

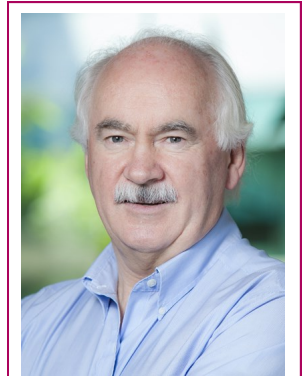


Inflammation: A New Link Between Lifestyle and Breast Cancer Outcomes

Can lifestyle affect breast cancer outcomes?

There are many studies showing that lifestyle factors like diet, weight and physical activity affect breast cancer [risk](#). However, little is known about how these factors affect breast cancer recurrence (when breast cancer comes back) and survival. Even though survival rates for breast cancer are high, many women may experience recurrence 5, 10 and even 15 years after their initial diagnosis.

Understanding how lifestyle factors affect breast cancer recurrence is critical for improving long-term survival of breast cancer patients. Through his Komen-funded research, Dr. John Pierce, Professor at the University of California, San Diego, has begun to uncover the links between lifestyle factors and breast cancer outcomes. He believes he has found a culprit: inflammation.



Dr. John Pierce, Ph.D.,
Professor of Family
Medicine & Public
Health, University of
California, San Diego

Which lifestyle factors affect recurrence and survival?

Many of the lifestyle factors associated with poor health tend to occur together (e.g. obesity, poor diet, diabetes, heart disease). This phenomenon is sometimes referred to as “problem lifestyle clusters.” These factors can cause inflammation in the body and chronic inflammation may cause cancer growth. Dr. Pierce believes that poor lifestyle factors, such as diabetes, diet and overall poor physical health can lead to long-term inflammation. This chronic inflammation may lead to higher rates of breast cancer recurrence and death.

Inflammation is the body's attempt to protect itself. It is a natural response to harmful stimuli such as injury, infection, irritants or damaged cells.



With a research grant from Komen, Dr. Pierce tested this idea. He used data from the NIH-supported Women’s Healthy Eating and Living (WHEL) study, which enrolled 3088 women diagnosed with early-stage invasive breast cancer. Women on the WHEL study ate either a low-fat, plant-based diet or a regular diet. The women were followed for many years, allowing Dr. Pierce to look at lifestyle risk factors over time and whether inflammation is linked to lifestyle and breast cancer outcomes.

Dr. Pierce found that women with “problem lifestyle clusters” including obesity, poor physical health and lack of physical activity, had an increased risk of breast cancer recurrence. In addition, smoking increased the risk of having poor outcomes (e.g. recurrence, disease progression, death). Diabetes was associated with increased risk of death in early-stage breast cancer survivors. In contrast, higher levels of [physical activity](#) after breast cancer treatment and improvements in physical health led to better cancer outcomes and survival.

Is Inflammation the Missing Link?

To investigate his idea further, Dr. Pierce began to study how lifestyle factors affect breast cancer recurrence. He discovered that high levels of C-reactive protein (CRP), a protein that serves as a measure of inflammation in the body, were associated with an increased risk of breast cancer recurrence and death.

“Ten percent of early breast cancer survivors had inflammation shortly after completion of primary treatment for breast cancer. These patients had much worse outcomes than other breast cancer survivors,” says Dr. Villasenor, a researcher in Dr. Pierce’s lab. Dr. Pierce’s studies suggest that inflammation worsens cancer outcomes and since inflammation is linked to “problem lifestyle factors” it may be the reason for worse outcomes in these patients.

The level of **C-reactive protein (CRP)**, which can be measured in the blood, increases when there’s inflammation in the body.





Science Buzz!

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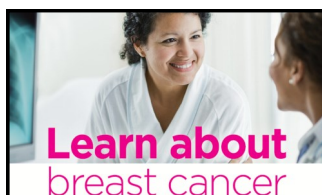


What's Next?

Dr. Pierce's discoveries suggest that inflammation may be the link between "problem lifestyle factors" and health outcomes for breast cancer survivors. *"Survival following a diagnosis of invasive breast cancer would appear to be strongly associated with a cluster of behavioral factors that increase inflammatory processes, but further work is needed to identify whether lowering inflammation will lead to a major improvement in survival,"* says Dr. Pierce.

He plans to continue his studies to determine whether CRP can be used as a marker to predict breast cancer outcomes, or whether it plays a role in causing breast cancer recurrence. By understanding the way lifestyle factors affect inflammation, Dr. Pierce hopes to identify new ways that breast cancer survivors can modify their lifestyle to reduce inflammation and risk of recurrence, and improve breast cancer outcomes.

A portion of Dr. Pierce's work on the role of inflammation in breast cancer outcomes was published in the January 2014 edition of the [Cancer Epidemiology, Biomarkers & Prevention Journal](#).



The Susan G. Komen® promise is to save lives and end breast cancer forever.

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