

# New method to manage stress responses for more successful tumor removal

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The week before and two weeks after surgery are a critical period for the long-term survival rate of cancer patients. Physiological and psychological stresses caused by the surgery itself can inhibit the body's immune responses, heightening vulnerability to tumor progression and spreading.

Now a new clinical trial by Prof. Shamgar Ben-Eliyahu of Tel Aviv University's School of Psychological Sciences and Dr. Oded Zmora will combine two medications originally used to treat excessive stress and [inflammatory responses](#) at Israel's Tel Hashomer Sheba Medical Center. The trial is the culmination of 15 years of research on the connection between the body's stress responses, [immune functions](#), and [tumor metastasis](#) — the process of cancer cells spreading to new tissue. In pre-clinical studies on animal models, long-term post-operative [survival rates](#) increased by up to 300 percent.

"Given our current understanding of how psychological and physiological stress help tumor cells to spread, we can now intervene in a simple and effective manner," says Prof. Ben-Eliyahu, whose research has been published in a number of journals, including the *Journal of Immunology*, *PLoS One*, and *Annals of Surgery*.

## The mind-body connection

Though critical for the treatment of cancerous tumors, surgery can cause

untold stress on the patient. The psychological stress and anxiety surrounding the surgery itself is obvious, but physiological processes that occur due to the surgical removal of the primary tumor also cause the body to release stress hormones that markedly inhibit the functioning of the immune system.

And just when the body is lowering its defenses, tumor cells are shifting into high gear. Hormones like prostaglandins and catecholamines, which weaken the body's immune defence, also directly strengthen cancer cells, making them more aggressive and efficient in their invasion of new tissues throughout the body, Prof. Ben-Eliyahu explains. "Through selection, similar to evolutionary processes, tumor cells have acquired a mechanism to synchronize the timing of their progression when the body is more vulnerable to metastasis. When the entire body is under stress, they metastasize because they have a greater chance of surviving," he says.

Prof. Ben-Eliyahu's clinical approach addresses this problem, hindering [tumor metastasis](#) by addressing the patient's anxiety and physiological stress responses to surgery. The two-drug cocktail, which includes a generic version of a beta-adrenergic antagonist and a COX2 inhibitor—used to treat hypertension and anxiety, and to inhibit inflammation and pain – will be administered to patients over a twenty day period before, during and after surgery.

## **Saving on healthcare costs**

For the first phase of the trial, Prof. Ben-Eliyahu and his team have already begun to recruit the 400 patients they want to include. The researchers are seeking grants and outside funding for a trial that is a crucial step in testing this treatment and hopefully making it widely available.

Typically, he says, pharmaceutical companies have strong financial incentives to support [clinical trials](#), knowing that they could benefit from a new drug. In this case, however, the trial is based on medications that have been previously approved, are safe, inexpensive, and already widely used. Prof. Ben-Eliyahu is currently aiming to recruit the necessary funds to conduct this clinical trial without the help of commercial resources.

"In the broader scheme of health and healthcare systems, we can help save lives and a lot of money," he notes, pointing out that with this drug treatment, governments and individuals will spend less on the long-term care of [cancer patients](#), with fewer numbers experiencing tumor recurrence.

Provided by Tel Aviv University

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