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Stress May Hinder Prostate Cancer Treatments

It's an almost inevitable reaction to a cancer diagnosis, but it may compromise the ability of treatments to work as they should.

Researchers at Wake Forest Baptist Medical Center indicate that stress aids the growth and spread of prostate cancer, by reducing the effectiveness of cancer drugs, and that stress-reducing medication should be used to help patients battle the disease.

"We are at the very beginning of understanding complex stress-cancer interactions," says researcher George Kulik.

For their first study, the researchers tested the effects of behavioral stress on laboratory mice implanted with human prostate cancer cells and then treated with an experimental cancer drug. When these mice were calm, the drug destroyed prostate cancer cells and blocked tumor growth. But when they were stressed, the drug didn't work.

In a second study, tumors in genetically modified mice grew when the animals were exposed to repeated stress, even when treated with cancer drug bicalutamide.

What might be happening, says Kulik, is that stress creates the hormone epinephrine—also known as adrenaline—causing a cellular "chain reaction" that may promote cancer progression. When mice were given beta-blocker drugs, which counteract epinephrine, stress was reduced and prostate tumor growth slowed.

The studies were published in the *Journal of Clinical Investigation*. They were funded in part by the US Department of Defense and the National Cancer Institute.