

# Cancer deaths decline in U.S., with advances in prevention, detection and treatment

February 4 2020, by Jonathan M. Gerber

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The American Cancer Society recently reported a drop in the overall cancer death rate in the U.S., with an [overall 29% decline](#) in cancer deaths from 1991 to 2017.

This resulted in 2.9 million fewer deaths over this span.

This decline was mainly attributable to progress in the four most common cancers: lung, colorectal, breast and [prostate cancer](#). This included a [record decline of 2.2%](#) in the last year of the report (2016-2017), led by a particularly steep recent drop in [lung cancer](#). And, an article published Jan. 29 in the *New England Journal of Medicine* found that [screening current and former heavy smokers](#) with a low-dose CT scan is helping to detect the disease earlier, which is contributing to lower mortality.

I am the [chief of hematology/oncology and medical director](#) of the Cancer Center at the University of Massachusetts Medical School and UMass Memorial Health Care. I take care of patients with cancer, with particular expertise in leukemia and related diseases. The steady decline in cancer deaths is quite encouraging, particularly in lung cancer—which provides a great example of how public health campaigns can change the course of a disease.

## **Lung cancer deaths drop significantly**

A number of factors have contributed to the reduction in lung cancer deaths, according to the report. Prevention has had a profound impact in reducing lung cancer over the past 25-plus years, primarily through smoking prevention and cessation programs. Smoking among adults is at an all-time low in the U.S., [at 13.7%](#). Tobacco is a risk factor for most cancers, and this is particularly true for lung cancer, where smoking is the single greatest cause.

Improved [radon detection and mitigation](#) has also helped, as radon exposure represents the [second most preventable cause](#) of lung cancer.

The advent of [low-dose computer tomography \(CT\) screening](#) for high-risk

patients—current and former heavy smokers—has also played a critical role. Early detection by CT has found lung cancers at a still curable stage, leading to at least a 20% decrease in death rates.

Advances in treatment have accounted for the remainder of progress in lung cancer. The introduction of new drugs, including immunotherapy—which won the [2018 Nobel in Medicine and Physiology](#) for its ability to harness the power of the immune system to kill [cancer cells](#)—provides hope for previously untreatable patients.

Despite these successes, lung cancer is still the leading cause of cancer death, with [228,820 new cases and 135,720 deaths](#) predicted for 2020 in the U.S.

## **Has progress stalled in the other common cancers?**

The gains in treating [breast, prostate and colorectal cancer](#) have slowed a bit over the past decade. However, to put this in perspective, more deaths are predicted in the U.S. this year from lung cancer than from these other three cancers combined.

Breast, prostate and colorectal cancers have also all benefited from [longstanding screening programs and earlier therapeutic successes](#), thus setting a higher bar for further improvement compared to lung cancer.

Some of the stalled progress may also reflect rising rates of [obesity](#), which represents a risk factor for death from each of these cancers.

Last, [immunotherapy has not yet realized the same gains](#) in these cancers, as in [lung](#) and others.

That said, these data extend only up to 2017; so more recent breakthroughs are not yet reflected in the report.

## Dramatic breakthroughs

Some groundbreaking advances have yielded great successes in selected cancers, with the hope that such treatments may be more broadly applicable. Immunotherapy has proven highly successful [in melanoma](#). Some may recall the treatment of former [President Jimmy Carter with pembrolizumab](#), an immunotherapeutic drug.

This breakthrough, along with the introduction of drugs that specifically target cancer cells to kill them or at least slow their growth, or what scientists call molecular inhibitors, has led to the most pronounced reduction in cancer death rates for melanoma since 2013. These same principles have since been applied with some degree of success to a variety of other cancers. Indeed, this very strategy has been responsible for the some of the [recent success with lung cancer](#).

Even more impressively, a specific class of drugs called [tyrosine kinase inhibitors](#) dramatically changed the course of chronic myeloid leukemia (CML) over the past two decades. These drugs shut off a key signaling pathway that the CML cells depend upon for their growth and survival, thus converting CML from a universally fatal disease to one with which most patients will live a near normal lifespan. Targeted inhibitors have also revolutionized the treatment and prognosis of chronic lymphocytic leukemia and a number of other blood cancers.

In addition, the past quarter century has seen tremendous advances in the treatment of pediatric acute lymphocytic leukemia—the most common form of childhood cancer, with cure rates now [approaching 90%](#). Another type of leukemia, [acute promyelocytic leukemia](#), also now has cure rates in excess of 80%, thanks to the introduction of [all-trans retinoic acid](#) (an active form of Vitamin A) and the subsequent addition of arsenic over the past several decades.

One of the most exciting advances has been another form of immunotherapy – [chimeric antigen receptor \(CAR\) T cells](#) – which have produced extraordinary results in some of the most challenging blood cancers. These genetically re-engineered immune cells are reprogrammed to seek out and destroy cancer cells with remarkable efficiency. This highly promising therapy is now FDA-approved for some types of leukemia and lymphoma; it is also now being explored in many other types of cancer, including solid tumors.

## Putting it all in perspective

These remarkable advances in cancer prevention, detection and treatment provide great hope. In fact, it is important to note that the ACS data extend only through 2017, so many recent breakthroughs are not yet reflected in the report.

That said, there is still much work to be done, and funding support for ongoing research remains critical.

Improved participation in, increased availability of, and better design of clinical trials are also desperately needed to advance the field. Cancer is rapidly approaching heart disease as the number one cause of [death](#) in the U.S., and we have made far too little progress with many types of cancer.

Furthermore, access to state-of-the-art, much less cutting-edge, cancer care remains limited, with significant racial and socioeconomic disparities. This is particularly true for [developing countries](#), where many tests and therapies are prohibitively expensive and are simply not available to most citizens.

Armed with a better understanding of cancer and a host of new strategies to treat it, we oncologists are quite optimistic that the next decade will

yield impressive results in the battle against cancer. We must ensure not only continued progress, but also that these advances reach all patients, in an effort to stamp out [cancer](#) across the world.

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