

# Cancer Research and The \$90 Billion Metaphor

THERE NEVER WAS AN OFFICIAL “WAR ON CANCER.” THAT PHRASE FROM NEWS reports and debates attached itself to the U.S. program that began when President Richard Nixon signed the National Cancer Act in December 1971. The law made big promises and gave the U.S. National Cancer Institute (NCI) a token measure of independence. It also encouraged the idea that cancer could be targeted, like a trip to the moon, and cured. The law was important for research, RAND medical historian and policy analyst Richard Rettig has written: It stopped a decline in NCI’s budget.

This reversal began in Congress. Urged on by health activists such as Mary Lasker, leading Democrats in 1970 adopted curing cancer as their cause. Aware that it might become a national issue, Nixon embraced it, too. The resulting legislation raised NCI’s budget almost overnight by 23% to \$233 million; NCI’s funding has continued to climb since then to more than \$5 billion per year—although in recent years inflation has grown faster. Since the 1971 act, NCI has spent about \$90 billion on science, treatment, and prevention of cancer.

The war metaphor remains part of this legacy—and a target for skeptics. In 1986, former NCI biostatistician John Bailar stirred controversy with a bleak analysis in *The New England Journal of Medicine*, noting that cancer incidence and mortality rates hadn’t changed fundamentally in 15 years. He suggested that the nation was “losing the war against cancer.” Sweeping declarations continued. In 2003, then-NCI Director Andrew von Eschenbach set a goal of ending suffering and death from cancer “by 2015.” Such broad claims invite balloon-pricking.

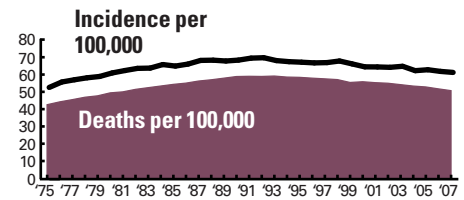
But if one sets aside the rhetoric, says Allen Lichter, executive director of the American Society of Clinical Oncology, it’s evident that the cancer campaign has changed therapy and saved lives (see indicators for the seven deadliest cancers, right). It is true that for certain cancers—of the pancreas, brain, and liver, for example—the picture has not improved. But the overall U.S. cancer mortality rate began to decline in the 1990s. And clinical care “looks nothing like it did 40 years ago,” says Lichter, who began training as an oncologist in the 1970s. He speaks of a revolution that took lessons from the 1960s advances against childhood leukemia to develop “adjuvant therapy”: the “crazy idea” that chemotherapy should be given to patients in remission to treat “presumed microscopic disease” that has spread. His list of benefits continues with breast-conserving and microscopic surgery, imaging for diagnosis and disease management, molecular analysis of tumors and targeted drug therapy, longer survival times, and much better palliative care. Looking for progress in cancer can feel “like watching the hands of a clock,” Lichter admits. “But things are definitely moving in the right direction.”

—ELIOT MARSHALL

## U.S. Cancer Trends

### Lung & Bronchus

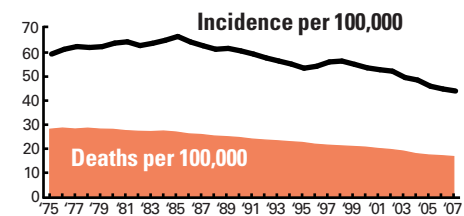
The good news: Lung cancer incidence among men began to decline in the early 1980s; the death rate, in the early 1990s. This shows the power of prevention—through a campaign to curb tobacco use. The bad news: The death rate is far higher for African-American men than for white men, and deaths among women (of all races) continued to climb until recent years.



2010 Estimated Deaths **157,300** 5-Year Mortality Trend **-1.6%**

### Colon & Rectum

The U.S. National Cancer Institute (NCI) spotlighted declining colorectal cancer trends in its 2010 *Annual Report to the Nation on the Status of Cancer*. Improved diet and screening with colonoscopy, among other early-detection techniques, are helping to control the second-deadliest cancer. NCI’s modeling predicts that overall mortality could drop 50% by 2020.



2010 Estimated Deaths **51,370** 5-Year Mortality Trend **-3.0%**

SOURCE FOR CANCER STATISTICS: NCI SURVEILLANCE RESEARCH PROGRAM; PHOTOS (LEFT TO RIGHT): LINDA BARTLETT/NCI; BILL BRANSON/NCI; NCI

## 40 Years of the War on Cancer

1971

President Richard Nixon signs the National Cancer Act promoting the National Cancer Institute.



1973

NCI launches Surveillance Epidemiology and End Results program to collect U.S. cancer data.

1978

Clinical testing begins of interferon- $\alpha$ , the first biological cancer therapy.

FDA approves tamoxifen to prevent breast cancer recurrence.



1979

Researchers discover p53, the mutated gene most often seen in tumors.

1980

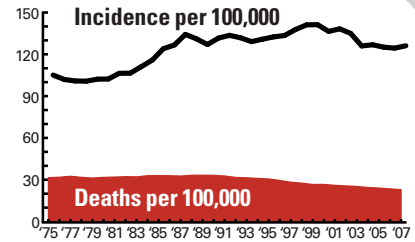
Robert Gallo and others isolate human T-cell lymphotropic virus-1, a cause of cancer.



### Breast (female)

Efforts to detect and treat invasive breast cancer partly explain why incidence rose dramatically in the 1980s, reaching a peak for all races in 1999. Death rates from breast cancer have been declining steadily since 1989–90, although 5-year survival continues to be far higher for whites than African Americans.

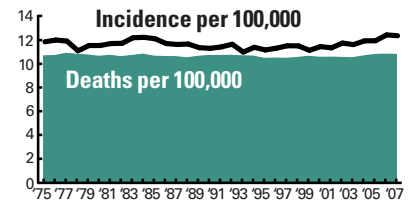
2010  
Estimated  
Deaths **39,840**



### Pancreas

In part because it is difficult to detect early, pancreatic cancer remains the fourth-deadliest cancer, and incidence and mortality have hardly budged. The average patient diagnosed with advanced disease will live only 6 months.

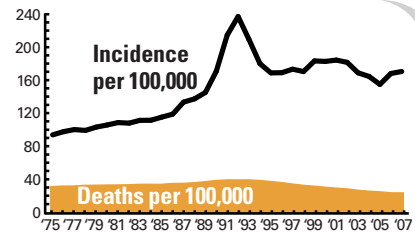
2010  
Estimated  
Deaths **36,800**



### Prostate

The incidence of prostate cancer, the second most common cancer in men, spiked in the early 1990s after regulators approved the prostate-specific antigen (PSA) screening test. Most men treated after a PSA test had nonlethal tumors.

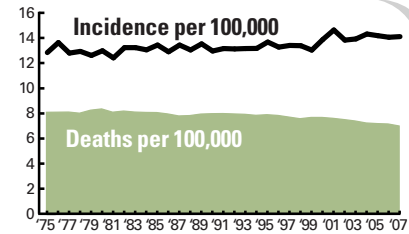
2010  
Estimated  
Deaths **32,050**



### Leukemia

Death rates for the four main types of leukemia have slowly declined, thanks largely to treatments that combine chemotherapy drugs. The survival rate is now about 80% for childhood acute lymphoblastic leukemia.

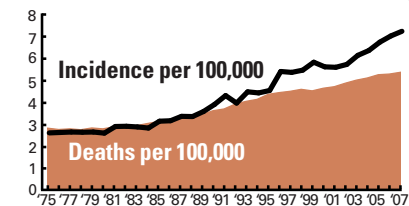
2010  
Estimated  
Deaths **21,840**



### Liver

Mortality and incidence for liver and bile duct cancers have risen steadily, linked to infections with hepatitis B and C, which are top risk factors, along with alcohol abuse. Because tumors usually cannot be removed with surgery, post-diagnosis survival is brief.

2010  
Estimated  
Deaths **18,910**



SOURCE FOR CANCER STATISTICS: NCI SURVEILLANCE RESEARCH PROGRAM; PHOTOS (LEFT TO RIGHT): ISTOCKPHOTO; THINKSTOCK; NCI; PAUL SAKUMA/AP

1981

First cancer-prevention vaccine introduced—against human hepatitis B virus.

1983

Researchers create severe combined immunodeficient mice, a model for cancer research.

1985

Randomized trial shows that lumpectomy plus radiation are as effective as mastectomy for breast cancer.



1986

Biostatistician John Bailar writes in *The New England Journal of Medicine*, "We are losing the war against cancer."

1989

Nobel Prize for discovering the first proto-oncogene (Src) awarded to Harold Varmus and Michael Bishop.



# Science

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