommended

If you are diagnosed with osteoporosis or have a high risk of fracture, your provider may recommend medication to strengthen your bones. These medications can help prevent fractures and maintain bone density.

Committing to Bone Health

Taking care of your bones is a lifelong commitment. By staying active, eating well, maintaining a healthy weight, avoiding tobacco, limiting alcohol, and following your provider's recommendations for screening and treatment, you can help keep your bones strong and reduce your risk of fractures.

Using Pathways Study Findings to Develop a Tool to Assess Bone Health in Breast Cancer Survivors

Currently, our Pathways team is working to use study findings to develop a fracture risk prediction calculator to calculate the 5-year probability of fracture for patients who are eligible to be prescribed an aromatase inhibitor to treat their breast cancer. Similar to the widely used Fracture Risk Assessment Tool or FRAX® (https://zbclink.org/frax) for calculating risk of fracture in healthy adults, the goal of our tool is to support clinician-patient discussion and decision-making of initiating an aromatase inhibitor. Our calculator will potentially include important characteristics such as age, weight, height, bone mineral density, bone biomarker levels in the blood, genetic score for fracture risk, and physical activity.

For the most up to date information on the Pathways study, please visit our website:
http://pathways.kaiser.org

New Contact Information?

To keep in touch with you we must have your latest contact information. Please let us know if your phone number or home address has changed. You can reach us by calling our toll-free number: 1-866-206-2979 or email us at dor-pathways@kp.org

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