

Prevention and Screening Drive Drop in Cancer Deaths

Between 1975 and 2020, almost 6 million deaths from common cancers were averted through a combination of prevention, screening and improved treatments.

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At a Glance

- Most deaths avoided from common cancers between 1975 and 2020 could be traced to prevention and screening efforts.
- Improved treatments, however, accounted for most of the reduction in deaths from breast cancer.
- Understanding which strategies have been most effective in reducing cancer deaths can help guide their future use nationwide.

Over the last five decades, the number of deaths from many cancer types has dropped substantially in the U.S. A range of factors have played a role in this decrease. These include better treatments, prevention efforts such as smoking cessation, and nationwide screening campaigns to catch cancers—or precancerous growths—early.

It hasn't been clear how much each of these factors has contributed to the overall drop in deaths observed since 1975. Understanding the largest contributors could help focus further research and promotion of the most effective strategies.

A research team led by Drs. Katrina Goddard and Philip Castle from NIH set out to better understand the contributions of prevention, screening, and treatment to the observed drop in cancer mortality. They used models developed by the Cancer Intervention and Surveillance Modeling Network (CISNET) through 2020.

The models examined deaths from five of the most common types of cancer: breast, cervical, colorectal, lung, and prostate cancer. They projected how cancer mortality rates changed under four different scenarios. These scenarios were: no advances in prevention, screening, or treatment; prevention and screening only; treatment advances only; and advances in prevention,

screening, and treatment. Results were published on December 5, 2024, in [JAMA Oncology](#).

The researchers estimated that, between 1975 and 2020, almost 6 million deaths from these cancers were averted through a combination of prevention, screening, and improved treatments. Together, prevention and screening averted about 4.75 million, or 80%, of the deaths.

The contributions of prevention and screening differed between cancer types. For example, 98% of lung cancer deaths were averted by efforts to help people stop smoking. Nearly all deaths averted from cervical cancer were by screening and the removal of pre-cancerous growths. In contrast, only 25% of breast cancer deaths averted were due to regular mammography. Rather, improved treatments were responsible for most of these averted deaths.

“Although many people may believe that treatment advances are the major driver of reductions in mortality from these five cancers combined, the surprise here is how much prevention and screening contribute to reductions in mortality,” Goddard says. “Eight out of 10 deaths from these five cancers that were averted over the past 45 years were due to advances in prevention and screening.”

“The impact of these interventions cannot be understated because they not only saved lives, but they also kept healthy people healthy,” Castle notes. He adds, “The success of these interventions also emphasizes the need for continued research to discover ways to prevent and screen for other cancers.”

More recent prevention and screening strategies, such as lung cancer screening and HPV vaccination to prevent cervical and other HPV-related cancers, were not in wide use during the study period and could further reduce cancer death rates.

The study did not address the potential harms of interventions, such as false-positive results and overdiagnosis during screening. It also didn’t measure other outcomes, such as quality of life. Further work will be needed to fine-tune and personalize screening recommendations.

This [research summary](#) was published by the National Institutes of Health on January 14, 2025.