

Targeted cancer treatments far outperform traditional methods

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Cancer treatments that attack tumors based on their individual genetic traits—not their location in the body—far outperform traditional methods, extending survival for twice as many patients, a study said Saturday.

The precision medicine field of targeted therapy involves testing tumors for clues about their genetic mutations, and matching patients with new drugs designed to block cancer's growth on a molecular level.

Targeted options for patients have risen dramatically in the last two decades—and one day tumor testing and cell-free DNA analysis may become the standard of care, said lead investigator Apostolia Tsimberidou, professor of investigational cancer therapeutics at MD Anderson Cancer Center in Texas.

"I am optimistic that in the next few years we will dramatically improve the outcomes of patients with cancer with increasing implementation of precision medicine," she told reporters at the American Society of Clinical Oncology meeting in Chicago, the world's largest annual cancer conference.

Tsimberidou and colleagues began studying the impact of these therapies in 2007, after seeing the success of Gleevec (imatinib)—a breakthrough drug approved by US regulators in 2001 that showed huge success against [chronic myeloid leukemia](#).

Their study, called IMPACT, is the first and largest to look at survival across a host of cancer types and many different targeted therapies.

More than 3,700 patients at Texas MD Anderson Cancer Center enrolled from 2007 to 2013.

All had advanced cancers, or "end-stage disease," involving cancers of the gastrointestinal tract, breast, or lung. Melanoma and cancer of the female reproductive tract were also included, along with more rare types of cancer.

Those enrolled had typically tried at least four—and sometimes up to 16—other treatments that failed to halt the growth of their cancer.

More than 1,300 were found to have tumors with at least one genetic change. Of these, 711 received a treatment that matched the biology of the tumor. Another 596 received a treatment that was not matched, often because no matched treatment for the patient was available at the time.

After three years, 15 percent of people treated with targeted cancer therapies were alive, compared to seven percent in the non-targeted group.

After 10 years, six percent of the targeted group was alive, compared to just one percent in the other group.

Still far from a cure

On the whole, targeted therapies led to an average of four months of life without the cancer advancing, known as progression-free survival, and nine extra months of overall survival.

Those who were treated with traditional approaches lived just under

three months without cancer growing, and 7.3 months longer overall.

Targeted therapies "significantly improved overall survival," said Catherine Diefenbach, an oncologist at New York University (NYU) Langone.

This method of molecularly profiling tumors, understanding their genetics and how to act on that "is the wave of the future," added Diefenbach, who was not involved in the study.

For Diefenbach, the study illustrates a paradigm shift in cancer treatment, whereby cancers are no longer treated on the "neighborhood" of the body in which they arise.

"Prior to precision medicine, patients were treated based on what kind of cancer they had," she told reporters.

"But a breast cancer patient, as we have heard, can have a cell that is much more like a lung cancer patient, genetically, than another breast [cancer](#)."

Diefenbach also pointed out that "most of these patients received drugs that were already (US Food and Drug Administration) FDA-approved or in advanced clinical trials, so people did not have to go out and reinvent the wheel to treat these patients in a completely new way."

The field of [precision medicine](#) has grown immensely since the study began, said Tsimberidou, recalling that back in 2007, "we tested for no more than one to two genes.

"Now patients are being tested for hundreds of actionable genes, amplifications and mutations, as well as for immune markers," she said.

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