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## Program on Breast Cancer and Environmental Risk Factors

**SPRECHER**  
**INSTITUTE**  
for Comparative  
Cancer Research

# General Questions on Risk

Frequently Asked Questions

## ■ Question

Does stress weaken the immune system?

## ■ Answer

Available information suggests that stress can contribute to reduced immune function and increased risk of cancer, including breast cancer.

### Normal Immune System Function Fights Cancer Cells

Many cancer cells arise during the course of an individual's lifetime. However, these are usually recognized as aberrant cells by the immune system and removed/killed before they can actually become a problem. The immune system is able to use several different strategies to provide effective resistance to cancer. However, in the end the critical factors are the rate at which cancer cells form (influenced by environmental factors such as exposure to toxins/mutagens) and the efficiency of immune surveillance in recognizing and destroying the cells. Anything altering the delicate balance can promote an increased risk of cancer.

### Stress Changes the Immune System Response

Stress influences immune function by causing changes in both hormones levels and liver proteins that in turn can influence immune function. In particular when the stress is both intense and prolonged (for example as in the case of bereavement), the effects on the immune system lead to a reduced capacity to fight disease. It is well known among the human population that the first six months after the loss of a loved one are a period of great risk (associated with poor immune performance) to the surviving spouse. These human data are supported by a variety of animal studies connecting chronic stress with poor cell-mediated immune function and an increase in risk of both viral infection and cancer. Therefore, intense and prolonged stress is definitely a negative factor for immune function and protection from disease including cancer.

*Answered by: Rodney Dietert, Ph.D.*

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