

Colon Cancer Screening: What's New

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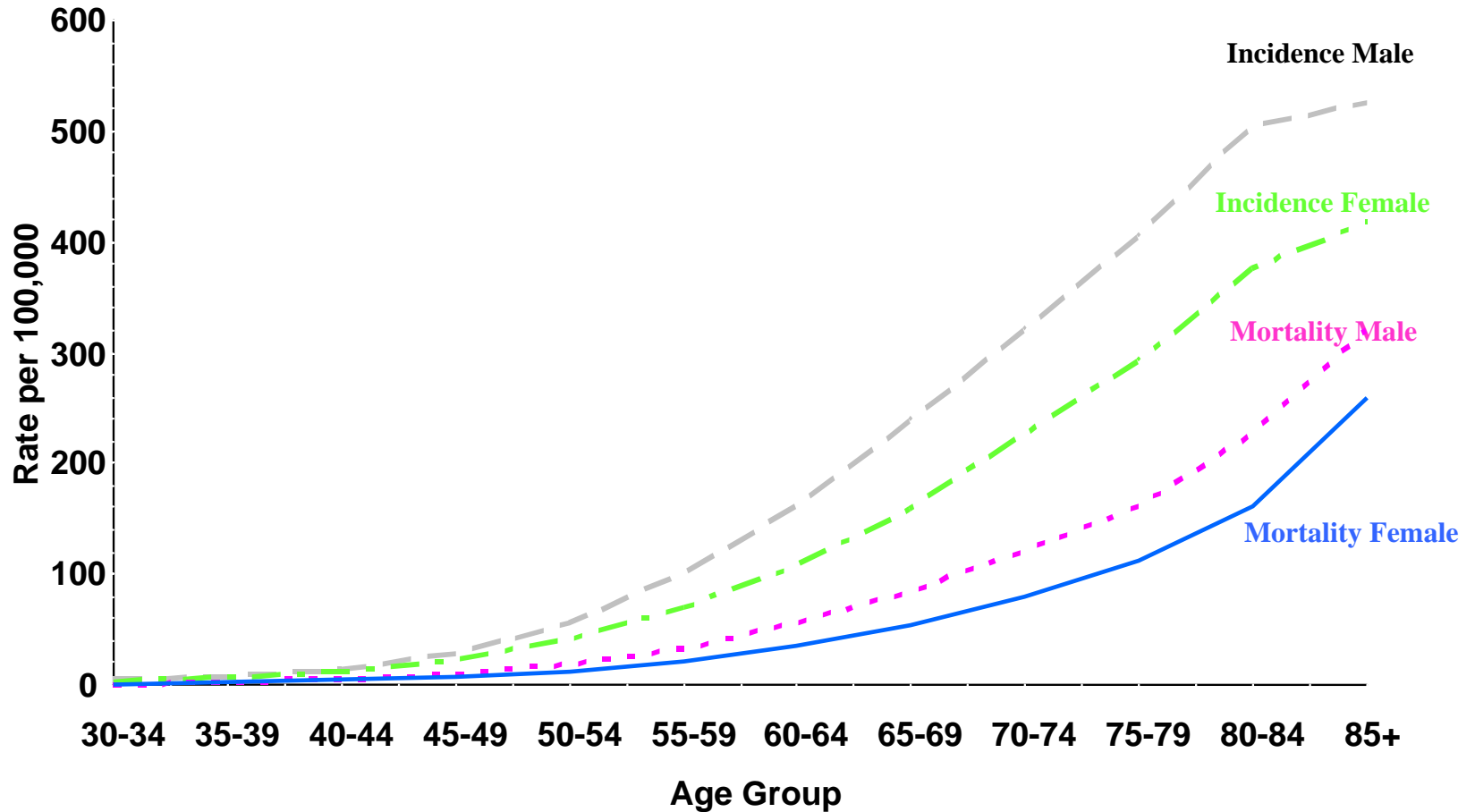
Overview

- Epidemiology and Pathogenesis of CRC
- Colon cancer screening
 - Colonoscopy, FOBT, Flexible sigmoidoscopy
 - Virtual colonoscopy
 - Stool DNA testing
- ASGE quality indicators for CRC screening
 - Non-polypoid neoplasms
 - Colonoscopy withdrawal time

Epidemiology of CRC

- 4th most common cancer in US
- 2nd leading cause of cancer-related death
- 140, 000 new cases/year
- 50,000 deaths/year
- Lifetime risk is similar in both sexes
- >90% of CRC after age 50
- AAM: screening should start at age 45

*Cancers of the Colon and Rectum (Invasive):
Average Annual Age-Specific SEER Incidence and
U.S. Mortality Rates By Gender, 1995-1999*



Epidemiology

- Age > 50 with adenoma: 25-40%
- Age > 50 with advanced* adenoma: 3-10%
- Lifetime risk of CRC at age 50: 5%

→ Most adenoma do not develop into CRC

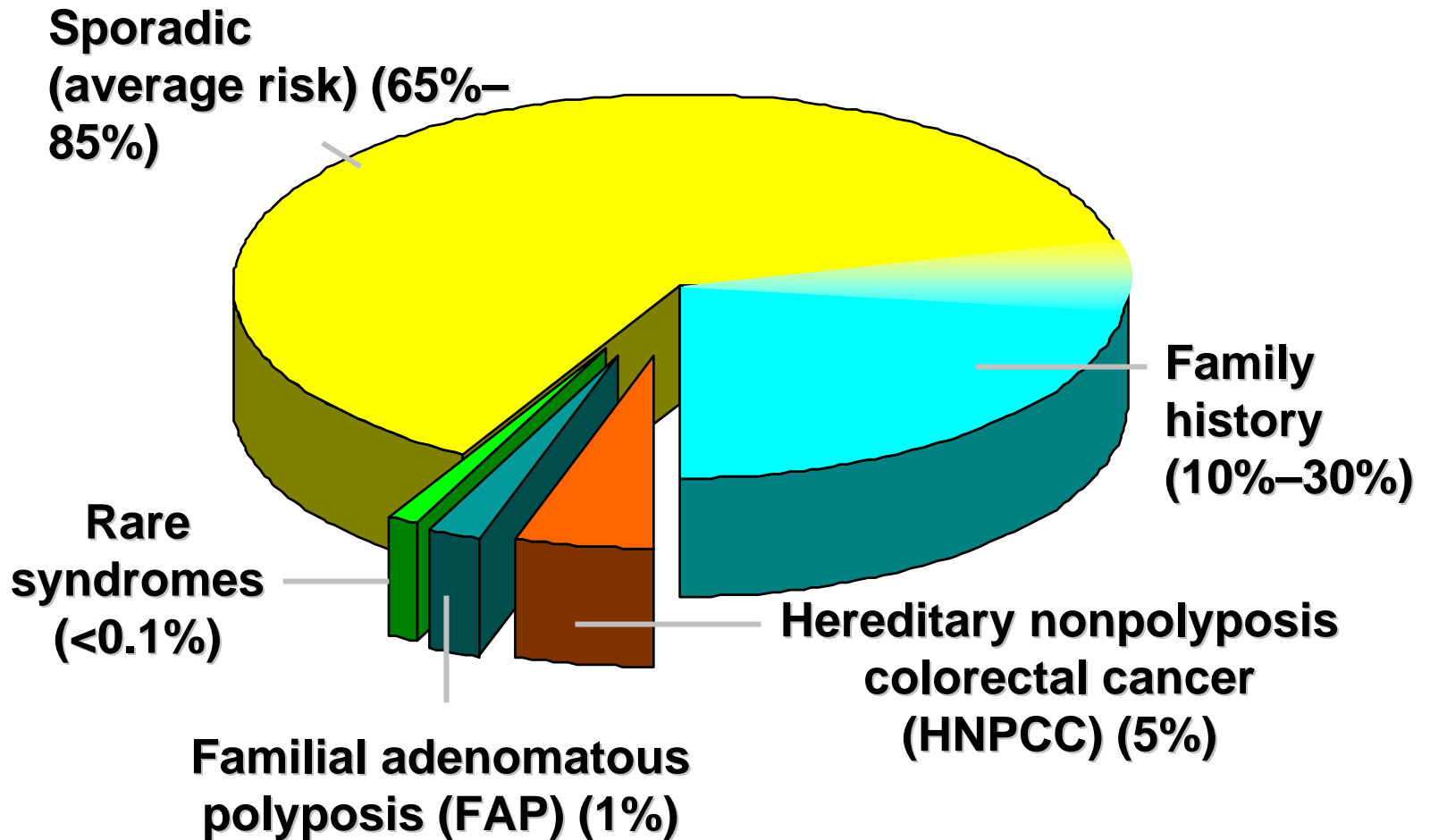
→ Advanced adenoma are at greatest risk

*Advanced adenoma: >1cm, >25% villous adenoma, HGD

Risk factors

- Age > 50
- PMH/FH of adenoma, CRC
- IBD
- FAP, HNPCC
- Pelvic irradiation
- Diet/lifestyle: high red meat, high fat, alcohol, tobacco, obesity

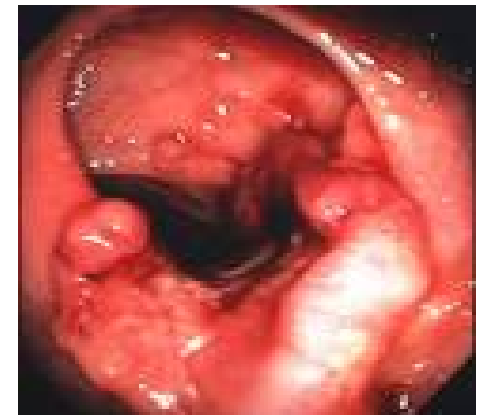
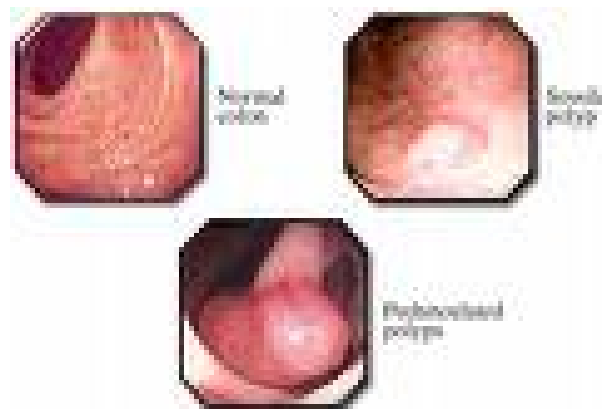
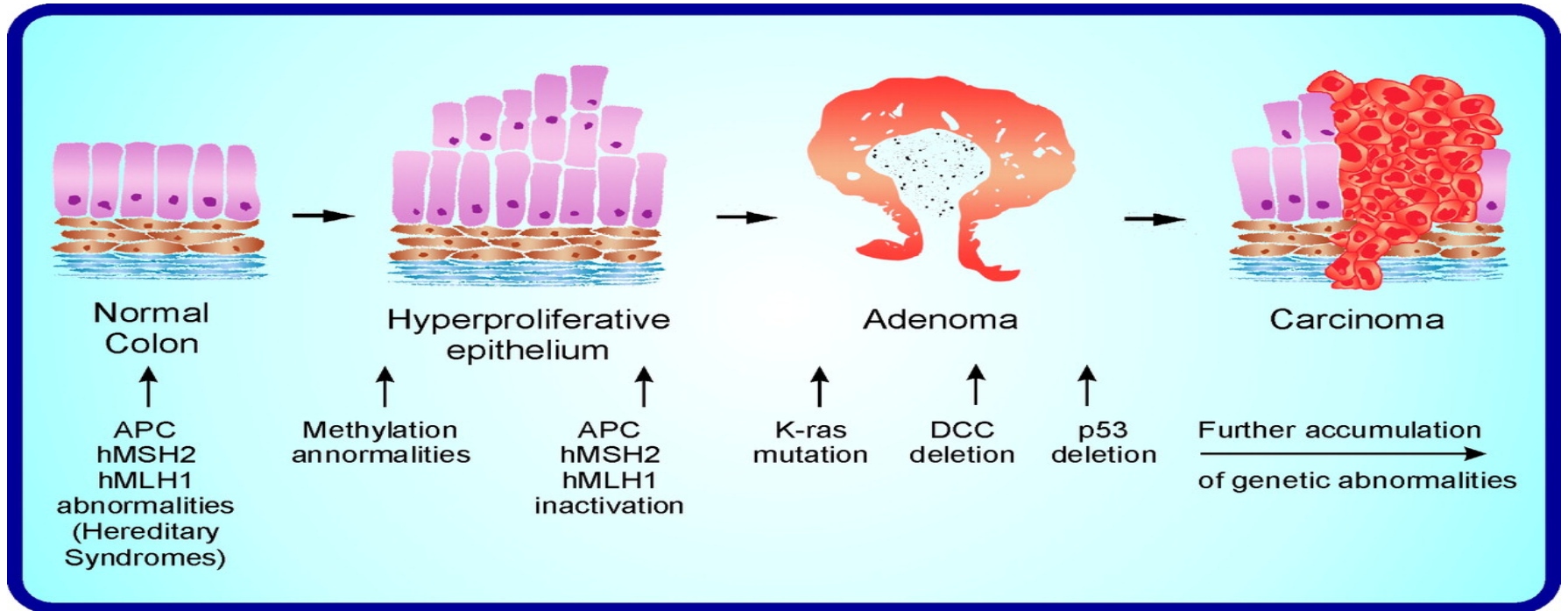
Colorectal Cancer (CRC)



Protective Factors

- High fiber diet/vegetables/fruits
- High calcium diet
- High folate diet
- High physical activity
- ASA/NSAIDs use

CRC Pathogenesis



CRC Survival Rates

- 5-year survival rate:
 - Early stage: 90%
 - Metastatic disease <10%
- 5-year overall survival rates:
 - White: 60-65%
 - AA:50%

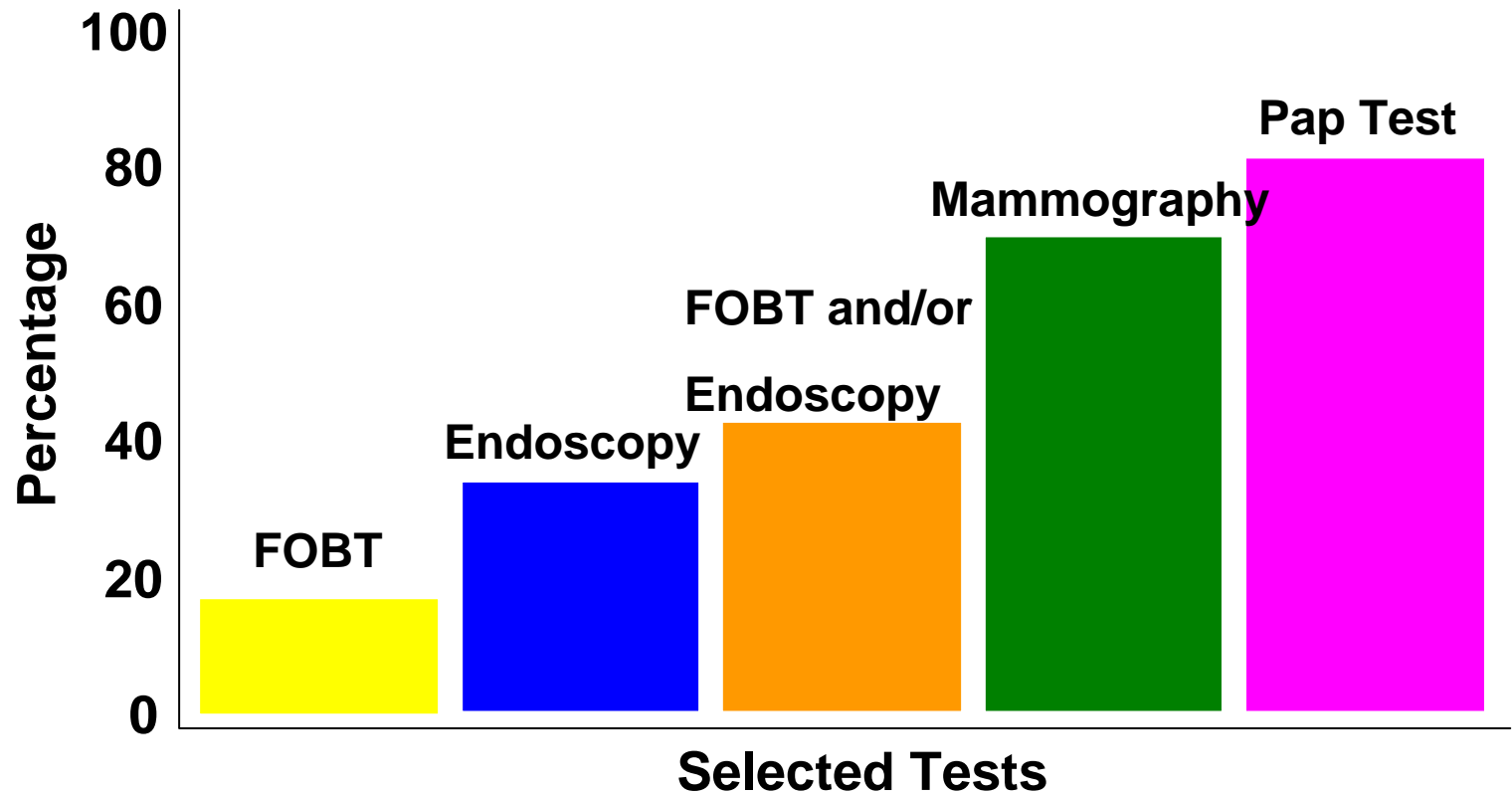
Definition

- Screening: search for CRC in asymptomatic patient w/o prior CA
- Surveillance: evaluation of patient at high-risk of CRC: h/o adenoma/CRC, IBD.
- Diagnosis: Evaluation of symptomatic patient

5 Key Points for CRC Screening

- CRC can be prevented
- Screening decreases mortality from CRC
- All individuals age > 50 need screening
- High-risk individuals begin earlier screening
- Any screening test is better than no test

*Comparison of Colorectal Cancer Test Use with other Cancer Screening Tests, NHIS 2000**



* Among appropriate populations that receive screening tests

Medicolegal issues for PCP

- Delay in CRC diagnosis accounts for > 50% of all litigation against PCP for GI disease:
 - Attributing rectal bleeding to hemorrhoids
 - Inadequate evaluation of positive FOBT
 - Failure to screen/recommend screening

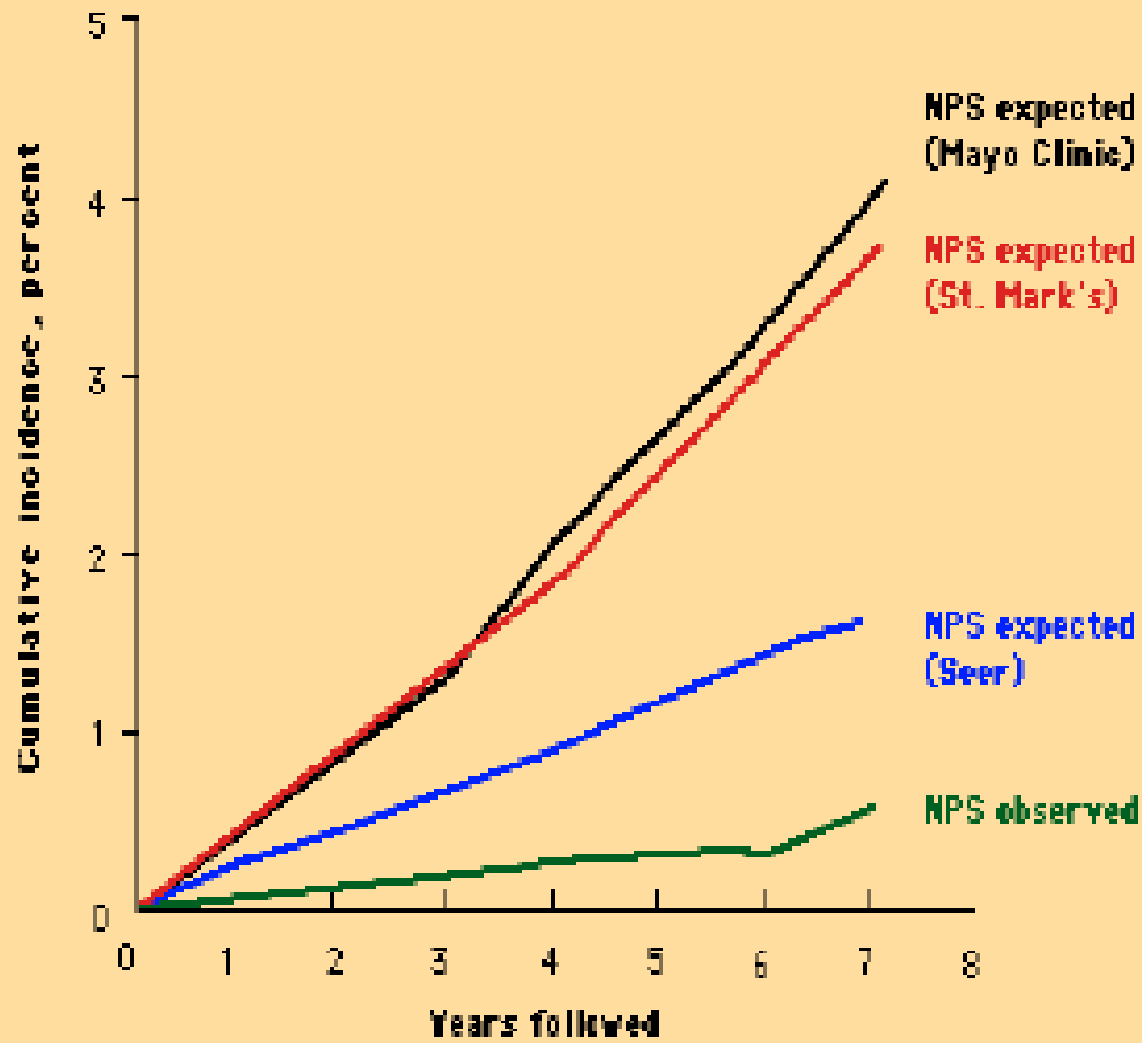


2008 joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer and the American College of Radiology

Screening of average risk individuals

- Start screening at age 50 (age 45 AAM?)
- Preferred modality: Colonoscopy (ASGE, ACG)
 - Every 10 years
 - Visualize entire colon
 - Diagnosis/histology and treatment/resection
 - National Polyp Study: Polypectomy ↓ ↓ the incidence of CRC by 76%-90% when compared to 3 historic reference groups
 - Indirect evidence that it ↓ ↓ CRC-related mortality

Observed and Expected Colorectal Cancer Incidence in National Polyp Study Cohort After Colonoscopic Polypectomy[†]



[†]Data from Winawer, S.J., Zauber, A.G., Ho, M.N., et al, N Engl J Med 1993; 329:1977.

Screening Methods

Colonoscopy

Disadvantages of colonoscopy:

- Bowel preparation
- Cost
- Risk of sedation
- Risk of perforation: 1/1,000
- Miss rate:
 - 27% for polyp < 5 mm
 - 6%-11% for polyp > 1 cm
 - Associated w quality of prep, skills of endoscopist, withdrawal time

Screening Methods

Alternatives to Colonoscopy

- FOBT every year
- Flexible sigmoidoscopy every 5 years
- FOBT and FlexSig every 5 years
 - If any test positive → colonoscopy
- But 50% of patients with advanced adenoma/CRC in proximal colon have no distal polyp

Screening Methods

The Knew Kids on the Blocks

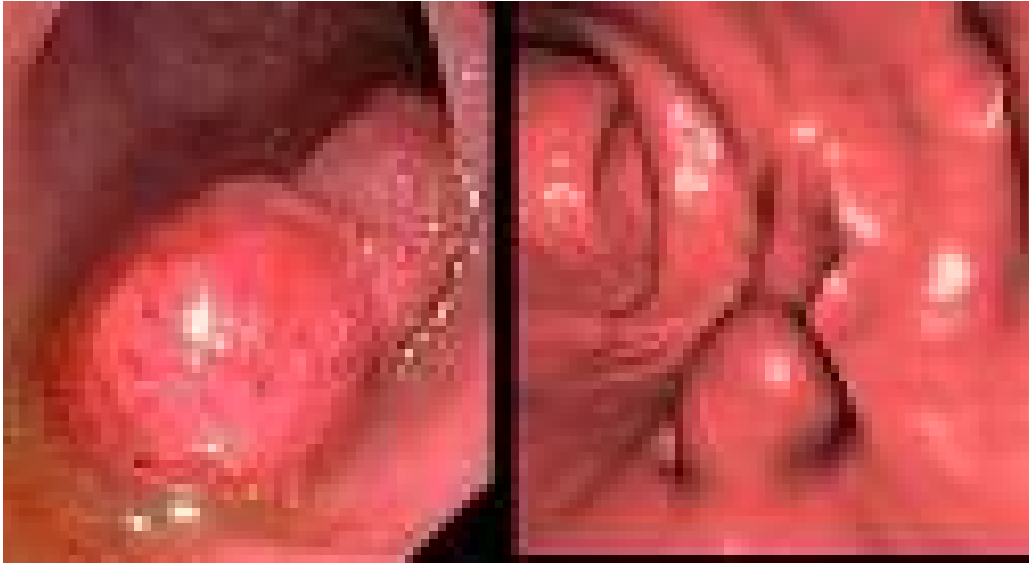
- Virtual Colonoscopy
- Fecal DNA testing

Screening Methods

Virtual Colonoscopy

- CT Scanning of colon after bowel prep and colonic distension
- For polyp > 10mm
 - Sensitivity 55%-100% (vs 98% for colonoscopy)
 - Specificity 94%-98%
- For polyp 6-9mm: Sensitivity:
 - 39%-94%
 - Specificity: 79%-92%
- Likely misses non-polypoid neoplasia

Virtual Colonoscopy



Screening Methods

Virtual Colonoscopy

- No consistent patient preference VC vs colonoscopy
- Still need to prep; no sedation
- If polyp seen → need colonoscopy
- Radiation exposure
- Not covered by Medicare and private insurers
- Not endorsed for CRC screening by medical societies
- Colonoscopy is more cost-effective

Screening Methods

Virtual Colonoscopy

Use:

- Patients who refuse colonoscopy
- Incomplete colonoscopy
- Patient at high-risk for sedation and at low-risk for positive exam

Screening Methods

Fecal DNA testing

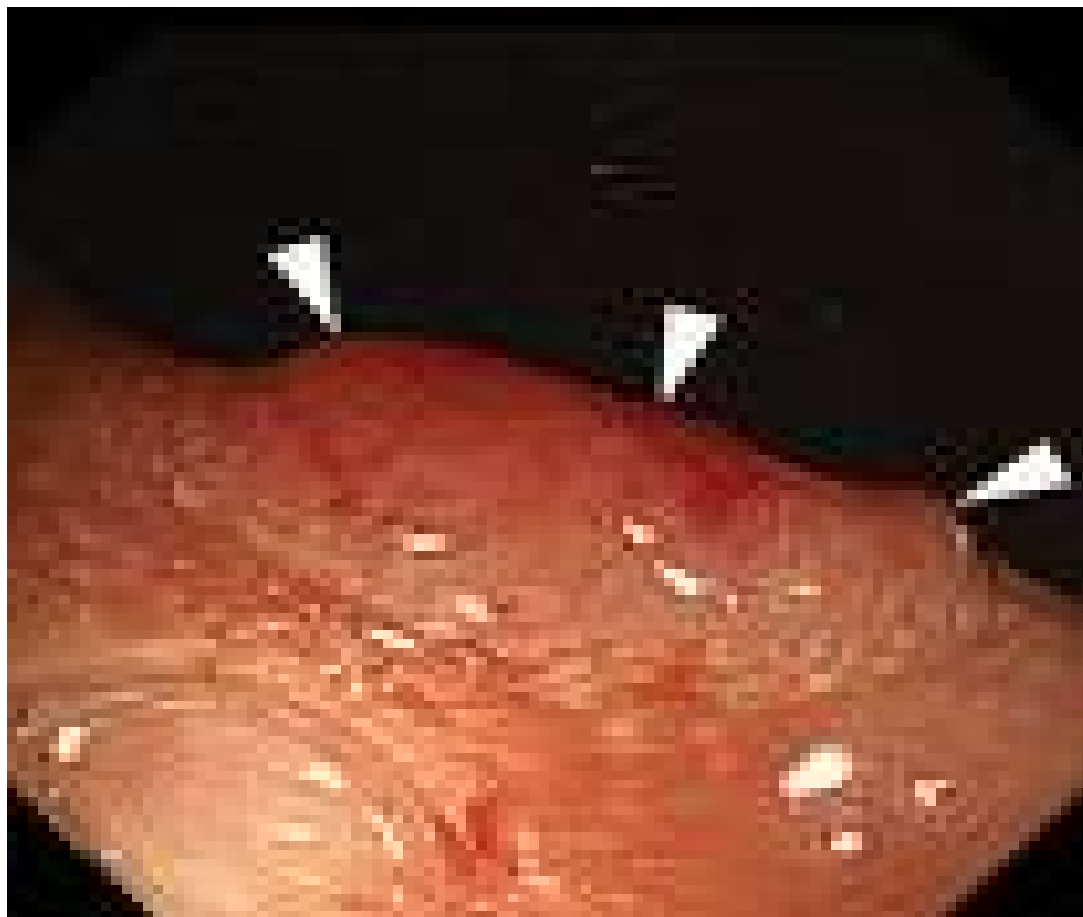
- Based on the molecular genetics of CRC: chromosomal instability, microsatellite instability, and CpG island methylation
- Sensitivity:
 - For CRC: 62%-91%
 - For advanced adenomas: 27%-82%
- Specificity: 93%-96%
- Not recommended for CRC screening

Screening for High-Risk individuals (30%)

- FH of CRC, colon polyp:
 - Colonoscopy starting at age 40 or 10 years younger than the affected relative, whichever comes first
 - Every 5 years
- IBD:
 - Colonoscopy every 1-2 years after 7-10 years of disease
- FAP (APC mutation):
 - Genetic testing (positive in 80%)
 - FlexSig starting at age 10, yearly
 - once adenomas appears → total colectomy
- HNPCC (Mismatch repair genes mutation):
 - Colonoscopy starting at age 20, every 1-2 years (yearly after age 40)

Non-Polypoid CR Neoplasms

- Slightly elevated, flat or depressed lesions
- Described by the Japanese in the 80's
- 1,819 subjects from the Palo Alto VA
- NP-CRN
 - Found in 9.3% of patients
 - Found in 15% of patients in surveillance program
 - 5x as likely as polypoid neoplasms to harbor in situ or invasive CA
 - Depressed type has the highest risk (33%)



NP-CRN

NP-CRN

- Highlights importance of excellent prep
- Slow withdrawal time
- Learn to distinguish subtle changes of NP-CRN from the surrounding normal mucosa

Colonoscopy Withdrawal Time

- Compared rate of detection of neoplasia with withdrawal time of 6 min or more vs withdrawal time <6min
- Detection of :
 - Any neoplasia: 28% vs 11%
 - Advance neoplasia: 6.4% vs 2.6%

Colonoscopy Withdrawal Time

- Compared detection of neoplasia with withdrawal time of 8min or more vs withdrawal time < 8min
- Detection of:
 - Any neoplasia: 37.8% vs 23.3%
 - Advanced neoplasia: 6.6% vs 4.5%

Summary

- Colon cancer is a preventable disease
- Importance of screening
- Colonoscopy: Gold standard for screening
- New methods being evaluated
- Importance of high quality exam in detecting CR neoplasia