

Advancements in prostate cancer research provide hope for finding a cure and lead to the discovery of new treatments to minimize the impact of a man's prostate cancer and maximize his quality of life. This regular *Hot SHEET* supplement includes some of the latest research from the Prostate Cancer Foundation ([www.pcf.org](http://www.pcf.org)).

### Stress and Prostate Cancer

By Janet Farrar Worthington

**Does prostate cancer make stress worse?** For many men dealing with prostate cancer, the answer is a definite yes. Treatment, side effects, insurance hassles, the next PSA test – all this uncertainty breeds stress.

*But here's a question that may be even more significant:*

**Does stress make prostate cancer worse?** This one's not so easy to answer. "Everybody has an individual response to stress," says medical oncologist Suzanne Conzen, M.D., Prostate Cancer Foundation (PCF)-funded investigator and Chief of Hematology and Oncology at the University of Texas Southwestern Medical Center in Dallas. "And that's the key," she adds: **"it's not so much the stress itself but the physiological response that can take a toll, and that may hinder our ability to fight cancer."**

**The body responds to stress with a surge of corticosteroids; primarily cortisol.** "We are hard-wired to respond to stress with this 'fight or flight' response." Unfortunately, many of us react to everyday troubles with the same surge of stress hormone as if we were under attack. Our hypothalamus, located in the most primitive part of the brain, tells our adrenal glands, "This is the big one! Go to Defcon 3." And cortisol, revving up in its effort to save us, can cause harm instead, affecting normal functions including the immune system, and even changing genes that are expressed in cancer cells.

"Some people have a higher stress response than others. It could be an inherited tendency; or they haven't necessarily developed effective ways of coping with exposure to stressors," says Conzen. "However, not all people who have a high stress response get cancer; and a lot of people are under stress and don't get cancer. But that's the complexity: not everybody who smokes gets lung cancer, but smoking is a risk factor. What you want to do is reduce your risk factors," and your *response* to stress – like a bad diet, or smoking, or being overweight – is a risk factor for prostate cancer **that can be changed.**

"We think high cortisol levels are probably not a good thing in men who have prostate cancer. At least a subset of those men may have tumors that respond to high levels of stress because the prostate cancer expresses a protein, the glucocorticoid receptor, that is activated by cortisol," and although Conzen is working on how to determine who these men are, right now, there's no way to know for sure.

Cortisol, a hormone, attaches to a protein called the glucocorticoid receptor (GR) in cells throughout your body, and this is like flipping a switch that activates stress in all those cells, including cancer cells. In prostate cancer, Conzen has found that the GR "is more highly expressed in cancer that is resistant to androgen deprivation therapy (ADT)."

But it's complicated, she adds: "We think it's not only *how much* GR your tumor has, it's how active it is." With a PCF Challenge Award, Conzen and colleagues in her lab are working to find a way to measure how active cortisol and GR are in a prostate tumor, "whether it's turning on and off a lot of genes, or just a few genes. The amount of GR does not necessarily correlate with the activity of the protein."

So, how to fix it – if a man has aggressive prostate cancer, and high cortisol/GR activity? "One hypothesis would be, deprive that tumor of your body's stress hormone receptor activity by keeping the stress hormones relatively low." This could happen with some type of medication – or, it could happen with stress reduction. What is that, exactly? It could mean making changes in your life, so there are fewer stressful factors in it. It also could mean making changes in you – with the help of such things as exercise, yoga, meditation, and counseling. For more on Dr. Conzen's research, go to [www.pcf.org/c/stress-and-prostate-cancer](http://www.pcf.org/c/stress-and-prostate-cancer).

**Interested in more ways to improve your wellness?** This *Prostate Cancer Awareness Month*, show your support by taking a simple challenge to eat 30 healthy foods in 30 days. While eating healthy and exercising can't stop you from getting cancer, it can lower your risk. Whether you or someone you love had been affected by prostate cancer – or if you just want to learn the principles of a healthy lifestyle – you can join in the challenge this September. Go to [www.pcf.org/eat](http://www.pcf.org/eat) to learn more and sign up!

**For more information visit [www.pcf.org](http://www.pcf.org), email [info@pcf.org](mailto:info@pcf.org), or call 1-800-757-2873.**