



Take That, Lung Cancer!

Breakthroughs in screening and treatment are giving us powerful new ways to fight back.

BY KATHERINE HOBSON

Doctors used to have to tell people with lung cancer that they didn't have many options. But though the disease still takes the lives of more Americans than any other form of cancer, advances in treatment and screening are starting to improve the outlook—and laying the groundwork for more progress, says J. Leonard Lichtenfeld, MD, interim chief medical officer of the American Cancer Society. Experts are learning more every day, and that's translating to better care. Says Jyoti Patel, MD, director of thoracic oncology at the University of Chicago Comprehensive Cancer Center, "I now treat almost every patient differently than I would have just five years ago." Here, three key developments.

What's new:

Targeted therapies that match a drug to a tumor's cancer-causing mutation, in the same way you find the right key for a lock.

As we increasingly understand the genetics of tumors, we're finding more drugs to tackle the specific DNA flaw fueling an individual tumor's growth, says Roy S. Herbst, MD, PhD, chief of medical oncology at Yale Cancer Center. Before the mid-2000s, people with non-small cell lung cancer (NSCLC)—the most common form—were treated with generic chemotherapy; now there are potential targeted treatment options for about 20 percent of this group. Patients diagnosed

with NSCLC should ask their oncologist about having their tumor analyzed for targetable mutations, says Jennifer C. King, PhD, senior director of science and research at GO₂ Foundation for Lung Cancer.

Up ahead: There are even more targeted medications in the development pipeline, and some early study data suggest that the KRAS mutation, previously thought to be untreatable, can be successfully targeted. That would be tremendous news, since KRAS is mutated in about a quarter of NSCLC cases.

Keep in mind: Targeted drugs can extend life, sometimes for years, but can't permanently stop the disease. Not everyone responds to targeted therapies, and even when they do, other mutations usually begin to stoke the tumor's growth, causing a recurrence. But researchers are developing drugs to aim at those secondary mutations, says Patel, as well as combinations that could bring better results.

What's new:

Immunotherapy treatments that coax the body into treating cancer like an invader.

"Instead of taking direct aim at the cancer, this approach activates the immune system to fight it off," says King. An innovative class of drugs counteracts the cancer's ability to tamp down the body's immune response. A significant number of these so-called checkpoint inhibitors, some in combination with chemo, have now been approved for NSCLC and for small cell lung cancer.

Up ahead: Recent statistics show that about 23 percent of patients with advanced NSCLC (most cases of NSCLC are still caught late) who hadn't previously been treated with chemo but took the drug Keytruda (generic name: pembrolizumab) were still alive after five years. CAR T-cell therapy, another type of immunotherapy that has shown

high remission rates in blood cancer, is also being studied as a possible treatment for solid tumors, including lung cancer.

Keep in mind: Side effects can include potentially serious organ inflammation. And checkpoint inhibitors don't work for every patient, says Patel. Clinical trials are under way to better understand who will respond well and who will need to try another approach.

What's new:

Screening those at risk for lung cancer.

In 2011, the results of a more than 53,000-patient trial that looked at using low-dose spiral CT scans to screen older people and current heavy smokers—at least a pack a day for 30 years or the equivalent—showed that it reduced the risk of dying from the disease by 20 percent. The American Cancer Society recommends that current and former heavy smokers between ages 55 and 74 be screened at a reputable facility that does a high volume of scans after talking to their doctor about the benefits, limitations, and drawbacks of screening. (The 2011 research trial showed that there are those who have serious complications after invasive follow-up tests—including some who didn't actually have lung cancer, says Otis Brawley, MD, professor of oncology and epidemiology at Johns Hopkins University.)

Up ahead: Researchers are trying to improve the accuracy of spiral CT scans, in part by using artificial intelligence to better avoid false positives. In the interest of making follow-up less invasive, they're also pursuing the use of liquid biopsies (perhaps paired with CT screening), which can be conducted like a routine blood draw.

Keep in mind: These encouraging efforts are "not ready for prime time," says Brawley. Still, he predicts we'll be discussing commercially available liquid biopsies within five to ten years. Hope is on the horizon.