

New diagnostic methods open brave front in battle on colon cancer

Colorectal cancer kills about 56,000 people a year in the United States, making it second only to lung cancer

The five most deadly cancers

Estimated deaths in 1998

LUNG AND BRONCHIAL	93,100 Men, 67,000 Women
COLORECTAL	27,900 Men, 28,600 Women
BREAST	43,500 Women, 400 Men
PROSTATE	39,200
PANCREATIC	14,100 Men, 14,900 Women

Sources: National Cancer Institute's Surveillance, Epidemiology and End Results Program

By Carl Neiburger
Mercury News Staff Writer

New diagnostic techniques and a nationwide campaign to increase their use are aimed at putting a dent in one of the deadliest cancers.

Colorectal cancer kills about 56,000 people a year in the United States, making it second only to lung cancer, which takes about 160,000 lives annually.

About one in 18 Americans gets colorectal cancer at some time in his or her life. About one in 40 dies of it.

But few realize how common colorectal cancer is, said Carolyn Beeker, a behavioral scientist with the Centers for Disease Control in

Atlanta. "It's simply not on America's radar screen," she said.

She and others with government agencies and groups such as the American Cancer Society are trying to change that.

The reason? Recent studies have proved that diagnostic tests can catch colon cancer in its earliest — and least dangerous — phases. The tests can even detect precursors before they develop.

Watching for symptoms is not enough. By the time a person notices intestinal bleeding, digestive discomfort or other signs, the disease is typically well-advanced.

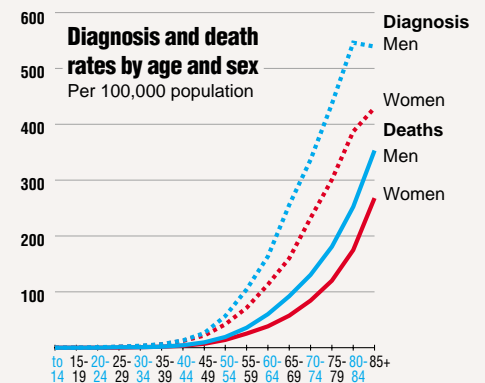
The major risk group for colon

cancer is adults over age 50, who account for 94 percent of all colon cancer victims.

The most common tests are a blood-stool analysis and a clinical exam called a sigmoidoscopy, in which a flexible probe is inserted into the rectum.

Now the challenge is to get people to take the tests, which means changing public attitudes about colorectal cancer. "It's a disease that people feel uncomfortable talking about," Beeker said.

But not too many years ago, breast cancer wasn't discussed in public, either, she said. Here's a detailed look at colon cancer.



How cancer screening can save lives

Colon cancer develops slowly, often taking a decade or more to produce noticeable symptoms. By the time that happens, the disease is well-advanced. Here's a look

at the disease and the screening techniques that are used to detect colon cancer or precursor growths early, when survival odds are greatest.

What is cancer?

Cancers are caused by glitches in DNA — the genetic material that tells cells what to do. This can happen only when cells divide, when they copy their DNA.

Glitches in DNA copying can result from a genetic problem or from mistakes that occur as the body ages. Scientists theorize that cancer may be more common among older people because their cells have undergone more divisions — allowing more opportunity for mistakes to occur — and because their immune systems are weaker and less able to detect and eliminate cancers.

Researchers believe that it takes more than a single cell-division mistake to cause cancer. Rather, a series of events, which takes years or even decades, turns healthy cells into cancer.

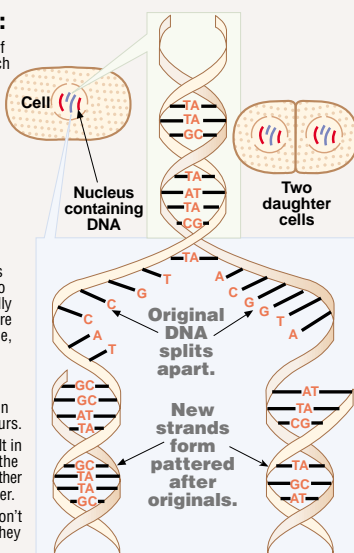
How cells divide normally:

- 1 Chromosomes — paired strands of DNA — split into two halves, and each half is replicated.
- 2 The cell edits the replicated DNA to make sure there are no mistakes. If an irreparable mistake is discovered, the cell kills itself.
- 3 The cell then splits in two, each new cell with a full complement of DNA.

Cell division begins with "stem" cells — cells that are constantly dividing to generate new tissue. New cells usually divide 25 to 50 subsequent times before forming mature tissue. As they divide, they become more specialized.

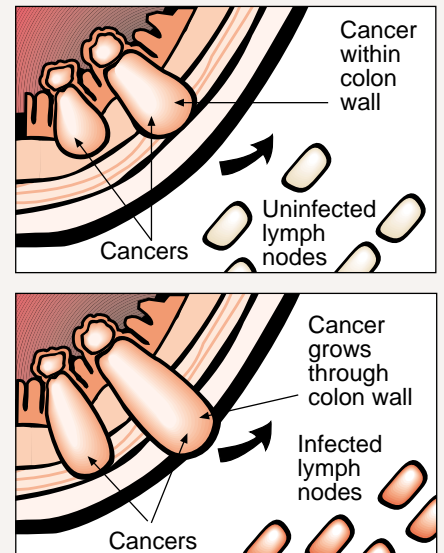
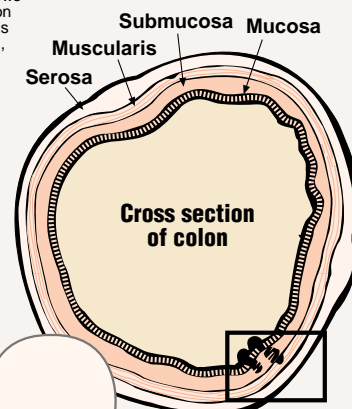
What can go wrong:

- A cell can fail to detect a replication error or fail to kill itself if an error occurs.
- The initial error usually won't result in a cancer. But it may disable some of the cell's safety mechanisms, leading to further glitches that eventually result in cancer.
- Cancer cells, unlike normal cells, don't know when to stop dividing, nor do they mature into specialized cells.



How colorectal cancers form

- Tumors typically start with growths inside the intestinal wall called polyps. These are at first benign but can evolve into cancer. Polyps can be removed quickly and painlessly during medical examinations.
- If a polyp becomes cancerous, it can grow in all directions, projecting into the colon and also growing through the colon wall.
- If a tumor grows through the colon wall, cancer cells can break loose, enter nearby lymph glands, and from there spread to other organs — especially the liver.
- Colorectal cancer develops slowly. Tumors can develop for up to a decade with no symptoms.



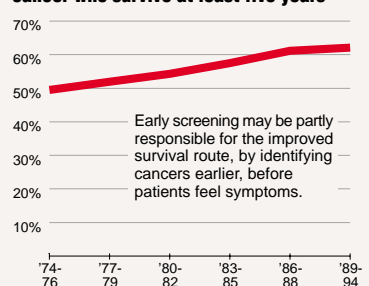
Survival times increase; death rates decline

... But more can be done

A survey conducted in 1997 and released this March found:

- Only 30 percent of Americans — 35 percent of Californians — over age 50 have had sigmoidoscopies in the last five years.
- Among Americans without health insurance, only 16 percent have had sigmoidoscopies.

Percent of people diagnosed with colorectal cancer who survive at least five years



Early screening may be partly responsible for the improved survival rate, by identifying cancers earlier, before patients feel symptoms.

Five-year survival odds based on stage on first diagnosis:

Localized	Small tumors that have not grown into the intestinal wall.	91.4%
Regional	Cancer has grown through colon wall; may have spread to lymph nodes.	66.1%
Distant	Cancer has spread to other organs, such as the liver.	8.5%

Screening techniques for early detection

Two limited, low-tech tests are being joined by higher-tech, more reliable techniques. A newer technique that may become as reliable and less uncomfortable is being developed.

Low-tech approaches:

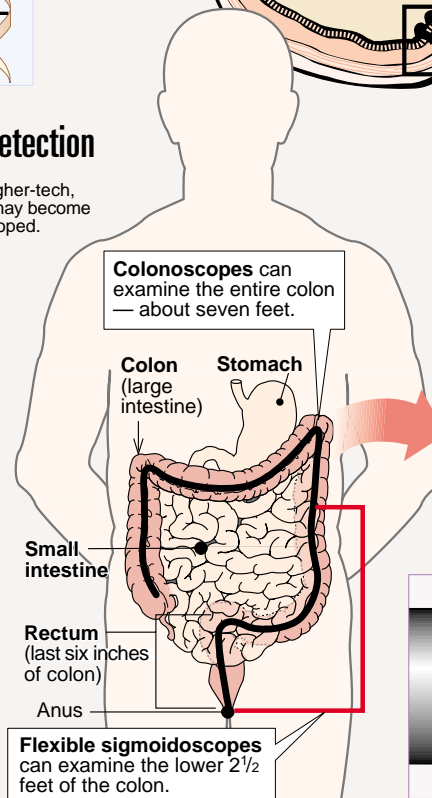
- **Digital rectal exam:** A physician wearing a glove inserts a finger into the rectum to feel for abnormalities. This can only detect growths very near the anus. This test is recommended to be given annually.
- **Blood stool tests:** Stool from three successive days is tested for blood. This is the least expensive screening method but misses cancers that don't bleed. This test is recommended to be given annually.

Higher-tech techniques:

- **Sigmoidoscopy:** A doctor inserts a flexible tube connected to a television monitor to examine the lower third of the colon, known as the sigmoid colon because it is S-shaped. Studies indicate that this test may identify up to 70 percent of colorectal cancers. If no problems are found, this exam should be given every five years.
- **Colonoscopy:** Like a sigmoidoscopy but uses a longer tube to examine the entire colon. If no problems are found, this test should be given once a decade.

The future:

- **Virtual sigmoidoscopy:** Computer axial tomography or "CAT" scans can create computer images of the intestinal tract without a tube being inserted. Researchers are trying to make this technique accurate enough to use it to check for polyps and cancers without inserting an uncomfortable tube.

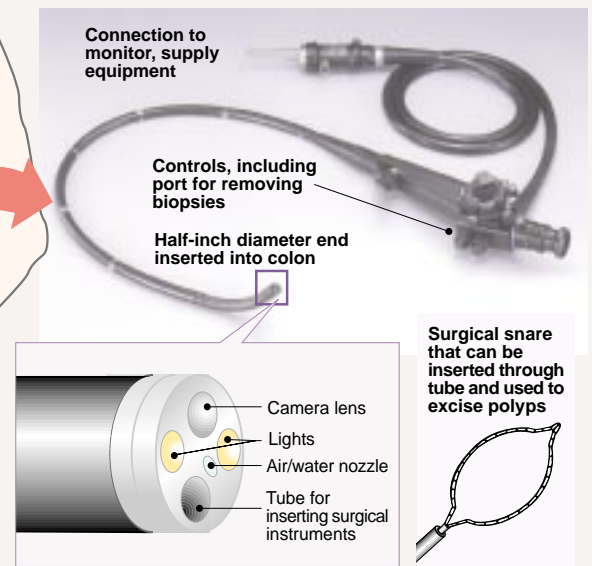


Colonoscopes can examine the entire colon — about seven feet.

Flexible sigmoidoscopes can examine the lower 2½ feet of the colon.

Colonoscope and sigmoidoscope

These flexible tubes can be inserted into the colon to let doctors inspect the insides and, if necessary, remove minor growths such as polyps.



Sources: Barbara Conley, oncologist, National Cancer Institute; Robin Justice, biologist, Claremont McKenna College; American Cancer Society; National Cancer Institute Surveillance, Epidemiology and End Results (SEER) Program; American Society of Clinical Oncology; Olympus Optical Co.; "Everyone's Guide to Cancer Therapy"

REPORTING BY CARL NEIBURGER, GRAPHIC BY WES KILLINGBECK — MERCURY NEWS