

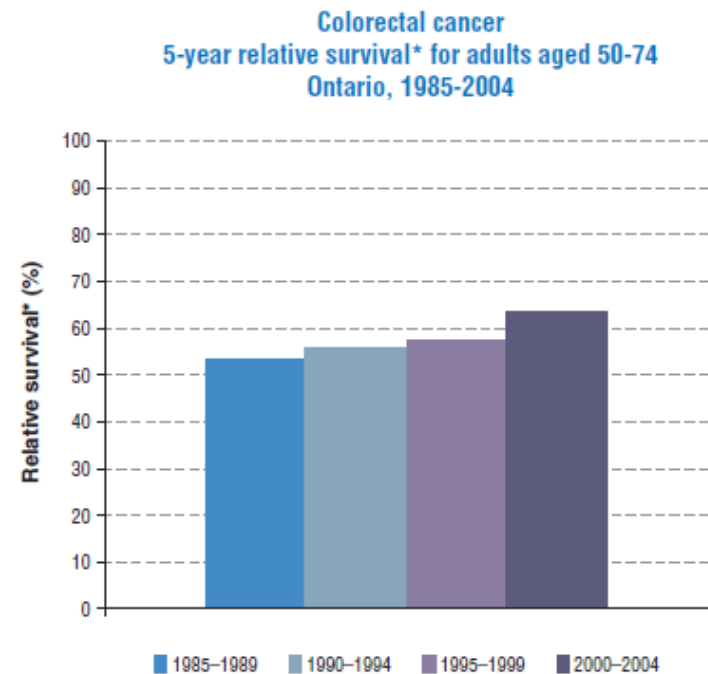


Colorectal Cancer Screening

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Colorectal Cancer Screening

- Colorectal cancer is the second leading cause of death from cancer in Ontario.
- Survival for colorectal cancer has improved, and can be further increased by screening to detect early- stage cancers.



Source: Cancer Care Ontario (Ontario Cancer Registry, 2007)

*Using Brenner's period method, which estimates survival of all cases followed up during the specified periods.

Colorectal Cancer

2007 estimates Cancer Care Ontario:

- New Cases 7800
- Deaths 3250

Colorectal Cancer Screening

- When caught early through regular screening, there is a 90 per cent chance that colorectal cancer can be cured.

Stage at diagnosis and survival from colorectal cancer

Stage at diagnosis ¹	Stage distribution Manitoba, 2005	Estimated five-year relative survival US (SEER) 1993-1997
I	20%	96%
II	26%	87%
III	31%	55%
IV	23%	5%

¹ American Joint Committee on Cancer (AJCC), AJCC Cancer Staging Manual, Sixth Edition, see www.cancerstaging.org

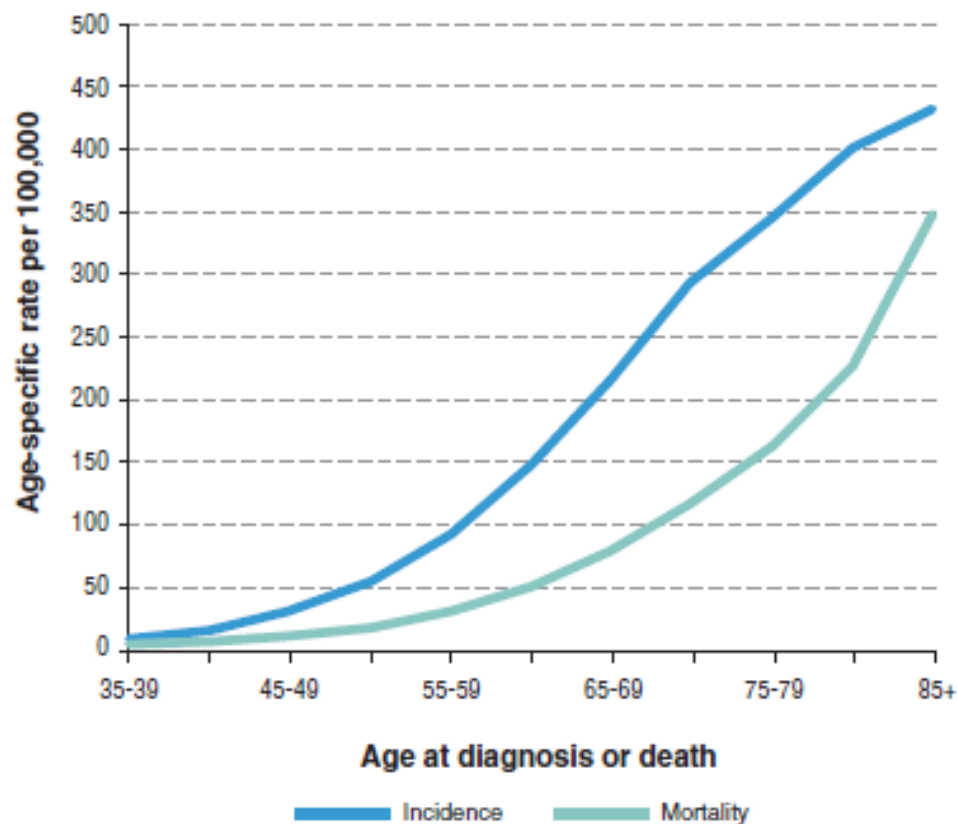
Source: 2005 Annual Statistical Report, Incidence and Mortality, Epidemiology and Cancer Registry, CancerCare Manitoba, 2005 (calculated from cases with known stage)

The Annual Report to the Nation on the Status of Cancer, 1973-1997, with a Special Section on Colorectal Cancer. Cancer 2000;88:2398-424. (Data from Surveillance, Epidemiology, and End Results (SEER) Program)

Colorectal Cancer Screening

Guidelines strongly recommend screening of all average-risk individuals beginning at the age of 50 years.

Colorectal cancer
incidence and mortality rates by age,
Ontario, 2000–2004



Goals

- Increase Awareness
- Increase Screening
- Reduce Incidence
- Reduce Mortality
- Reduce Burden
- Improve Quality of Life

Screening

- Average risk population
 - Screening should begin at age 50 years
 - Methods
 1. FOBT-annual/biennial
 2. Sigmoidoscopy – every 5 years
 3. Double contrast BE – every 5 years
 4. Colonoscopy – every 10 years
 5. CT Colonography

Polyp

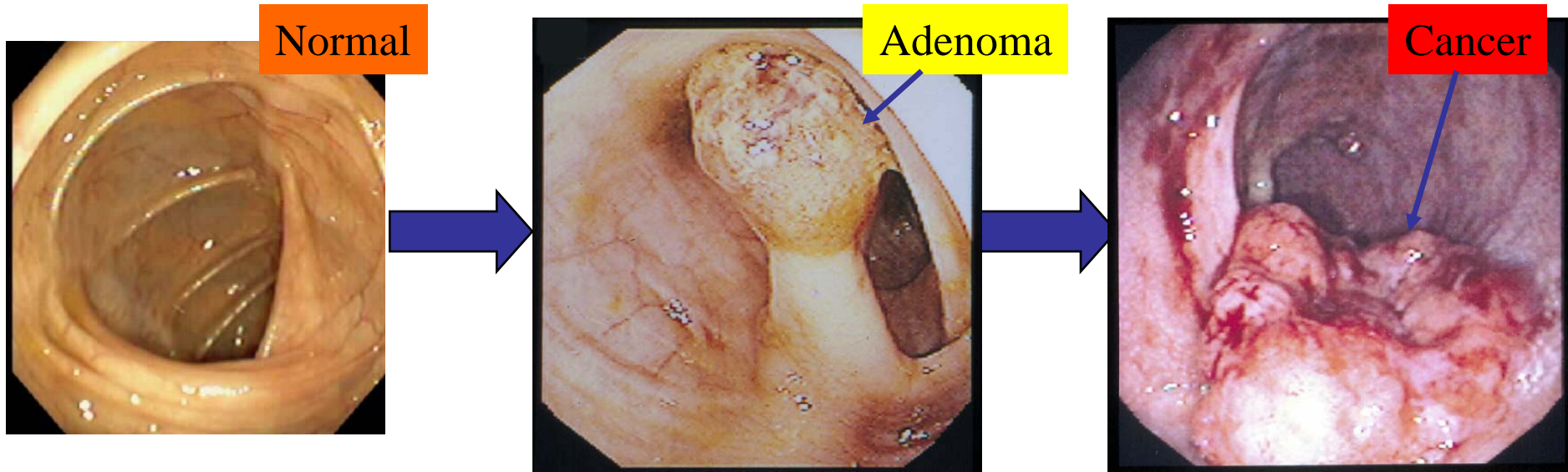


- A mass projecting into the colonic lumen
- Commonly found in Western countries – 30-40% in patients over age 60 years

Colorectal Cancer

- Most colorectal cancers are sporadic, occurring in average risk individuals
- More than 90% of CRC develop from adenomatous polyps
 - Prevalence of colonic polyps
 - 20% at age 50
 - 50% by age 75-80
 - Most asymptomatic

Adenoma to Carcinoma Pathway



APC
loss

K-ras
mutation

Chrom 18
loss

p53
loss

Normal
Epithelium

Hyper-
proliferation

Early
Adenoma

Intermediate
Adenoma

Late
Adenoma

Cancer

Screening Strategies

One-Stage Screening

Colonoscopy

Two-Stage Screening

FOBT
Flex Sig.
Virtual Colonoscopy
Stool DNA Mutations



Colonoscopy

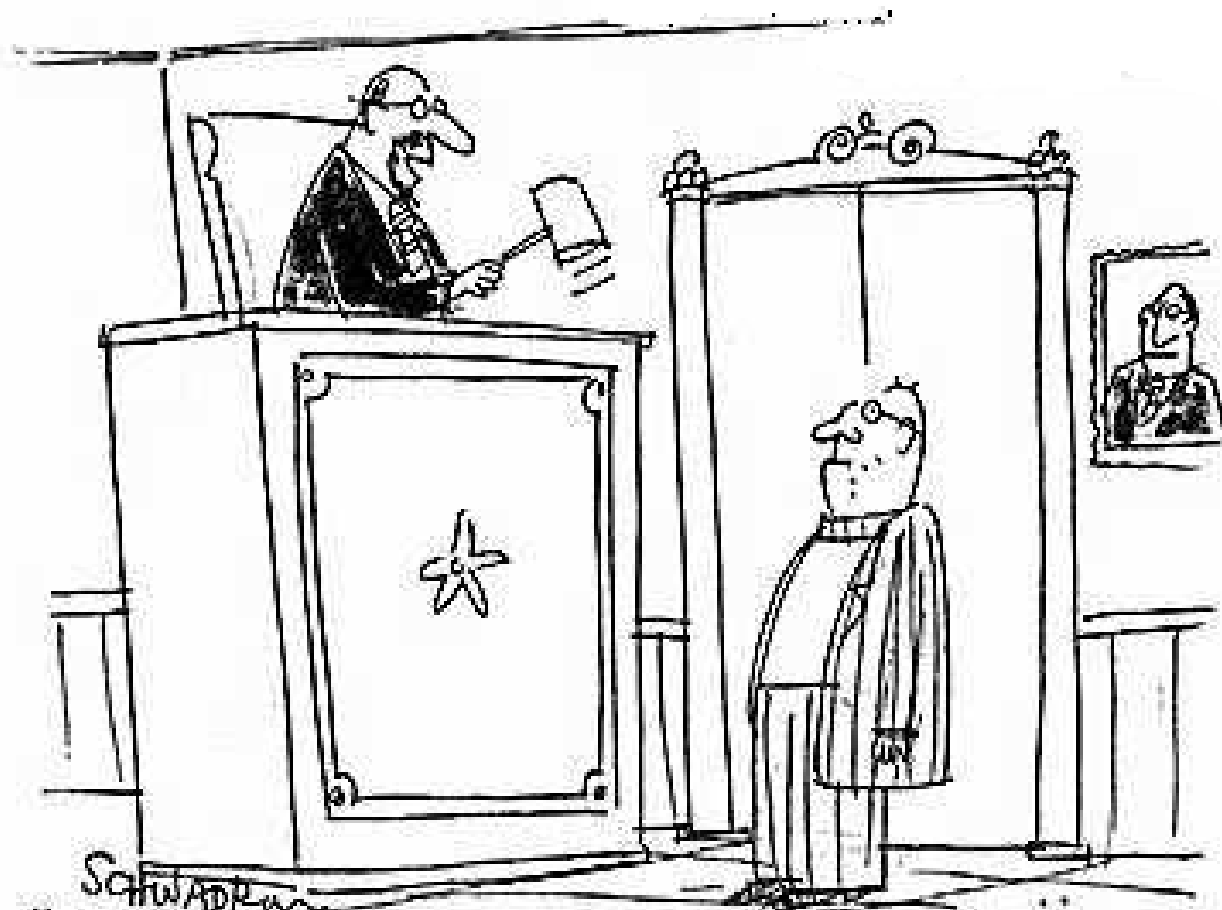
ACS-MSTF-ACR Guideline

Gastroenterology 2008; 134:1570–1595

- Distinguishes between tests designed primarily for early cancer detection (fecal blood and DNA tests) and those designed to detect both adenomas and early cancers (imaging and endoscopy)

Tests to Detect Early Colon Cancer

- gFOBT has been shown to reduce mortality from CRC by 15–33% in randomized controlled trials
 - Patients with a positive test have a 3 to 4-fold higher risk of CRC than individuals with a negative test. Therefore, colonoscopy should be performed in all patients with a positive test.
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- N Engl J Med 1993; 328:1365–1371
 - Lancet 1996; 148:1472–1477
 - Lancet 1996; 148:14667–14671)



Schwadron
"THE JAIL CELLS ARE FULL, SO I'M GOING TO LET YOU OFF WITH A COLONOSCOPY..."

Imaging

- Barium Enema:
 - poor test for important cancer precursor lesions, detecting only 50% of patients who have adenomas of more than 10 mm
 - The ACS-MSTF-ACR guideline recommends that this test should only be used in settings where no other screening test is available
 - The USPSTF does not recommend the use of barium enema.

Imaging

- CT Colonography (CTC)
- 90% of patients with polyps of at least 10 mm were identified correctly with CTC.
- The false-positive rate was 14%.
- ACS-MSTF-ACR guideline suggested that CTC was an acceptable screening test
- USPSTF felt that the evidence was insufficient for a recommendation.

CTC uncertainty

- **Interobserver variability** Gastroenterology 2006;
131:1690–1699
- May not detect patients with only flat polyps
- **Radiation exposure** N Engl J Med 2007; 357:2277–2284

CTC uncertainty

- Bowel prep is required
- Screening intervals after negative examination
- Extra-colonic findings are common (27-69%)
- Cost

Colonoscopy

- Screening colonoscopy studies have shown that 0.5–1.0% of patients will have colon cancer
- 5–10% will have advanced neoplasia
- Serious adverse event rate 0.3%

Colonoscopy Screening Surveillance

- Average Risk:
 - Every 10 years
- FMHx:
 - Every 5 years, 10 years prior to family member
- IBD: Left Colon UC Every 1-2 years after 13 years, Pancolonic Every 1-2 years after 8 years
- HNPCC:
 - Age 20-25 q1-3
- FAP:
 - Age 10-12 q 1-2 until age 35, EGD q1-3

Conclusion

- There is compelling evidence that screening average-risk individuals for CRC can reduce incidence and mortality
- Each of the current screening tests has some potential benefit if applied programmatically, but each has limitations.

Conclusion

- The ideal screening test would be noninvasive and identify high-risk individuals before they develop cancer.
- In the meantime, we have tools to prevent many cancers, and recent guidelines have suggested that patients should be preferentially offered screening that is likely to result in prevention.