

# *New Cancer Drugs Offer Hope*

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Health Focus Contributor

A 1994 article on cancer drugs looked forward to the decade from 1994 to 2004 as “an exciting time clinically” with the development of new classes of drugs “dramatically more effective and possibly no more expensive than their predecessors.”

Looking back on that period, we can say that the author’s view was mostly prophetic. New drugs are being developed and introduced that target specific abnormalities in cancer cells, and these drugs offer hope for managing or treating solid tumors such as breast, lung, prostate and colorectal—adult cancers which are difficult to treat and account for about half of all cancer deaths. Unfortunately, at this time, the additional survival these drugs offer is likely to be measured in months rather than years. And the treatments are very expensive—sometimes costing more than \$150,000 a year.

Among the first of the new class of drugs was Taxol (paclitaxel), brought to market in 1993. It has been effective for the treatment of lung, ovarian and breast cancer plus advanced cases of Kaposi’s sarcoma. Taxol works by hindering the cancer cell’s ability to restructure itself in preparation for the rapid cell division that characterizes malignancy.

Herceptin (trastuzumab), used for the treatment of breast cancer, was also on the scene relatively early—in 1998. It binds to HER2-positive cancer cells—keeping them from dividing and signaling the immune system to destroy them. A drug similar to Herceptin, tykerb is now being tested in women with HER2-positive cancer, the most aggressive type of breast cancer.

For estrogen-sensitive breast cancer, tamoxifen (Novoldex) has been used to block the tumor’s ability to use estrogen. Three newer drugs, known as aromatase inhibitors, have been demonstrated to be even more effective for treating postmenopausal breast cancer patients. The three are anastrozole, exemestane and letrozole, and they work by blocking the conversion of androgens into estrogen.

One of the most effective of targeted cancer medications is Gleevec, approved by the Food and Drug Administration in 2001 for the treatment of chronic myeloid leukemia (a cancer of the red blood cells). It works by destroying a protein that enables the cancer cell to reproduce.

Many patients achieve complete remission with Gleevec, at which time they can opt for bone marrow transplantation and the promise of a cure. Some patients develop resistance to the drug, however. Two new drugs that could be even more effective are now being tested.

In one way or another, many of the recently developed cancer drugs are angiogenesis inhibitors. Angiogenesis is the medical term for the formation of new blood vessels. Once a tumor starts to grow, it needs new blood vessels to nourish it and give it a means to spread to other parts of the body.

Approved in 2004 to treat colon cancer, Avastin (bevacizumab) blocks vascular endothelial growth factor (VEGF). Erbitus (cetuximab), a similar drug, blocks the effects of epidermal growth factor (EGF). When used in conjunction with older cancer drugs, Avastin and Erbitux can slow the progression of the disease.

Some drugs now being investigated are vascular disrupting agents (VDAs). They selectively target and change the shape of cells lining the blood vessels of the tumor—damaging or destroying it. A promising approach involves combining VDAs with anti-angiogenic agents to prevent any attempt of the tumor to regenerate.

Lung cancer is frequently fatal because the tumor is difficult to detect until it has started to spread. For patients with advanced non-small cell lung cancer (the most common type), two new drugs—both introduced in 2004—offer hope. Tarceva (erlotinib) and Iressa (gefitinib) work in similar ways, blocking a protein known as epidermal growth factor receptor (EGFR) that is over-active in many cancers of the lungs, prostate and colon.

Tarceva has been shown to give patients two extra months of life compared to those not taking the drug. Iressa's effect on survival has been called into question by a recent study. Some persons may be more likely than others to respond to Iressa, explaining earlier, more positive results.

Whether a few months' extra survival should be considered a dramatic advance, particularly considering the high cost of most new cancer drugs, is influenced perhaps by whether those months belong to you or someone you love. Scientists hope, at any rate, that these initial discoveries will lay the groundwork for even more important advances in drug treatment.

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