

Cancer vaccines: Part of the equation for future cancer care

It's known as the [second-leading cause of death](#): cancer. Whether it's a personal experience, loved one or a friend, everyone has been impacted by it. The American Cancer Society projects more than 2.1 million cases of cancer and roughly 626,000 deaths in the United States in 2026.

While cancer deaths have decreased over the years certain types of cancers are affecting younger people more, now threatening the progress made by strategies like early detection and a decrease in smoking.

A familiar yet, to some, unexpected treatment may now offer hope for multiple high-risk cancers: [Vaccines](#), an idea that stems back to the 1890s.

The goal is to find out which molecules are going to predict an immune response against the cancer, says Robert McWilliams, MD, deputy director of OSF HealthCare Cancer Institute. "The more we do that, the more we're going to see this (work). It'd be wonderful to have a greater impact of cancer vaccines."

"What we're seeing now is really the culmination of a number of technologies improving. One is understanding the immune system and deciding when's the right timing, and when do vaccines make sense."

Dr. McWilliams adds. "Using mRNA vaccines; that technology is really applicable to many different scenarios. So, we can create a molecule or a vaccine that's targeted towards a specific finding. For instance, one of the more common instances that has been done lately is KRAS. It's an oncogene, which means it's mutated and has turned "on" in cancer cells in a large number of different cancers. You can actually design a vaccine against that."

This year alone, multiple positive results have been released from different vaccines targeting certain types of cancer like melanoma, colorectal and pancreatic.

Melanoma vaccine in late-stage trial

Merck and Moderna have [reported](#) promising results from trials of an individualized mRNA cancer vaccine designed for people with melanoma. When combined with Merck's immunotherapy drug Keytruda (pembrolizumab), the vaccine has been associated with a lower risk of melanoma returning or spreading compared with Keytruda alone. The personalized vaccine remains under investigation, with a Phase 3 trial evaluating the combination in people with high-risk melanoma following surgery.

Pancreatic cancer vaccine seeing positive results

Additionally, there's some hope in the fight against an extremely deadly cancer: pancreatic. The American Association for Cancer Research (AACR) [reported](#) in July 2026 that a vaccine targeting common KRAS mutations was found to be safe. The vaccine also produced a KRAS-targeted T-cell response in 90% of participants who were considered at elevated risk for pancreatic ductal adenocarcinoma (PDAC), one of the most common types of pancreatic cancer.

"These are patients who are out of surgery and receive a type of therapy for a bit of time. In the meantime, they're taking that person's tumor in the lab, sequencing it and doing predictive modeling about what proteins are needed to generate to develop the vaccine," Dr. McWilliams says. "Then you're able to inject the vaccine back into patients, in combination with immunotherapy, trying to augment the maximum impact of that vaccine in that patient."

PDAC is often found at later stages and has a minimal five-year survival rate, the AACR says.

There are certain cancer vaccine trials that are specifically for individuals at high-risk of developing a cancer, particularly pancreatic cancer, where that person can get enrolled in a trial to try and lower their risk of developing the cancer.

It's not a proven method yet, but the data that has been released has been very intriguing, Dr. McWilliams says.

"Cancer is a genetic disease. The DNA has changed, and that's how the cell becomes a cancer cell," Dr. McWilliams explains. "What's been new has been the rapid ability to assess genetic sequencing. It's become very easy for us to get genetic testing done."

Colorectal cancer vaccine providing hope for those with Lynch Syndrome

As the population of those under 50 who have been diagnosed with [colorectal cancer](#) increases, a new vaccine might provide hope for certain people as well. Someone with Lynch Syndrome, an inherited genetic condition which is often tied to colorectal cancer, that increases cancer risk may have access to a vaccine soon. Early research is also [exploring](#) whether vaccines could help prevent cancer in people with Lynch syndrome.

In a phase 1 study, 45 people with Lynch syndrome received an experimental vaccine developed by Swiss biotechnology company Nouscom. The vaccine is designed to train the immune system to recognize abnormal cells that can develop into cancer. When participants underwent colonoscopies about a year later, researchers found fewer precancerous growths and no advanced polyps.

Could cancer vaccines play a role in Peoria?

"We are in conversations with pharmaceutical companies to bring some of those studies to Peoria. We're also in conversations with an academic partner who is working on this, to be able to be part of their initial process to design the clinical trials," Dr. McWilliams says. "So, absolutely. It's an exciting opportunity and exactly what we built the breakthrough treatment center to do, is bring those exciting, novel agents to Peoria."

According to the Cancer Research Institute, the FDA has approved five vaccines that either help prevent cancer or are used in cancer treatment. Two are preventive vaccines: those targeting human papillomavirus (HPV) and hepatitis B, both of which can help reduce the risk of cancers associated with these infections. The other three are therapeutic vaccines used in specific cancer settings: sipuleucel-T (Provenge®) for metastatic prostate cancer; Bacillus Calmette-Guérin (BCG) for early-stage bladder cancer and talimogene laherparepvec (T-VEC; Imlygic®) for unresectable melanoma.