

# Insulin levels found to affect breast cancer survival

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(PhysOrg.com) -- Women treated for breast cancer who have elevated levels of circulating insulin face substantially higher mortality rates than their peers with lower levels, according to a new study authored by a Yale School of Public Health researcher. The research is published in the *Journal of Clinical Oncology*.

Patients with amounts of an insulin marker known as C-peptide greater than 1.7 ng/mL were at a two-fold higher risk of [breast cancer](#) death compared with women with C-peptide levels lower than that. Women with type 2 diabetes had an even greater risk of breast cancer death compared with women without [type 2 diabetes](#).

The findings suggest that treatment strategies that reduce C-peptide levels in women treated for breast cancer—which could include dietary-induced weight loss, increased physical activity and insulin-lowering medications—should be explored, according to Melinda L. Irwin, an associate professor at the School of Public Health, a member of Yale Cancer Center and the study's lead author.

“There is growing evidence that weight and physical activity affect breast cancer outcomes, and our findings suggest that the mechanism linking lifestyle factors and breast cancer may be the insulin pathway,” Irwin said. “Our findings are timely in that therapeutic trials of insulin-lowering medications in women treated for breast cancer are being conducted. Previous research of ours conducted at Yale also showed that a daily brisk walking program decreased insulin levels. Women treated

for breast cancer who are overweight or not currently exercising should definitely seek lifestyle counseling and/or talk with their physician about additional therapeutic options.”

Meanwhile, a separate research paper by Irwin that appears in the same issue of the journal found that overweight and obese breast cancer patients have lower levels of a crucial hormone called adiponectin that regulates several metabolic processes — which, in turn, decreases their chances of survival.

The finding is believed to be the first association between breast cancer survivorship and levels of adiponectin, a protein hormone that controls processes such as glucose regulation, the breakdown of fatty acids and energy intake. Levels of this hormone are related to body mass index, with overweight or obese breast cancer patients generally having lower levels of adiponectin and also elevated levels of insulin resistance (known as hyperinsulinemia).

The researchers followed 527 women from breast cancer diagnosis for an average of five years after diagnosis. A blood sample was collected every two years, as well as weight and height measurements and data on physical activity and diet to evaluate how lifestyle factors and hormones affect their breast cancer prognosis. They found that breast cancer patients who had higher levels of adiponectin survived longer.

Breast cancer patients can increase their adiponectin levels and lower their [insulin](#) levels markedly through behavioral and lifestyle interventions that promote physical activity and weight loss, Irwin said. Smilow Cancer Hospital at Yale-New Haven Hospital offers weight, diet and physical activity counseling for patients. Irwin is also currently recruiting women being treated for breast cancer into weight loss and exercise trials.

“Within the next couple of years, I hope the research continues to show a strong and clinically meaningful benefit of weight loss and exercise on cancer outcomes, and in turn will force second party payers/insurance companies to consider reimbursing for lifestyle counseling for cancer patients much like they do for patients with [diabetes](#) and cardiovascular disease,” she said.

Provided by Yale University

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