

Screenings are largely responsible for a one-third drop in cases of **colorectal cancer**—and even better approaches are on the way

THE CANCER YOU CAN BEAT

by Dr. Francis S. Collins

THE INCIDENCE OF colorectal cancer fell by more than one-third in the United States between 1985 and 2005—mostly because more people were screened for the disease.

Yet colorectal cancer remains the second-leading cause of cancer deaths, claiming the lives of nearly 50,000 Americans each year. The vast majority of these cases could be averted or caught in an early, curable stage if people simply started getting regular screenings when they hit the age of 50 (or possibly earlier if a family member has had the disease). Indeed, about 45% of Americans 50 or older have never been screened for colorectal cancer.

Many experts consider a colonoscopy to be the most sensitive and specific cancer-screening tool available. In the procedure, doctors guide an endoscope (a long, flexible tube equipped with a tiny camera) through the entire colon. This enables them to detect and remove polyps and lesions before they turn cancerous.

Another screening mainstay is the fecal occult blood test, in which stool samples are examined for microscopic specks of blood. (If you get this test, make sure it's the more accurate version that uses multiple stool samples collected at home, not at the doctor's office.) A third option is the sigmoidoscopy, in which an endoscope is used in only the lower part of the colon.

CBS Evening News anchor Katie Couric became an advocate for screening after colon cancer claimed the life of her husband Jay

in 1998. "Having a colonoscopy is really no big deal," she says. "No one should die because of embarrassment. You don't want to find yourself saying, 'If only.'"

Even as public-health experts strive to get more Americans screened by current methods, the search continues for even better ways to screen or treat this cancer. Here's a look at new approaches being developed by researchers funded by the National Institutes of Health (NIH).

■ Virtual colonoscopy

This relatively new procedure is attracting attention because it doesn't require sedation and is less invasive than the standard optical colonoscopy. President Barack Obama recently chose to undergo the procedure. But the virtual scan—which uses X-rays and computer-based virtual-reality technology to produce 3-D images of the colon's lining—also has some drawbacks. It isn't covered by many insurance plans, includes radiation exposure, requires the same colon-cleansing prep as a standard colonoscopy, and is more likely to miss small polyps and lesions. In addition, the virtual scan must be followed by a standard colonoscopy if any abnormalities are detected.

■ Nanotechnology

Current imaging methods detect cancers once they are large enough to be visible. But imagine how great it would be if doctors could

Scientists are developing techniques to detect—and block—cancerous changes to cells even at the molecular level.

spot a single cancerous or even pre-cancerous cell. This may soon be possible through nanotechnology, the branch of engineering that deals with the manipulation of individual atoms and molecules.

The NIH-funded Center for Cancer Nanotechnology Excellence of Stanford University has developed a technique that attaches gold nanoparticles to molecules that have a special affinity for cancer cells. When these gold nanoparticles are delivered into the colon via a standard endoscope, they brightly illuminate any cancer cells—and allow much earlier opportunities for eradication. Researchers hope to begin a clinical trial to test the safety of this approach in humans by early next year.

■ Genomic profiling

Today, thanks to advances in surgery and combination chemotherapy, the five-year survival rate for colorectal cancer that has spread to nearby lymph nodes stands at 30%. That's up from less than 10% in the

continued



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1980s. But scientists continue to search for new strategies against this formidable foe. Many are focusing on genomic research.

Cancer occurs when changes in a cell's genome, or DNA instruction manual, trigger uncontrolled growth. New drugs are targeting such molecular changes. Some of the drugs block the effects of a hormone-like factor that promotes cancer-cell growth; another inhibits the formation of blood vessels that feed the tumor.

We've also learned that different cancers have different patterns of genomic changes—and patterns differ even among those with the same type of cancer. So researchers are devising ways to tailor treatment plans to each patient's tumor. These approaches should prove more effective and less toxic than the current one-size-fits-all approach to chemotherapy. For example, testing the status of a gene called "KRAS" can tell doctors whether a colorectal patient is likely to respond to some of these new drugs.

Another new test, Oncotype DX, uses genomic information to assess the risk of recurrence in patients whose cancer hasn't yet spread to lymph nodes. The test helps doctors identify which patients will require close monitoring following surgery.

This is just a glimpse of what is to come. In the meantime, however, the best weapon against colorectal cancer is regular screening. If you're over 50, schedule an appointment now. 

Dr. Francis S. Collins is director of the National Institutes of Health.