

Colorectal Cancer Screening Risk Factors, Guidelines and Challenges

Gulshan Parasher, MD FACP FACG
Professor of Medicine
Chief Division of Gastroenterology & Hepatology
University of New Mexico Health Sciences Center

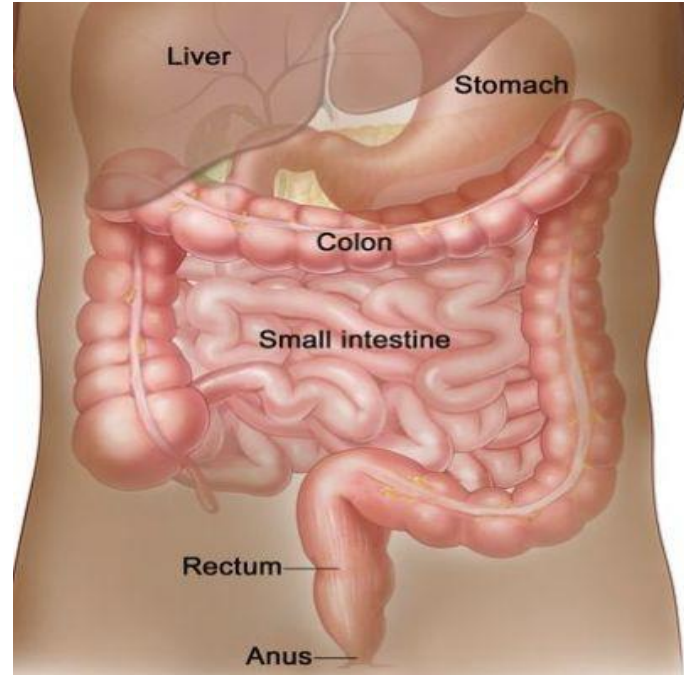
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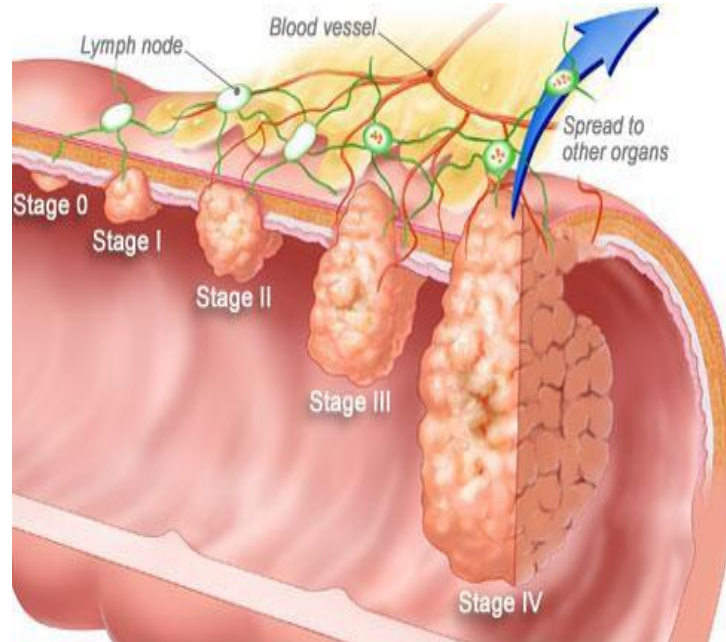
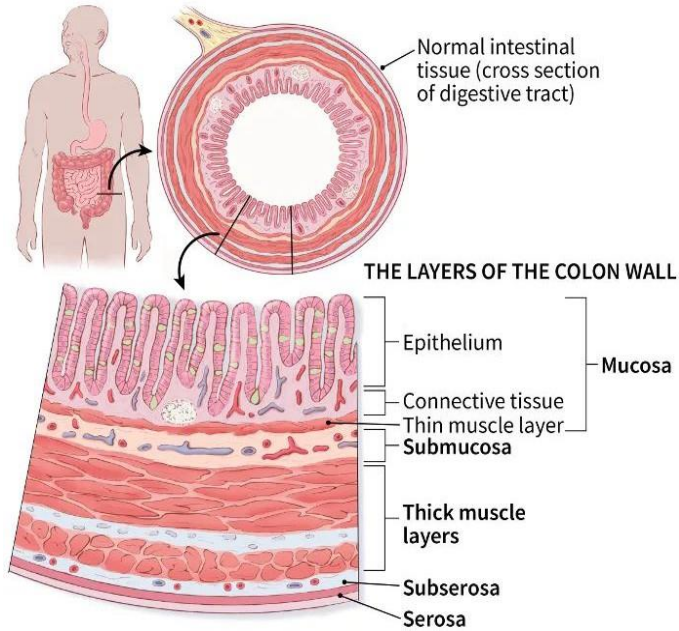
Learning Objectives

- Understand colorectal cancer risk factor and disease development
- Understand colorectal cancer burden and how screening can prevent colorectal cancer
- Improve knowledge of colorectal cancer screening guidelines and barriers to screening

What is CRC?



Colorectal Cancer



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How Does Colorectal Cancer start

- Most colorectal cancers start as a growth on the inner lining of the colon or rectum. These growths are called **polyps**.
- **Adenomatous polyps (adenomas):** These polyps sometimes change into cancer. Adenomas are called **precancerous**
- **Hyperplastic polyps and inflammatory polyps:** These polyps are more common, but in general they are not precancerous
- **Sessile serrated polyps (SSP) and traditional serrated adenomas (TSA):** These polyps are often treated like adenomas because they have a higher risk of changing into cancer.

How Common is Colorectal Cancer?

- 2nd most common cause of cancer deaths when numbers for men and women are combined
- 3rd leading cause of cancer-related deaths in men
- 4th leading cause in women
- Expected to cause about **53,010** deaths during 2024

How Common is Colorectal Cancer?

- Number of colorectal cancers in the United States for 2024 are:
 - About **106,590** new cases of colon cancer (54,210 in men and 52,380 in women)
 - About **46,220** new cases of rectal cancer (27,330 in men and 18,890 in women)
- Lifetime risk of developing colorectal cancer is about **1 in 23** for men and **1 in 25** for women
- The death rate from colorectal cancer has been dropping in older adults for several decades

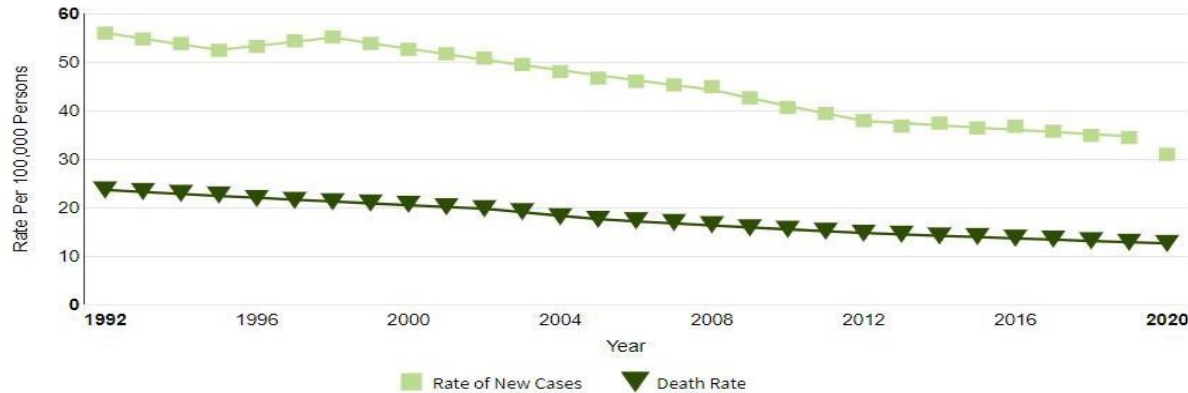
Colorectal Cancer Survival

Estimated New Cases in 2023	153,020
% of All New Cancer Cases	7.8%

Estimated Deaths in 2023	52,550
% of All Cancer Deaths	8.6%

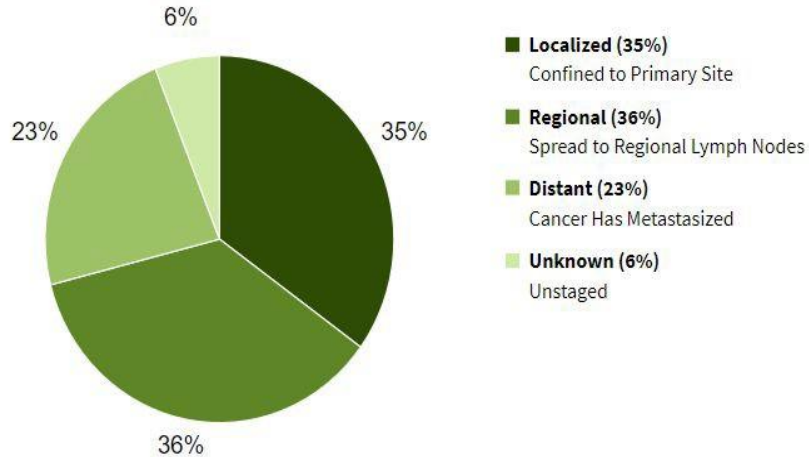
5-Year
Relative Survival
65.0%

2013–2019

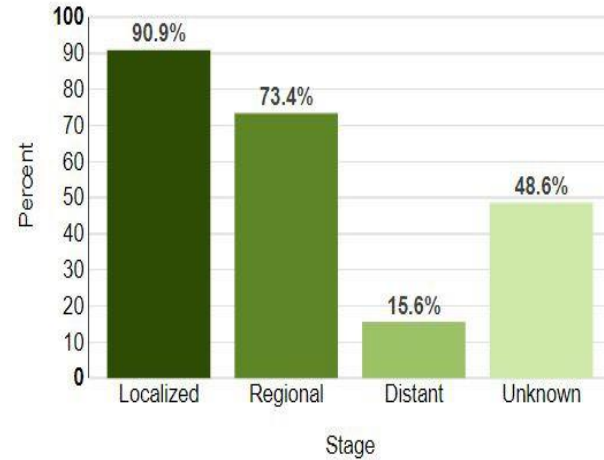


Colorectal Cancer Survival

Percent of Cases by Stage



5-Year Relative Survival



Colorectal cancer survival

5-year relative survival rates for colon cancer

SEER stage	5-year relative survival rate
Localized	91%
Regional	72%
Distant	13%
All SEER stages combined	63%

5-year relative survival rates for rectal cancer

SEER stage	5-year relative survival rate
Localized	90%
Regional	74%
Distant	17%
All SEER stages combined	68%

Modifiable Risk Factors for Colorectal Cancer

- **Obesity** -higher risk and mortality
- **Diabetes mellitus, Type 2**-more likely & poor prog
- **Long term diet high in red meats** increased risk
- **Smoking** - increased risk and more likely to die
- **Alcohol use** - Linked with moderate to heavy ETOH use
- **Low blood levels of vitamin D**

Non Modifiable risk factor for colorectal cancer

- **Age**- risk increases with age
- **Race**- highest in native Indians & Alaskan natives
- **Sex**- men more likely to die than women
- **Cholecystectomy** - mildly higher risk for colon cancer
- **Personal history of colon cancer**
- **Personal history of IBD** (Ulcerative Colitis or Crohn's disease)
- **Personal history of abdomen/pelvic radiation**

Non Modifiable Risk Factors

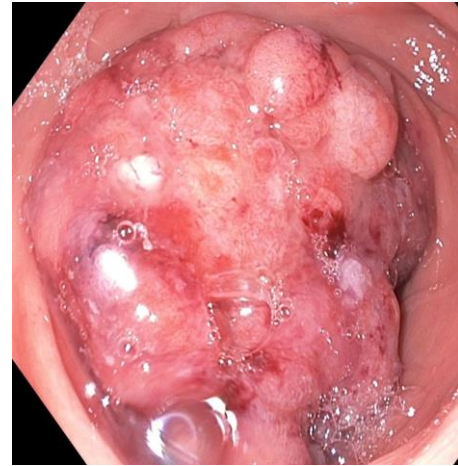
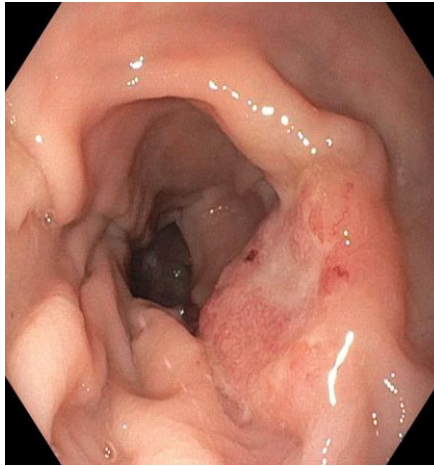
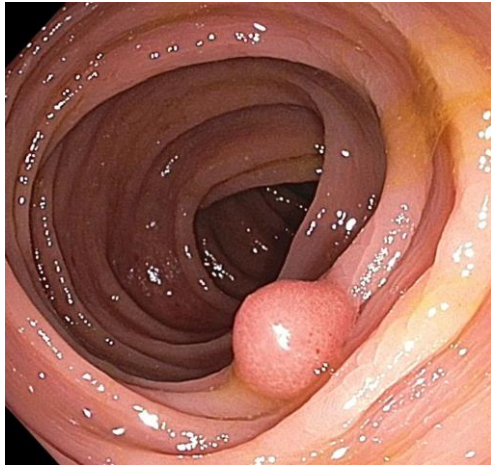
Family history of colorectal cancer or adenomatous polyps

- Cancers can “run in the family” because of inherited genes, shared environmental factors, or some combination
- 1 in 3 people who develop colorectal cancer have other family members who have had it
- People with a history of colorectal cancer in a first-degree relative are at increased risk
- Higher Risk
 - Younger than age 60 or
 - More than one first-degree relative is affected

Non Modifiable Risk Factors

- **Having an inherited syndrome** -5% have inherited gene mutation
- **Lynch syndrome (hereditary non-polyposis colon cancer or HNPCC)**- Accounts for 2-4%, DNA mismatch repair
- **Familial adenomatous polyposis (FAP)**- mutations in the *APC* gene that a person inherits from their parents.
- **Peutz-Jeghers syndrome (PJS)**: mutations in the *STK11 (LKB1)* gene.
- **MUTYH-associated polyposis (MAP)**: mutations in the *MUTYH* gene
- **Cystic fibrosis (CF)**: CF is an inherited condition in which the cells in some body organs make mucus that is thicker and stickier than normal.

Colon Polyp and Cancer



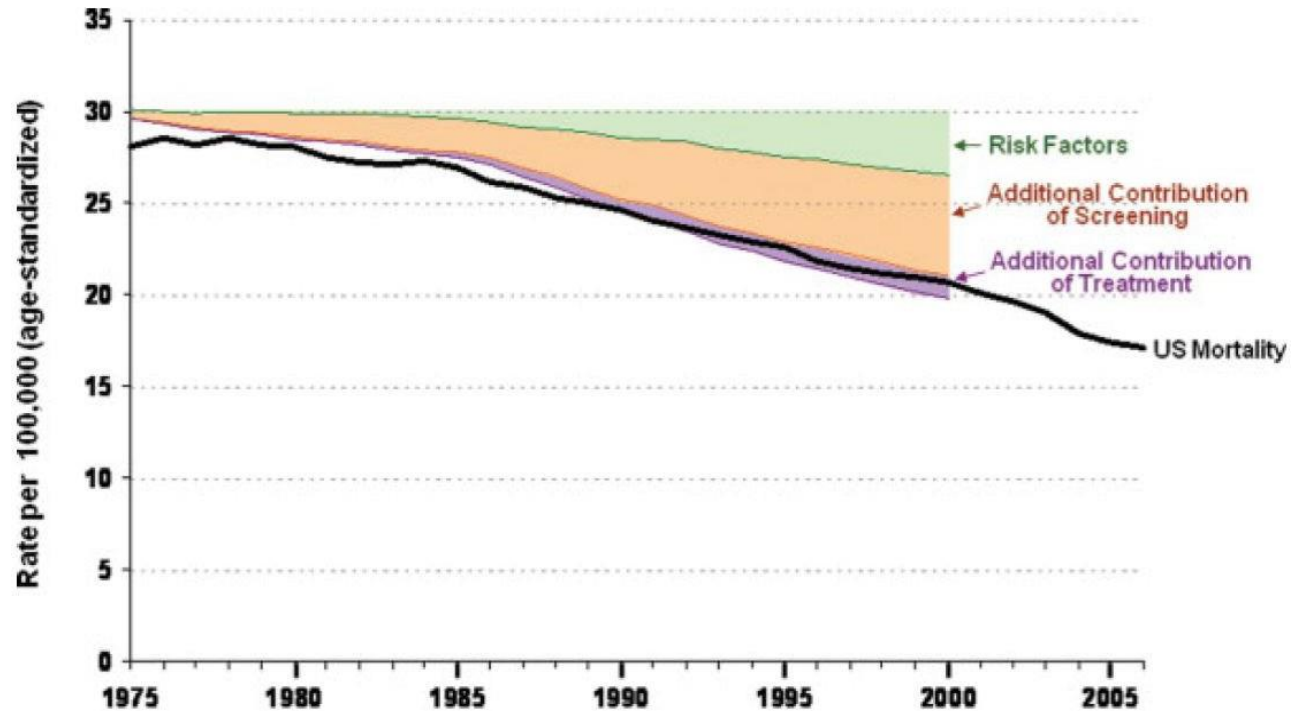
Signs and Symptoms of Colorectal Cancer

- A change in bowel habits, such as diarrhea, constipation, or narrowing of the stool
- A feeling that you need to have a bowel movement that's not relieved by having one
- Rectal bleeding with bright red blood
- Cramping or abdominal pain
- Weakness and fatigue
- Unintended weight loss
- Anemia

Why Screen for Colorectal Cancer?

- **Regular colorectal cancer screening** is one of the most powerful tools against colorectal cancer
- **Screening can often find colorectal cancer early**
- **Regular screening can even prevent colorectal cancer.** A polyp can take as many as 10 to 15 years to develop into cancer
- **When colorectal cancer is found at an early stage** the 5-year relative survival rate is about 90%. But only about 4 out of 10 colorectal cancers are found at this early stage
- Unfortunately, **about 1 in 3 people in the United States** who should get tested for colorectal cancer have never been screened.

Screening for CRC makes a difference



Stool Based Screening Tests

Test	Benefits	Limits
Fecal immunochemical test (FIT)	<ul style="list-style-type: none">No direct risk to the colonNo bowel prepNo pre-test diet or medication changes neededSampling done at homeFairly inexpensive	<ul style="list-style-type: none">Can miss many polyps and some cancersCan have false-positive test resultsNeeds to be done every yearColonoscopy will be needed if results are abnormal
Guaiac-based fecal occult blood test (gFOBT)	<ul style="list-style-type: none">No direct risk to the colonNo bowel prepSampling done at homeInexpensive	<ul style="list-style-type: none">Can miss many polyps and cancersCan have false-positive test resultsPre-test diet changes (and possibly medication changes) are neededNeeds to be done every yearColonoscopy will be needed if results are abnormal
Stool DNA test	<ul style="list-style-type: none">No direct risk to the colonNo bowel prepNo pre-test diet or medication changes neededSampling done at home	<ul style="list-style-type: none">Can miss many polyps and some cancersCan have false-positive test resultsShould be done every 3 yearsColonoscopy will be needed if results are abnormal

Key Points

Fecal screening tests

- Easy to use
- Safe
- Moderate-high sensitivity for colon cancer
- Low sensitivity for adenomatous polyp
- Ideal for patients who do not want colonoscopy, but will if stool test is abnormal

Who should NOT have fecal screening

Patients with a higher risk of CRC

- Had colon cancer
- Had adenomatous colon polyps
- Family history of colon cancer
- Have a hereditary cancer syndrome
- Have IBD

Visual Exams for Screening

Colonoscopy

Can usually look at the **entire colon**
Can biopsy and remove polyps
Done **every 10 years**
Can help find some other diseases

Full bowel prep needed
Costs more on a one-time basis than other forms of testing
Sedation is usually needed, in which case you will need someone to drive you home
You may **miss a day of work**
Small risk of **bleeding, bowel tears, or infection**

Can **miss small polyps**
Full bowel prep needed
Some **false-positive test results**
Exposure to a small amount of radiation
Can't remove polyps during testing
Colonoscopy will be needed if results are abnormal

CT colonography (virtual colonoscopy)

Fairly quick and safe
Can usually see the entire colon
Done **every 5 years**
No sedation needed

Not widely used as a screening test
Bowel prep may still be requested
Looks at only about a **third of the colon**
Can't remove all polyps
Very small risk of bleeding, infection, or bowel tear
Colonoscopy will be needed if results are abnormal

Sigmoidoscopy

Fairly quick and safe
Sedation usually not used
Done **every 5 years**

Virtual colonoscopy

Figure 14

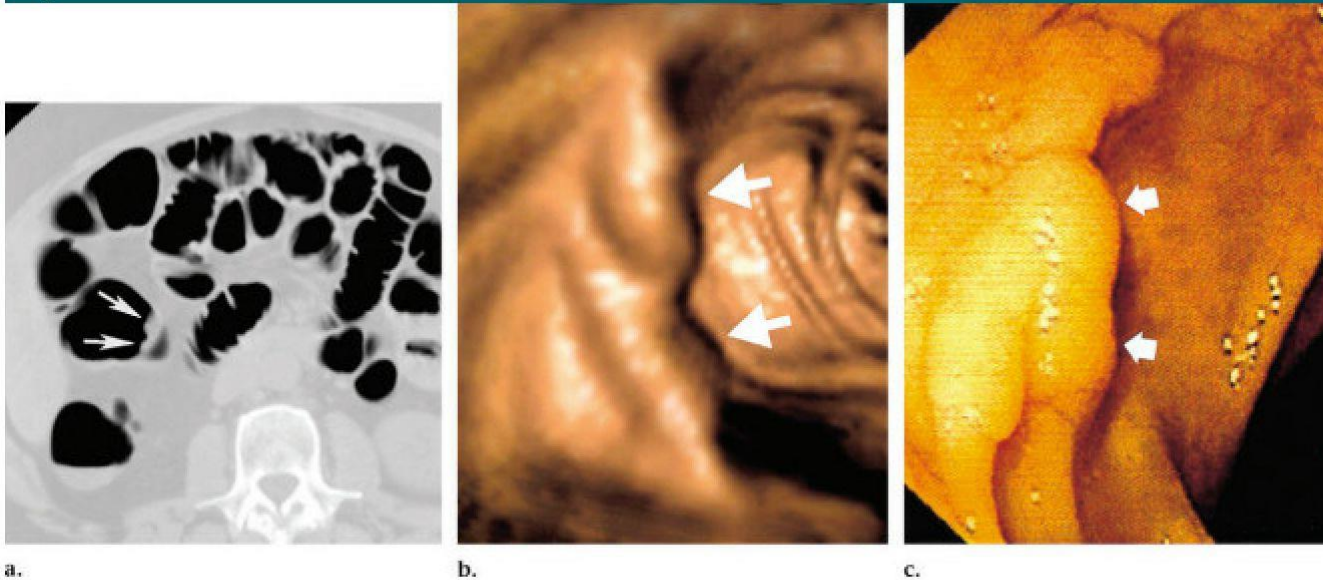


Figure 14: Large (23-mm) sessile lesion missed by many readers at CT colonography. (a) Axial image reveals only a portion of the lesion (arrows). (b) Endoluminal view better depicts overall morphology and length of the lesion (arrows). (c) Corresponding colonoscopy image correlates well with b. Arrows = lesion (images from reference 122).

Colonoscopy

- Highest sensitivity of all CRC screening tests
- Able to remove adenomatous polyps
- Most invasive CRC screening test

Colonoscopy is not perfect

- Risk of perforation
- Risk of bleeding
- Colonoscopy miss rate (Miss rate of large adenomas 2-12%)
- Cancer after Colonoscopy (0.3-0.9% within 3-5 yrs)
- Physician -dependent (Adenoma detection rate Men 30%, Women 20%)

Key points

- Colonoscopy
 - Most sensitive CRC screening test
 - Also preventive - allows removal of polyps
 - Patients avoid it
 - Most invasive screening test - more risk
 - Cost
 - Lack of availability in rural locations

USPSTF Guidelines 2021

- Screening for average-risk patients
 - Starting at **age 45 until age 75**:
 - FOBT/FIT every year
 - Cologuard every 1-3 years
 - CT colonography every 5 years
 - FS every 5 years
 - FS every 10 years if FIT done every year
 - Colonoscopy every 10 years

USPSTF Guidelines 2021

- Screening for average-risk patients
 - For age 76 until age 85:
 - Screening may be offered on a case-by-case basis depending on patient's health, prior screening history, and preferences

Multi-society guidelines

For patients with family history:

- If any first-degree relative had CRC or advanced adenomas before age 60 yr or in 2 or more relatives at any age,
 - Colonoscopy starting at age 40, or 10 years before the age of diagnosis, then every 5 years
- If the first-degree relative was age ≥ 60 yr
 - Start at age 40 and perform colonoscopy every 10 years

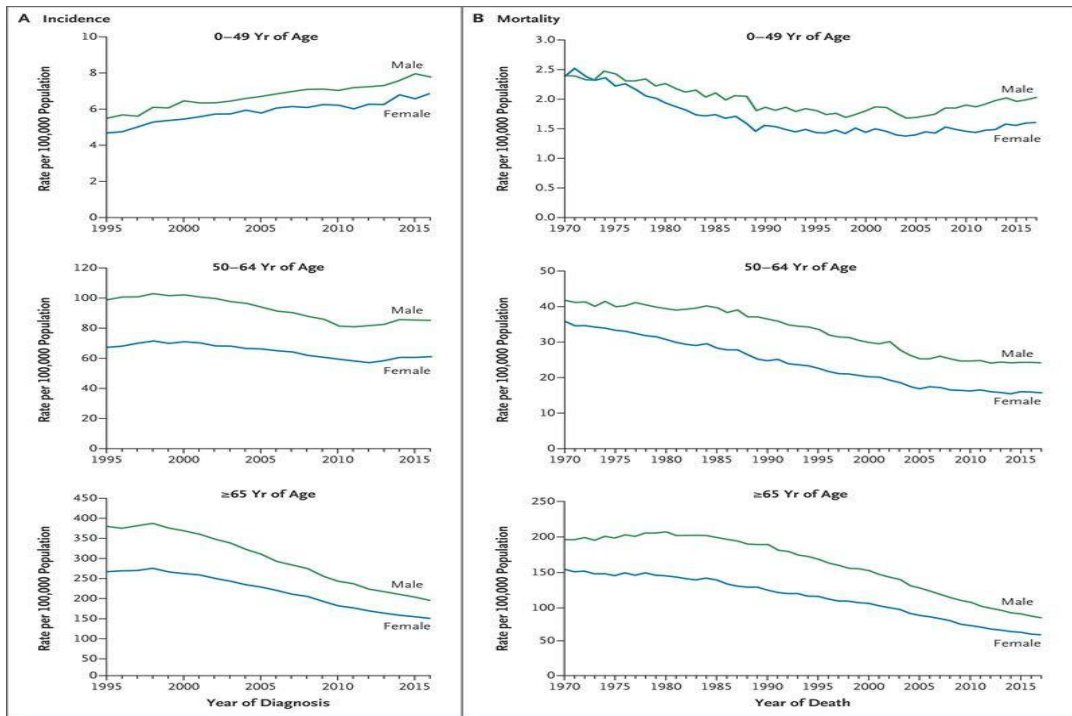
Barriers to CRC screening

- Logistics: Not understanding what to do
- Lack of time, Inconvenience, and lack of transportation
- Distasteful prolonged bowel preparation
- Embarrassing /Humiliating
- Invasive
- Painful /uncomfortable
- Cost (unaffordable copay /deductible), lack of insurance
- Taboo topic uncomfortable to discuss openly in public

CRC Among Young People

- Increasing rates of CRC among young people
- Risk of CRC increases by 1-2% annually in ages 20-49
- 14% of CRC patients are younger than 50
- 29% of rectal cancer seen in patients under 55
- In 2018, American Cancer Society recommended screening at age 45
- In 2020, USPSTF recommended screening at age 45

Early Age Onset CRC On The Rise



CRC in New Mexico

How Are We Doing?

- The rate of death from CRC among New Mexicans has declined over the past two decades.
- NM colorectal cancer death rate has been below the Healthy People 2020 goal of 14.5 per 100,000 population since 2012.
- ACS estimates for New Mexico suggest there will be **960 new cases** of invasive colorectal cancer diagnosed, and **340 deaths** attributed to colorectal cancer in 2024.
- This is an **increase of about 17%** over the 290 deaths that were expected in New Mexico in 2023.

CRC in New Mexico

American Cancer Society (ACS) estimates for New Mexico suggest there will be

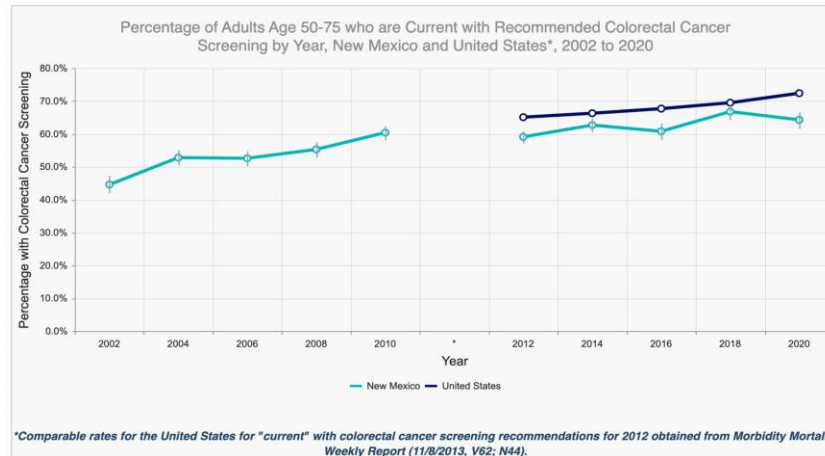
- **960** new cases of invasive colorectal cancer diagnosed
- **340** deaths attributed to colorectal cancer in 2024
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NM CRC Screening

Cancer Screening - Colorectal Cancer Screening

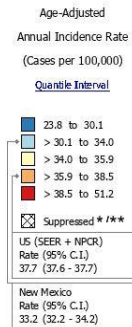
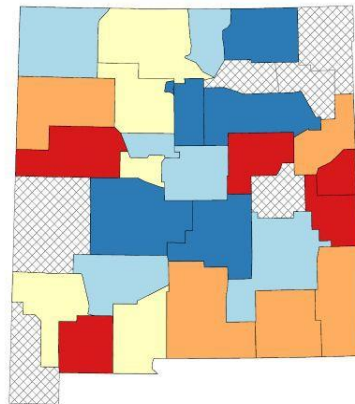
Summary Indicator Report Data View Options

Data Views:	More Information:	Related Indicator Reports:	Associated Health Topics:
Summary Report	-Choose One-	-Choose One-	-Choose One-



New Mexico CRC rates (2015-2019)

Incidence Rates[†] for New Mexico by County
Colon & Rectum, 2015 - 2019
All Races (includes Hispanic), Both Sexes, All Ages



Notes:

State Cancer Registries may provide more current or more local data.

Data presented on the State Cancer Profiles Web Site may differ from statistics reported by the State Cancer Registries ([for more information](#)).

[†] Incidence rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+). Rates are for invasive cancer only (except for bladder which is invasive and in situ) unless otherwise specified. Rates calculated using SEER*Stat. Population counts for denominators are based on Census populations as modified by NCI.

The US Population Data File is used for SEER and NPCR incidence rates.

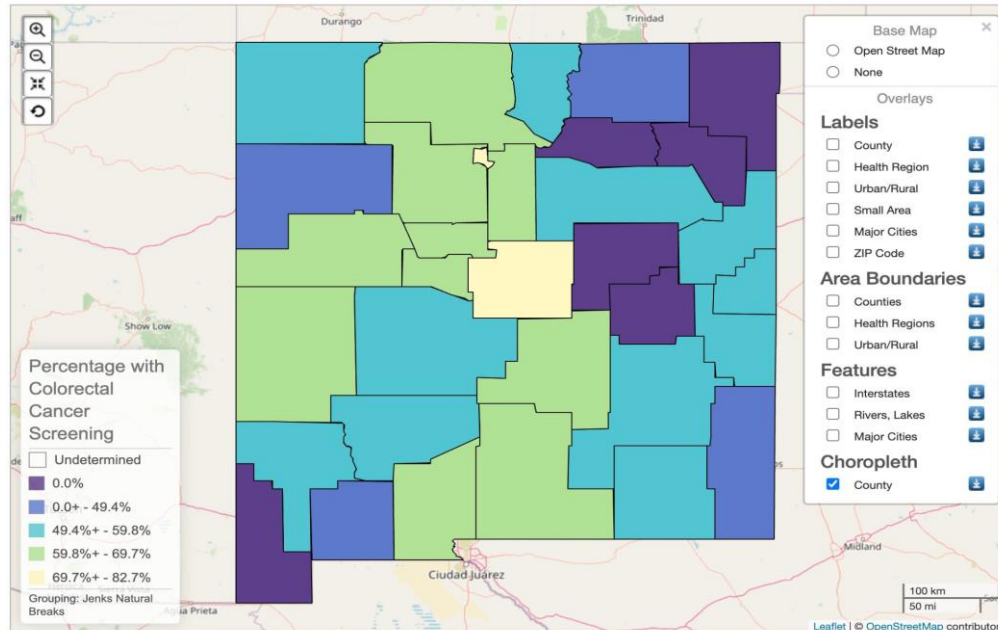
Rates are computed using cancers classified as malignant based on ICD-O-3. For more information see [malignant.html](#)

* Data have been suppressed to ensure confidentiality and stability of rate estimates. Data is currently being suppressed if there are fewer than 16 counts for the time period.

Data for the United States does not include data from Puerto Rico

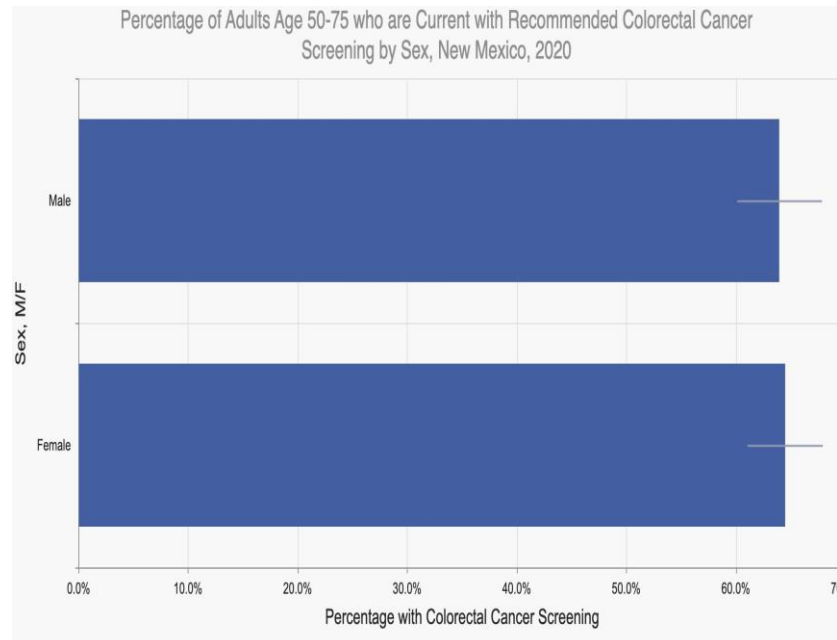
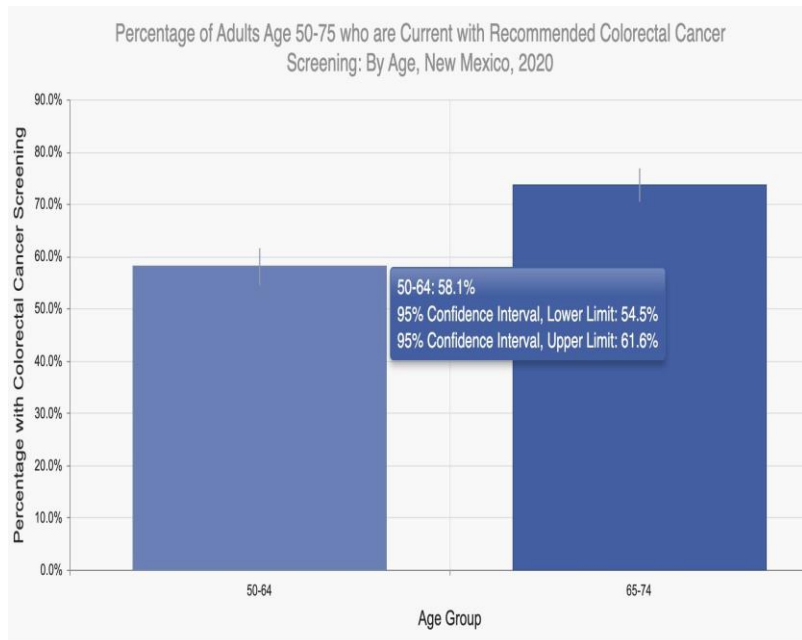
NM CRC Screening

Percentage of Adults Age 50-75 who are Current with Recommended Colorectal Cancer Screening by County, New Mexico, 2016, 2018, 2020

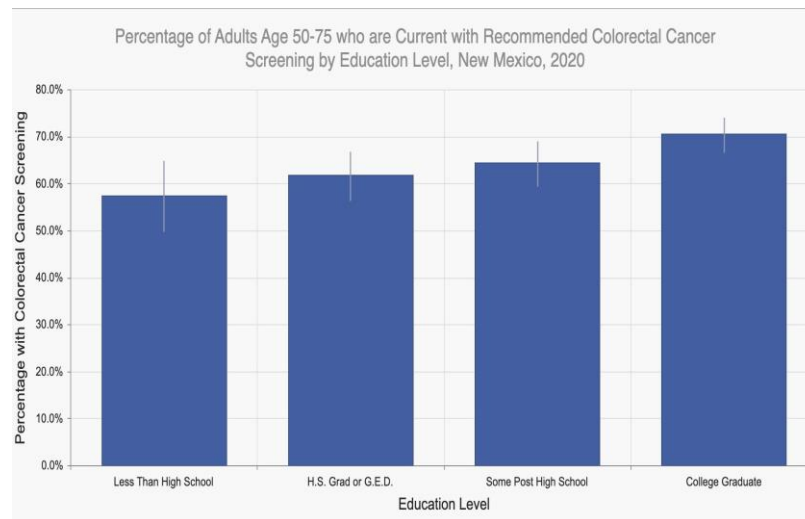
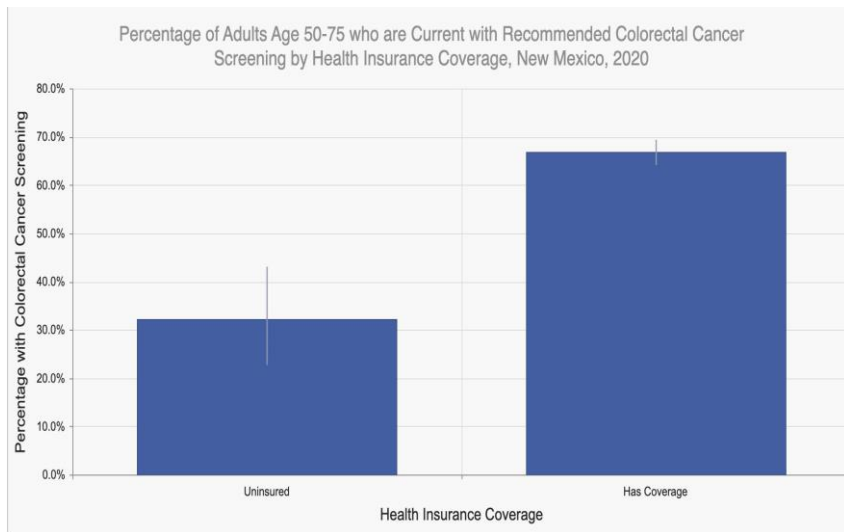


Percentage of Adults Age 50-75 who are Current with Recommended Colorectal Cancer Screening by Health Region, New Mexico, 2020

NM CRC Screening



NM CRC Screening



Improving Compliance in NM

Target patients with interventions towards a person's specific needs, concerns, emotions, and values;

1. Mailed or telephone reminders;
2. Screening by mailing stool test kits directly to patients/clinic test kits;
3. Educational interventions including programs that help patients successfully navigate the healthcare system to schedule and complete tests
4. New fecal immunochemical tests have been associated with significantly higher testing adherence- no need for dietary or medication restrictions

Improving Compliance in NM

Effective screening interventions that target providers include:

1. Utilizing clinical reminders
2. Educating providers about cancer screening options and guidelines
3. Training providers to better communicate with low literacy patients; teaching motivational interviewing
4. Implementing assessment and feedback interventions that evaluate the provider's performance in delivering or offering screening services and compare it against a goal or standard

Improving Compliance in NM

- Providers being unaware of or unconvinced by the evidence for screening or being confused by the complex guidelines
- Physicians fail to recommend screening during office visits
- Few primary care providers still perform flexible sigmoidoscopy, which limits screening options
- Behaviors that undermine the potential benefits of screening—including not automatically referring patients with abnormal stool tests for diagnostic colonoscopy and performing fecal blood tests with digital rectal examinations during an office visit

Improving Compliance in NM

Practice-level factors have been shown to positively influence colorectal cancer screening uptake:

1. Align office policies, reminder systems, communication strategies
2. Overall commitment to increasing access to screening
3. Implementing systematic strategies for identifying patients due for testing and tracking test results
4. Patients with abnormal colorectal screening tests undergo a colonoscopy.
5. Routine prevention visit or prevention clinic has been associated with increasing cancer screening.
6. Expanding the number of endoscopists available for performing screening and surveillance tests
7. Trained non-physicians to perform screening endoscopy

Conclusion: The Bottom Line

- Everyone should be screened for CRC
- Risk stratification
 - Those at risk should be encouraged to have colonoscopy
 - Fecal screening is better than no screening

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Questions