Screening for Colorectal Cancer

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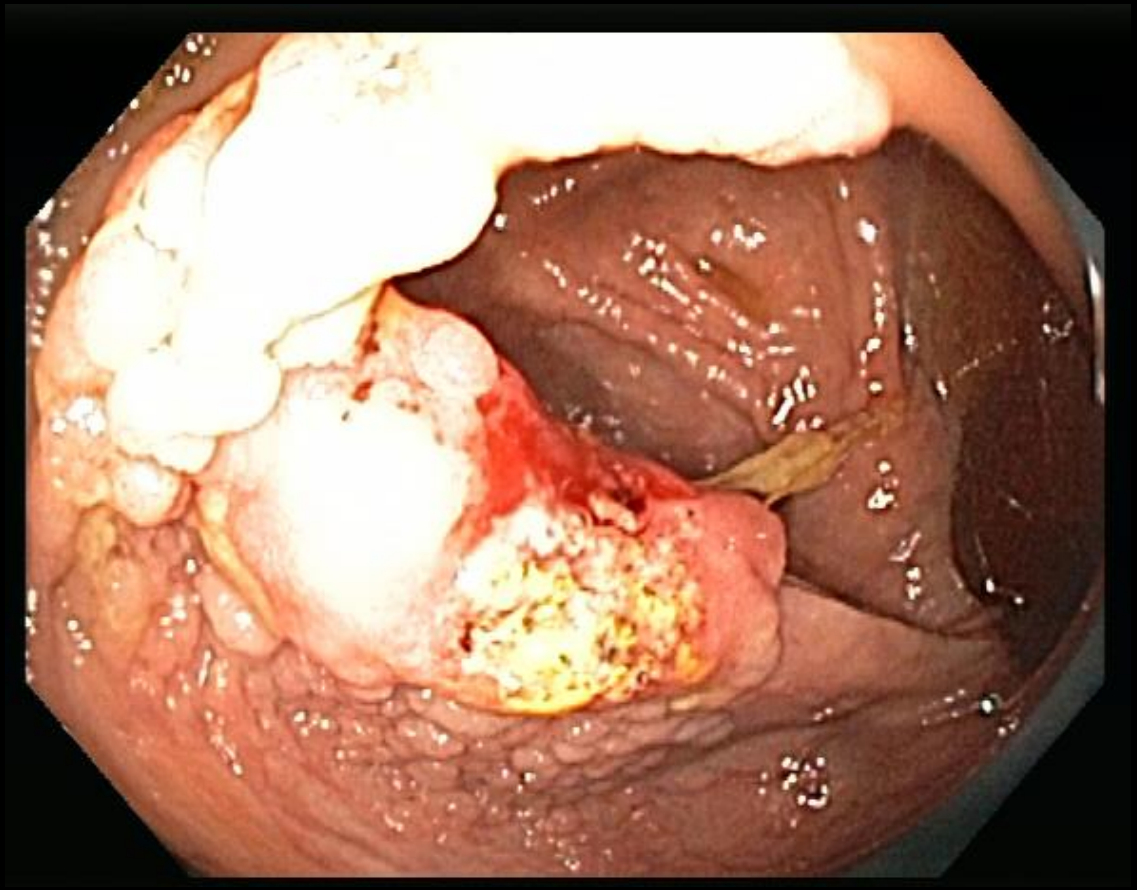
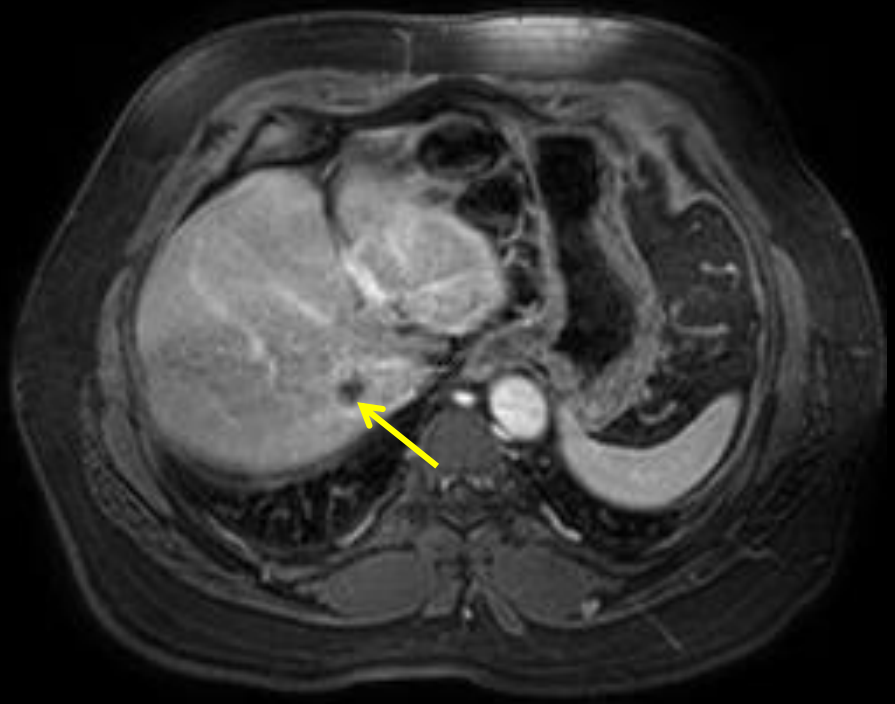
Clinical Case

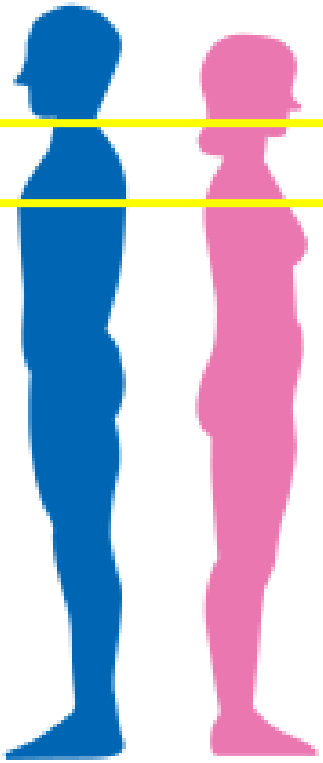
- 65 year-old healthy man at average risk for colorectal cancer
- No gastrointestinal symptoms
- Two years overdue for colorectal cancer screening
- Undergoes screening colonoscopy at the Baltimore VA Medical Center in October 2013





2014 Estimated US Cancer Cases

Males			Females	
Prostate	233,000		Breast	232,670
Lung & bronchus	116,000		Lung & bronchus	108,210
Colorectum	71,830		Colorectum	65,000
Urinary bladder	56,390		Uterine corpus	52,630
Melanoma of the skin	43,890		Thyroid	47,790
Kidney & renal pelvis	39,140		Non-Hodgkin lymphoma	32,530
Non-Hodgkin lymphoma	38,270		Melanoma of the skin	32,210
Oral cavity & pharynx	30,220		Kidney & renal pelvis	24,780
Leukemia	30,100		Pancreas	22,890
Liver & intrahepatic bile duct	24,600		Leukemia	22,280
All Sites	**855,220**		**All Sites**	**810,320**



Siegel et al. CA: A cancer journal for clinicians; 2014; 64:9

MARCH IS

Colorectal Cancer Awareness Month

Colorectal Cancer is the

2ND LEADING CAUSE

OF CANCER DEATHS

IN THE UNITED STATES.

Age 50+? Talk to a gastroenterologist about screening.

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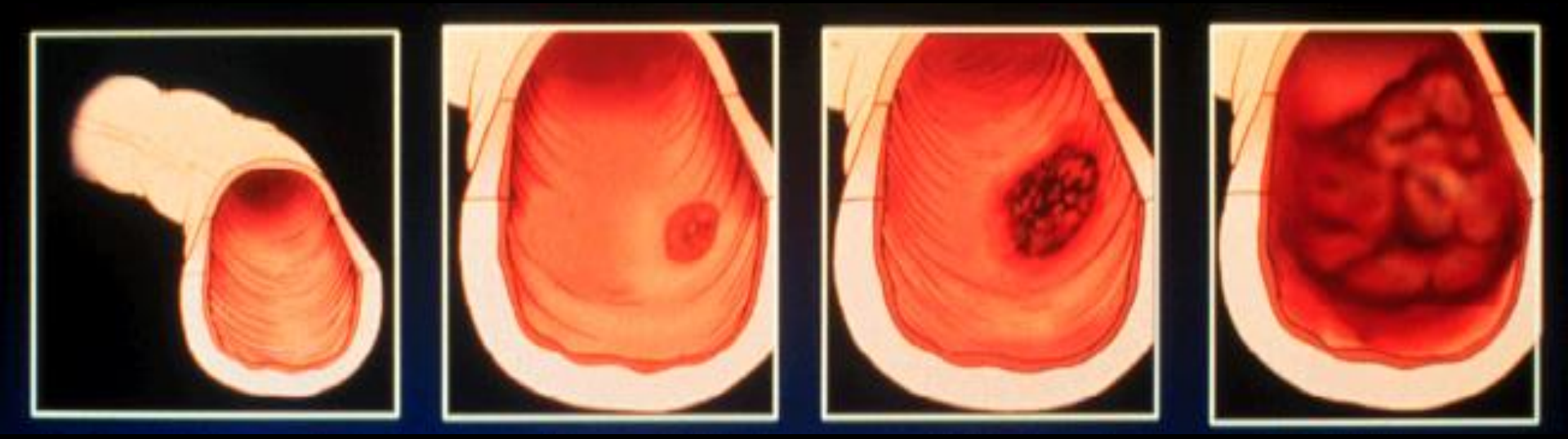
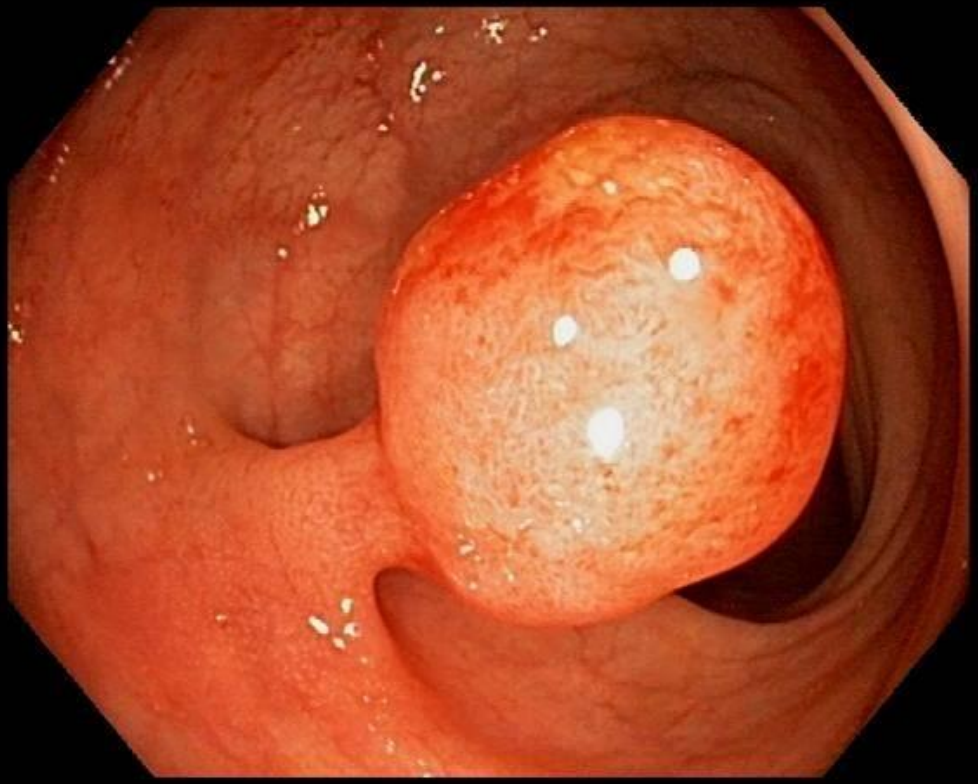
Adenoma – Carcinoma Sequence

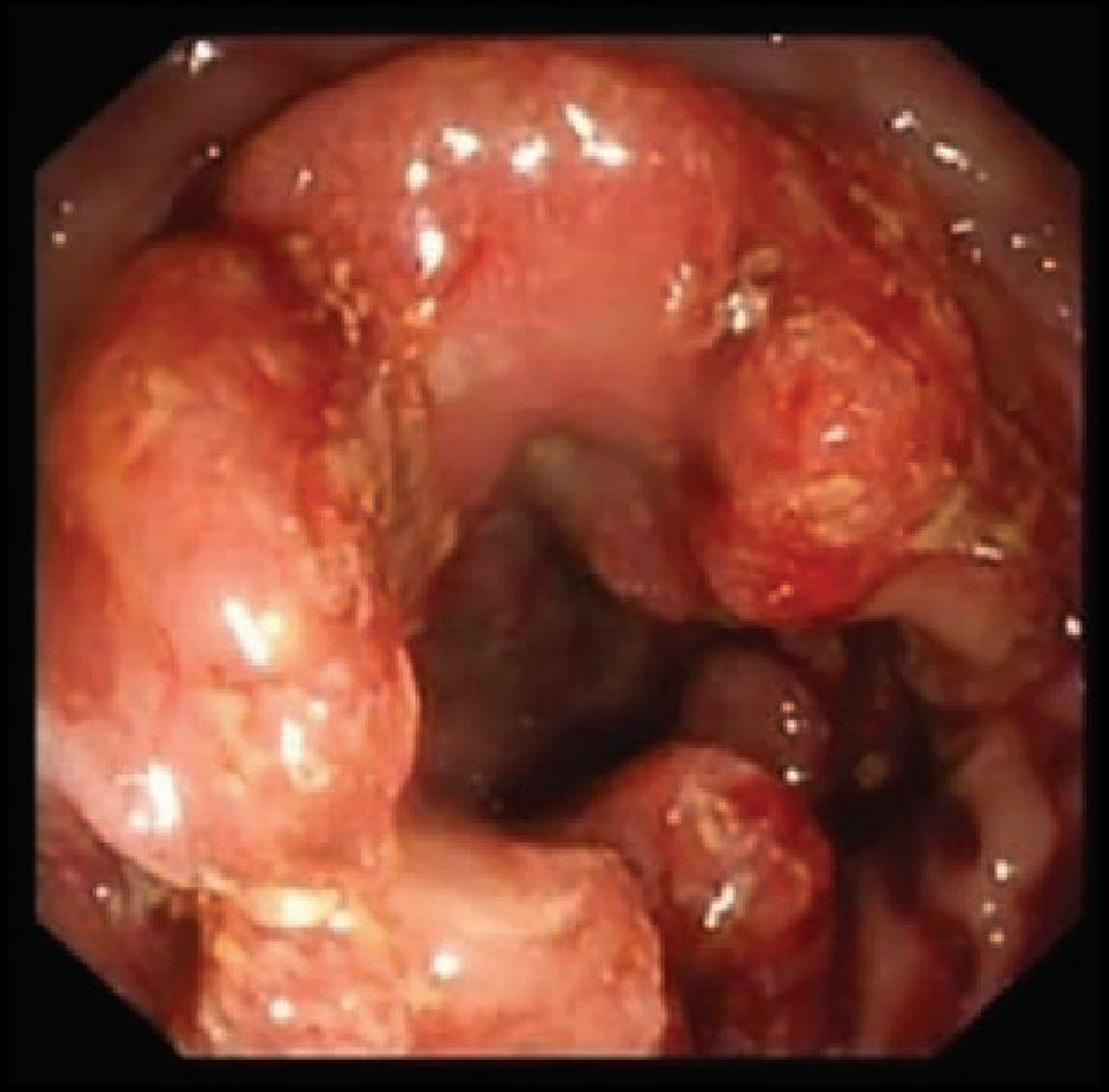


Normal Mucosa → Adenoma → Severe Dysplasia → Cancer

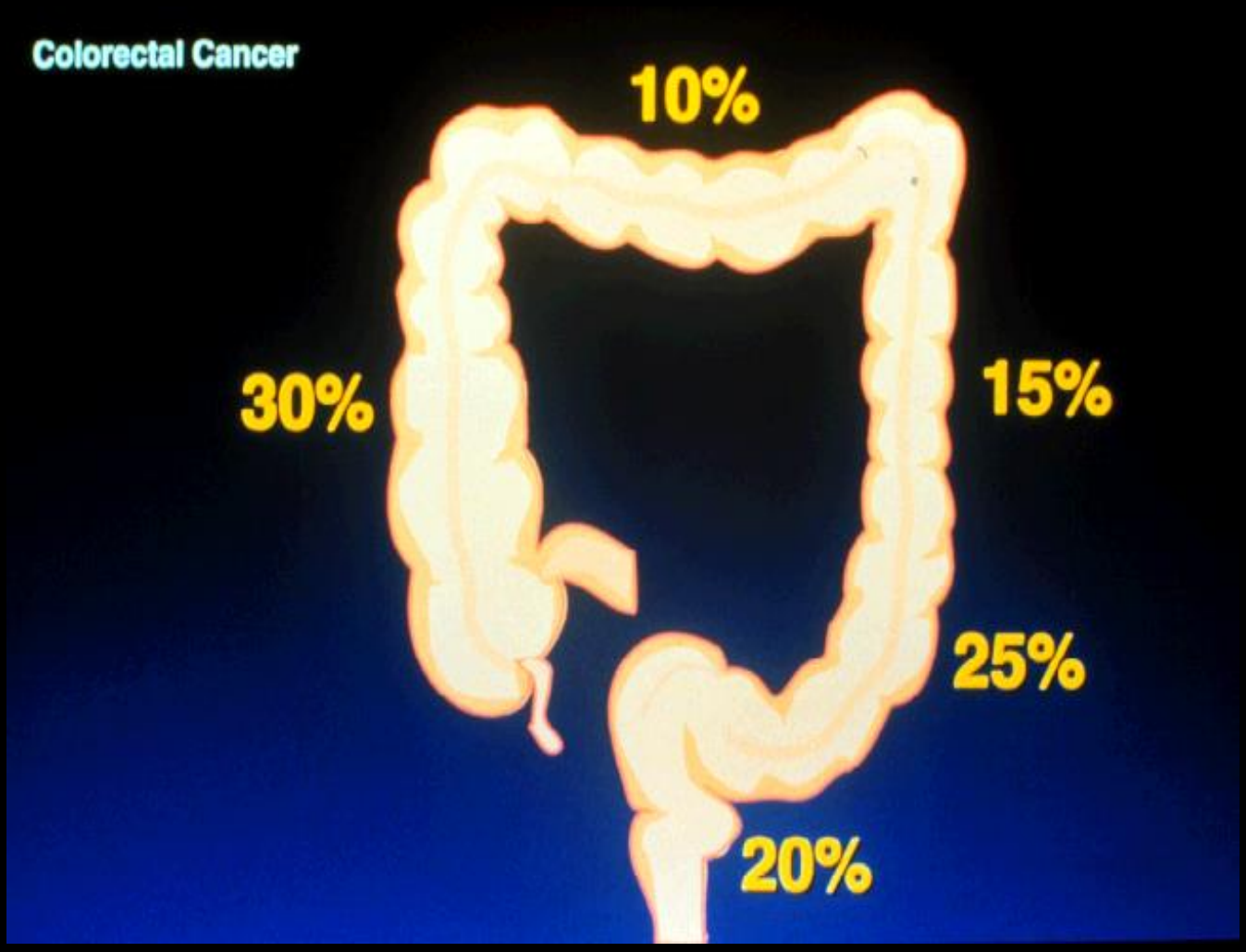
Colon Polyp



Colon Cancer



Distribution of Colorectal Cancer



Colorectal cancer screening
First assess RISK

AVERAGE RISK INDIVIDUAL – Options

- All patients age 50 years and older, the asymptomatic general population

HIGH RISK – Colonoscopy Strategy

- Personal history
- Family history
- IBD

Colorectal Cancer Screening

Average risk

- Fecal occult blood testing (FOBT)
- Flexible sigmoidoscopy
- Colonoscopy

- Barium enema
- CT colography
- Stool genetic testing

SCREENING FOR COLORECTAL CANCER
CLINICAL SUMMARY OF U.S. PREVENTIVE TASK FORCE RECOMMENDATION

Population	Adults Age 50 to 75*	Adults Age 76 to 85 years*	Adults Older than 85*
Recommendation	**Screen with high sensitivity fecal occult blood testing (FOBT), sigmoidoscopy, or colonoscopy.** **Grade: A**	**Do not screen routinely.** **Grade: C**	**Do not screen.** **Grade: D**
	For all populations, evidence is insufficient to assess the benefits and harms of screening with computerized tomography colonography (CTC) and fecal DNA testing. **Grade: I (insufficient evidence)**		

Screening Tests	High sensitivity FOBT, sigmoidoscopy with FOBT, and colonoscopy are effective in decreasing colorectal cancer mortality. The risks and benefits of these screening methods vary. Colonoscopy and flexible sigmoidoscopy (to a lesser degree) entail possible serious complications.
Screening Test Intervals	Intervals for recommended screening strategies: • Annual screening with high-sensitivity fecal occult blood testing • Sigmoidoscopy every 5 years, with high-sensitivity fecal occult blood testing every 3 years • Screening colonoscopy every 10 years

MARCH IS

Colorectal Cancer Awareness Month

1 IN 3 ADULTS ARE *NOT*

GETTING THE RECOMMENDED

SCREENINGS

Age 50+? **Talk to a gastroenterologist about screening.**

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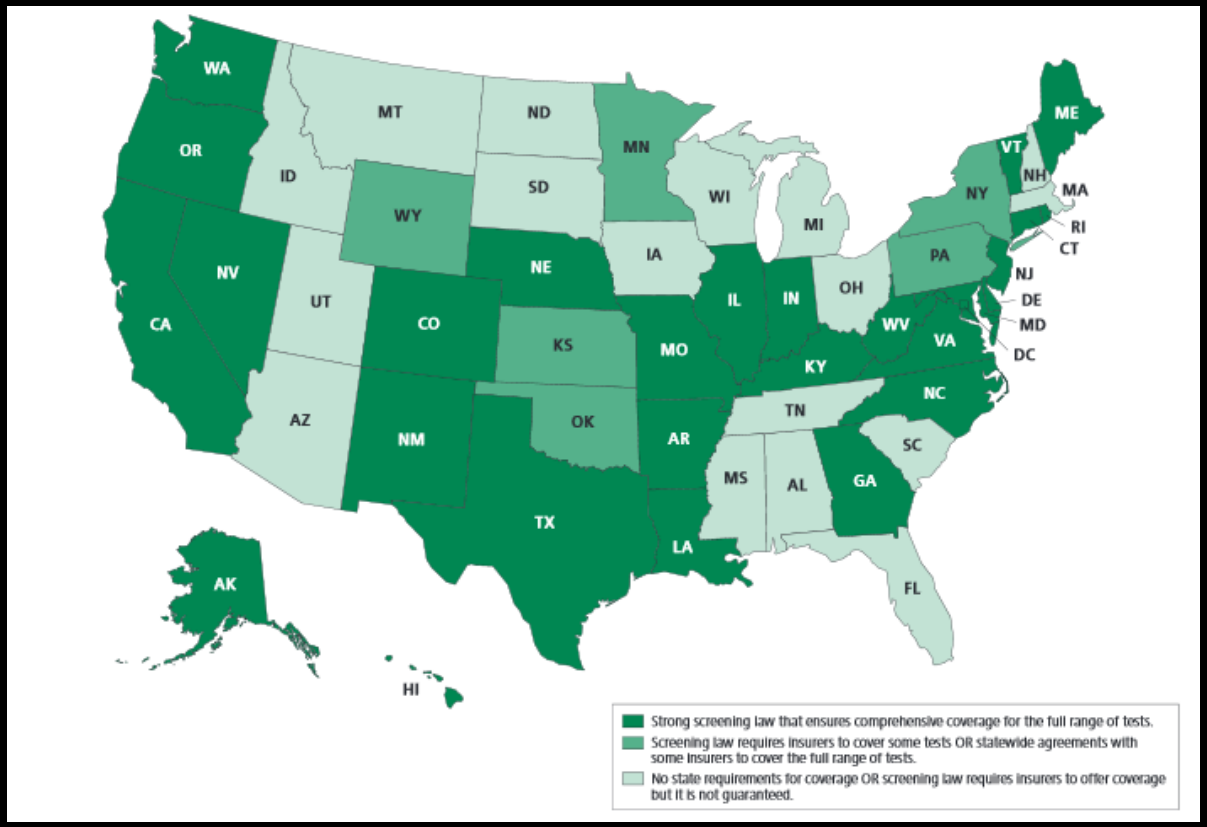
Maryland is pro-colon cancer screening



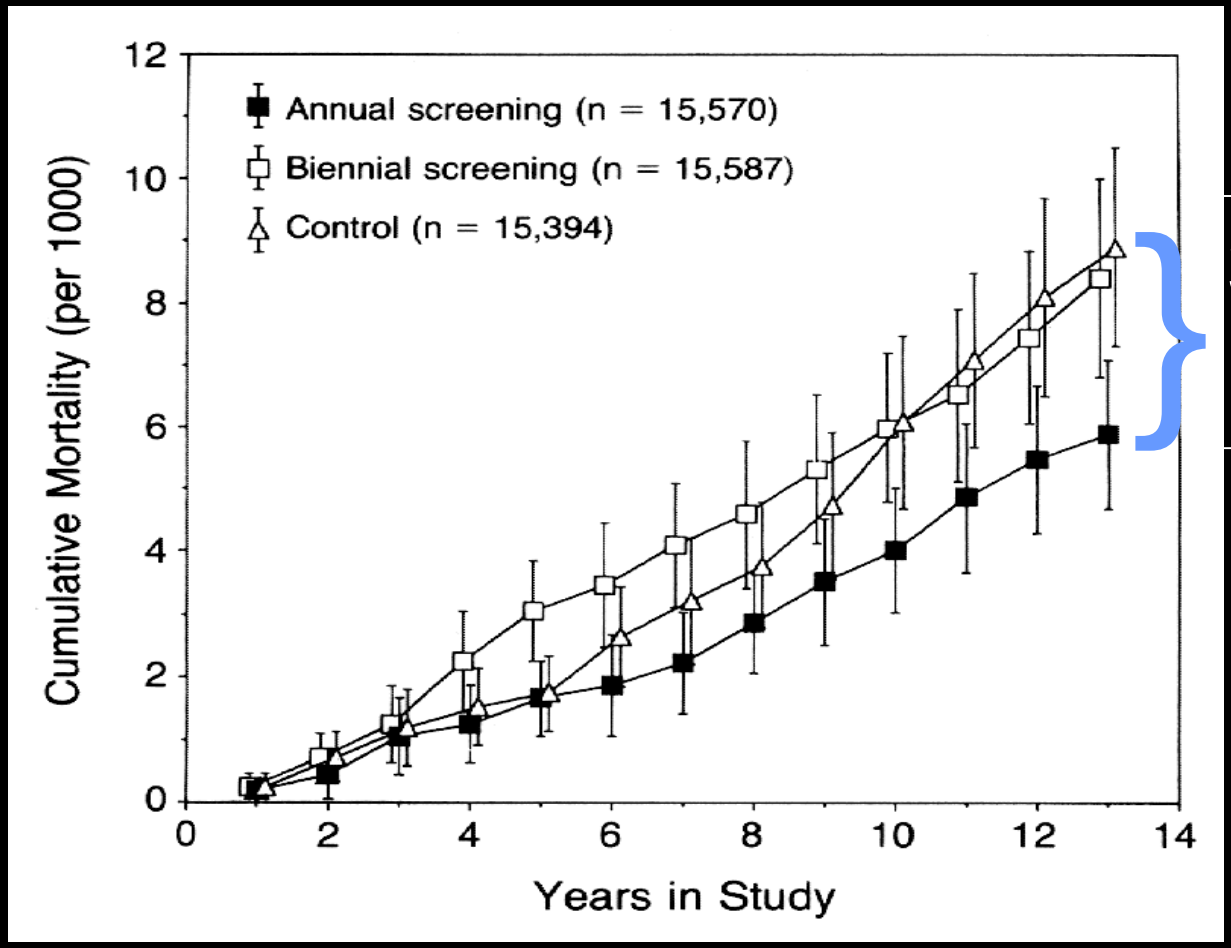
Colorectal cancer screening prevalence by state, 2006-2008

Colorectal cancer facts and figures 2011-2013.
http://www.cancer.org/acs/groups/content/@epidemiologysurveilance/documents/document/acspc-028323.pdf. Accessed 2/10/14

FOBT – Clinical Issues

- Guaiac-based (gFOBT) or fecal immunochemical testing (FIT – detects human hemoglobin)
- Traditional test requires multiple stools
- Diet modification is necessary (gFOBT)
- OK to test when patient is on low-dose ASA or warfarin in therapeutic range
- All positives must lead to full colonoscopy!

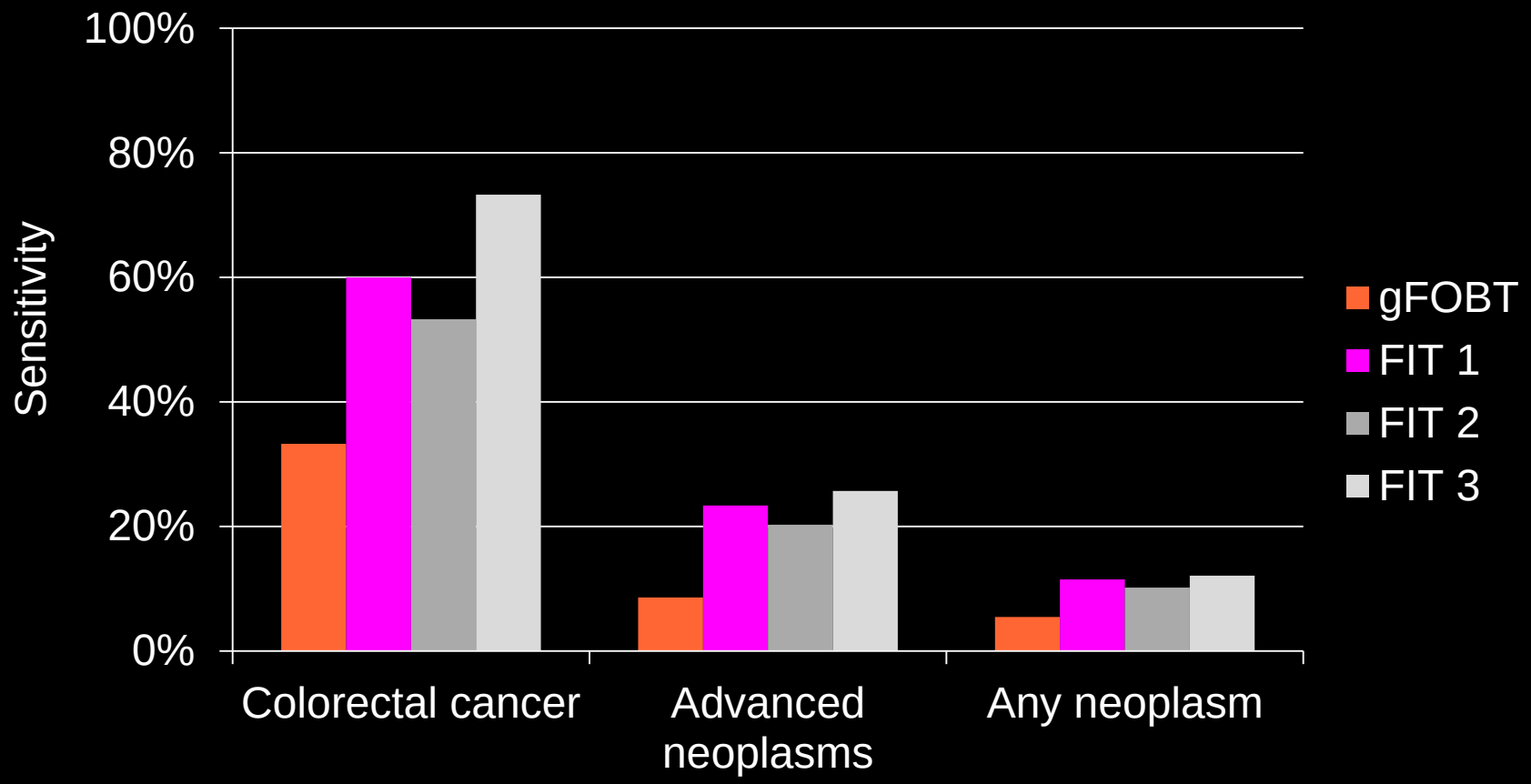
Annual FOBT Saves Lives!



33% reduction

Mandel JS et al. N Engl J Med 1993 328:1365-71.

FIT is more sensitive than gFOBT



Brenner H and Tao S. Eur J Cancer. 2013; 49:3049

Flexible Sigmoidoscopy

PROS:

- Inexpensive, cost-effective
- Mortality from rectal cancer reduced by 60-70% in case-control studies
- Easier bowel preparation
- Usually done without sedation

CONS:

- Detects only one-half of adenomas
- 40% of cancers arise proximal to splenic flexure
- 75% of proximal cancers have no adenomas distal to splenic flexure
- Often limited by discomfort, poor bowel preparation

Selby et al. N Engl J Med 1992;326:653
Rex et al. Gastrointest Endosc 1999;99:727
Newcomb et al. J Natl Canc Inst 1992;84:1572
Stewart Aust NZ J Surg 1999;69:2
Painter et al. Endoscopy 1999;3:269

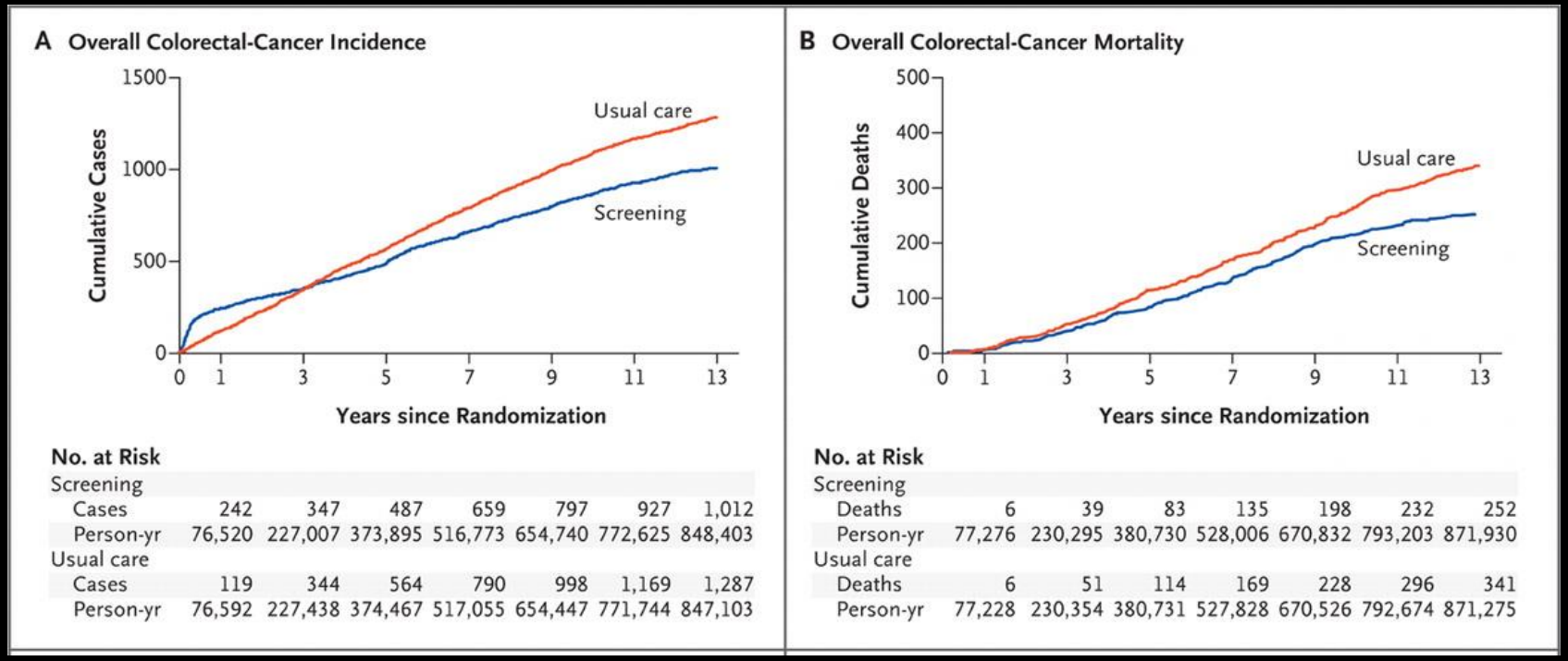
Flexible Sigmoidoscopy Misses 50% of Lesions

- Colonoscopy comparison studies:

  46-52% of patient with advanced proximal neoplasia (> 1 cm, villous, high-grade dysplasia or cancer) had no adenomas distal to the splenic flexure

Lieberman et al. N Engl J Med 2000; 343:162-8.
Imperiale et al. N Engl J Med 2000; 343:169-174.

Overall Colorectal-Cancer Incidence and Mortality.



No. at Risk

Screening							
Cases	242	347	487	659	797	927	1,012
Person-yr	76,520	227,007	373,895	516,773	654,740	772,625	848,403
Usual care							
Cases	119	344	564	790	998	1,169	1,287
Person-yr	76,592	227,438	374,467	517,055	654,447	771,744	847,103

No. at Risk

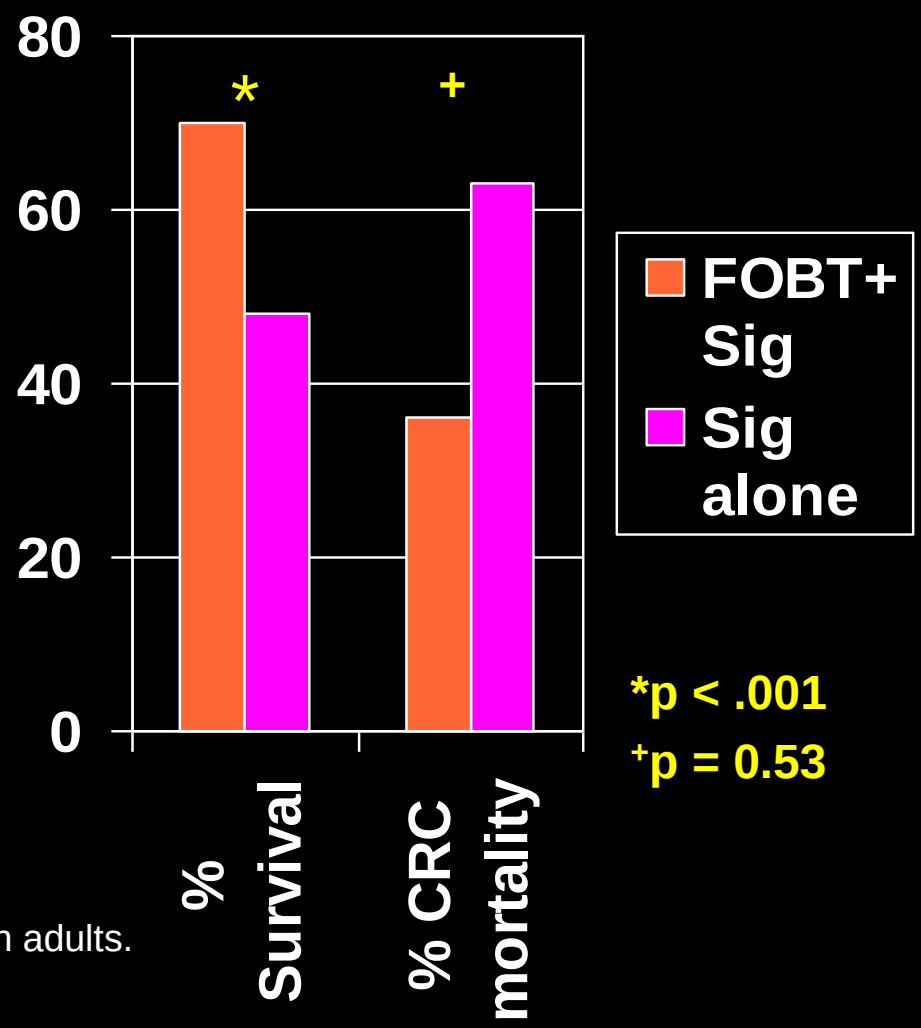
Screening							
Deaths	6	39	83	135	198	232	252
Person-yr	77,276	230,295	380,730	528,006	670,832	793,203	871,930
Usual care							
Deaths	6	51	114	169	228	296	341
Person-yr	77,228	230,354	380,731	527,828	670,526	792,674	871,275

Schoen RE et al. N Engl J Med 2012;366:2345-2357.

The NEW ENGLAND JOURNAL of MEDICINE

Combined FOBT and Sigmoidoscopy

- Case-control trial (N=21,750) w/rigid sigmoidoscopy – improved survival
- Other trials: FS + FOBT
  - Improved yield over FOBT alone
  - Adding FOBT to FS alone may not improve yield



Winawer et al. J Natl Cancer Inst 1993;85:1311
Pignone et al. Screening for colorectal cancer in adults. http://www.ahrq.gov/clinic/serfiles.htm

FOBT + Flexible Sigmoidoscopy Misses 24% of Lesions

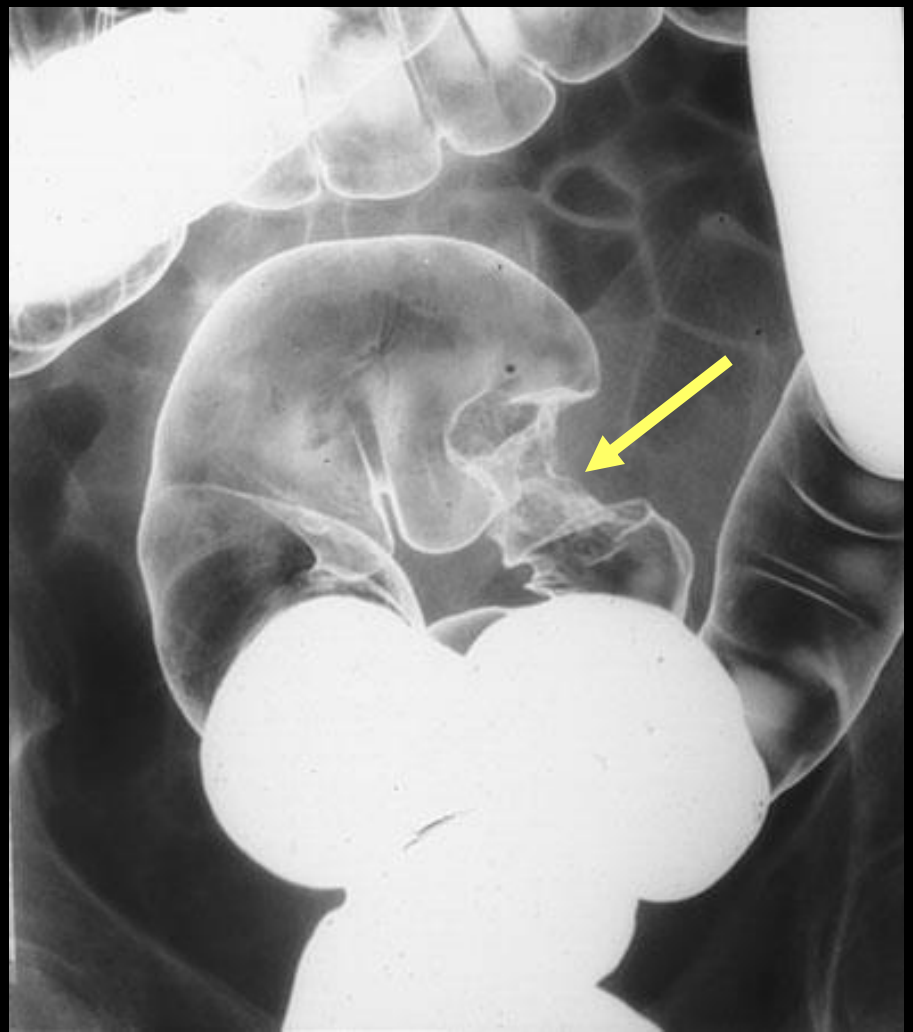
- Colonoscopy comparison studies:

  24.2% of patient with advanced proximal neoplasia (> 1 cm, villous, high-grade dysplasia or cancer) had negative FOBT and no adenomas distal to the splenic flexure.

Lieberman and Weiss. N Engl J Med 2001; 345:555-60.

Colorectal Cancer Screening: Double-Contrast Barium Enema

Colon Cancer



Double-contrast Barium Enema

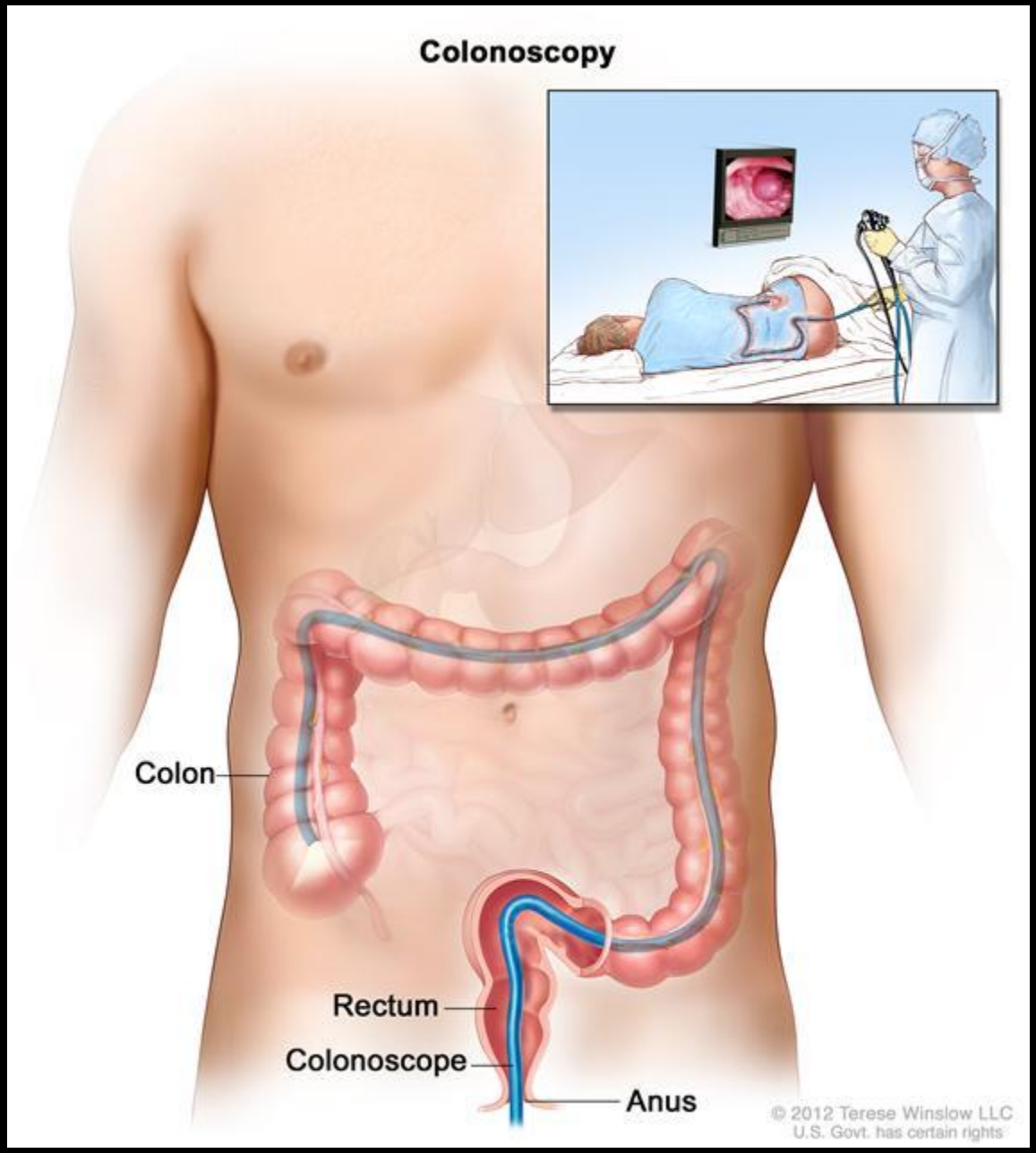
PROS:

- Low cost, exams whole colon

CONS:

- Never studied as a screening test
- Missed 50% of adenomas < 1 cm in National Polyp Study
- Sensitivity for cancer in patients with positive FOBT: 50-75%
- Poor specificity; best interval unknown

Winawer et al. Gastroenterol 1997;112:599
Rex. Endoscopy 1995;27:200
Lieberman et al. N Engl J Med 2000;343:163


Colonoscopy
Colon
Rectum
Colonoscope
Anus
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Colonoscopy

Colonoscopy

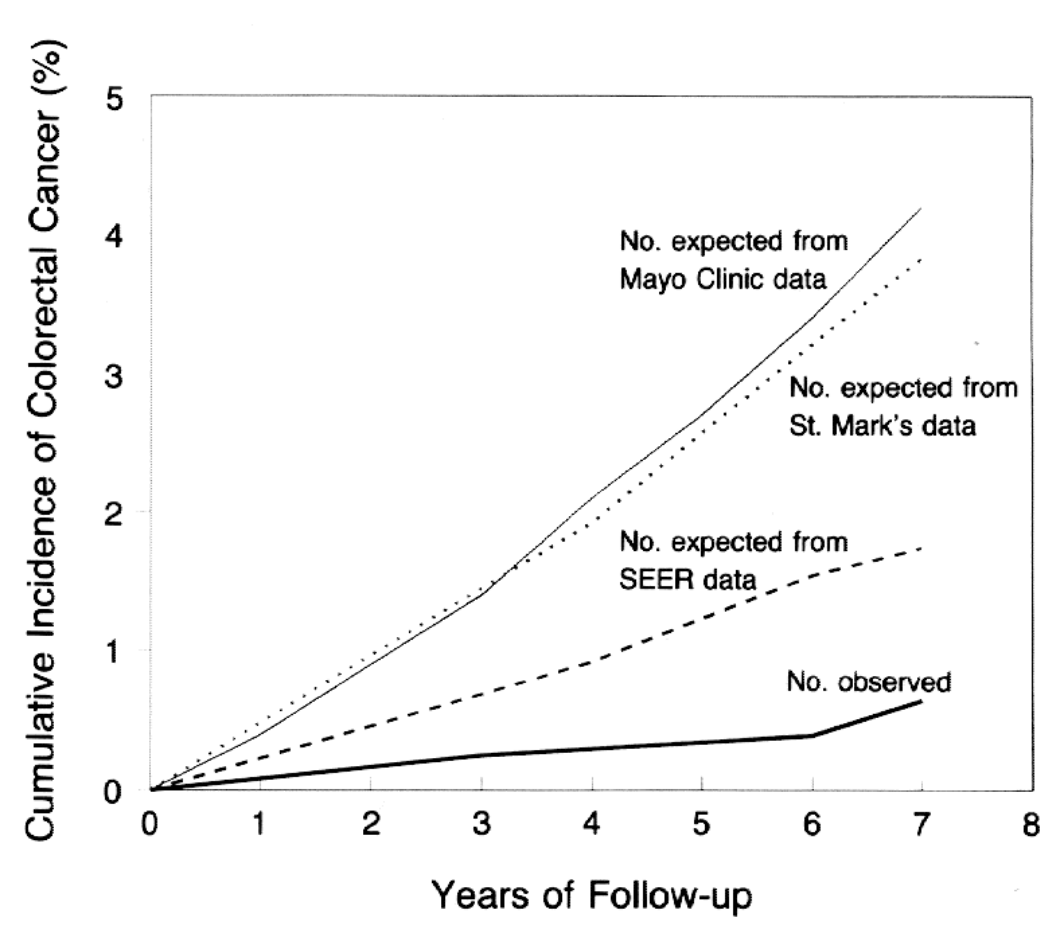
PROS:

- Exams entire colon
- Therapeutic – polyps removed at time of procedure

CONS:

- Invasive, risk of complications
- Requires bowel prep, missed work, escort home
- Incomplete procedures ~5%
- Missed polyps
- Randomized trials lacking

Colonoscopic Polypectomy Reduces Colorectal Cancer Incidence



Winawer et al. N Engl J Med 1993; 329:1977-81.

Miss Rate for Colonoscopy

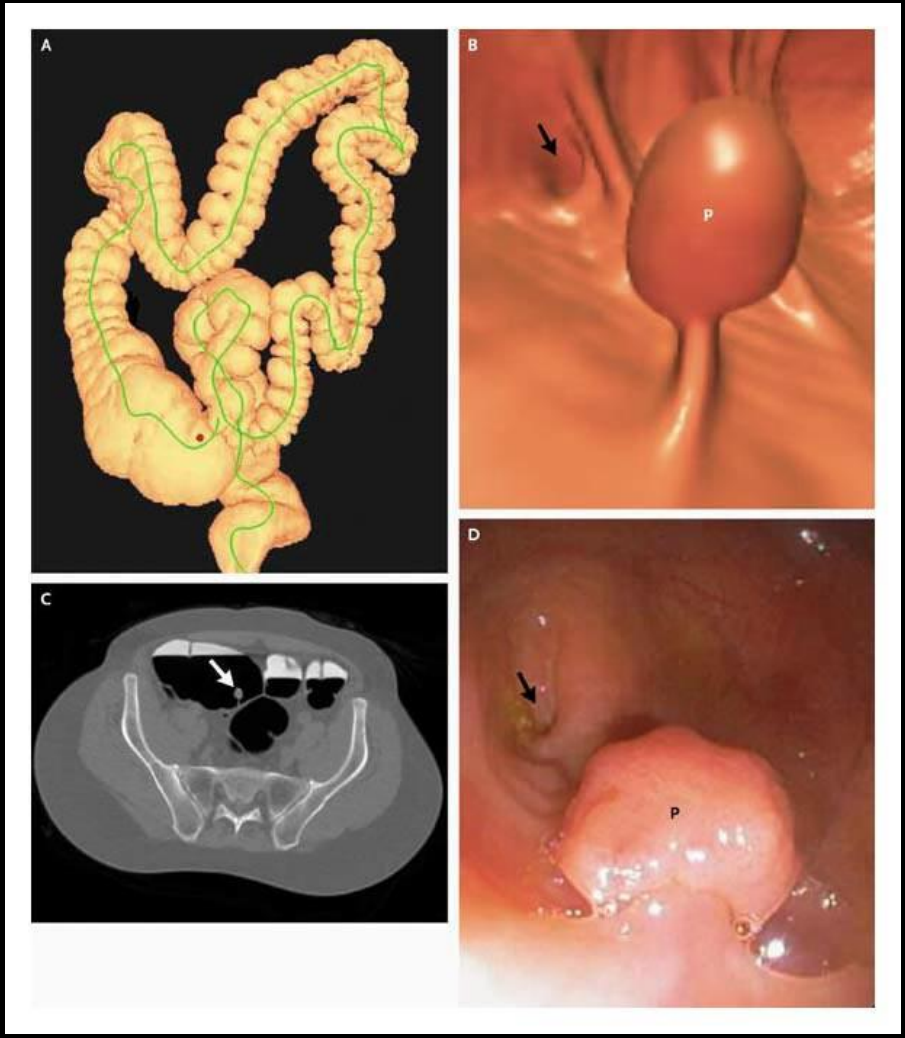
	Comparison group	
	Tandem Colonoscopy	CT Colography
Adenoma ≤ 5 mm	27%	--
Adenoma 6 – 9 mm	13%	9%
Adenoma ≥ 10 mm	6%	12%

Rex et al. Gastroenterol 1997; 112:24-28.
Pickhardt et al. N Engl J Med 2003;349:2191-2200.

Colonoscopy Complications

- Perforation 1-2/1000 procedures
- Bleeding 3/1000 procedures
- Mortality 1/10,000 procedures

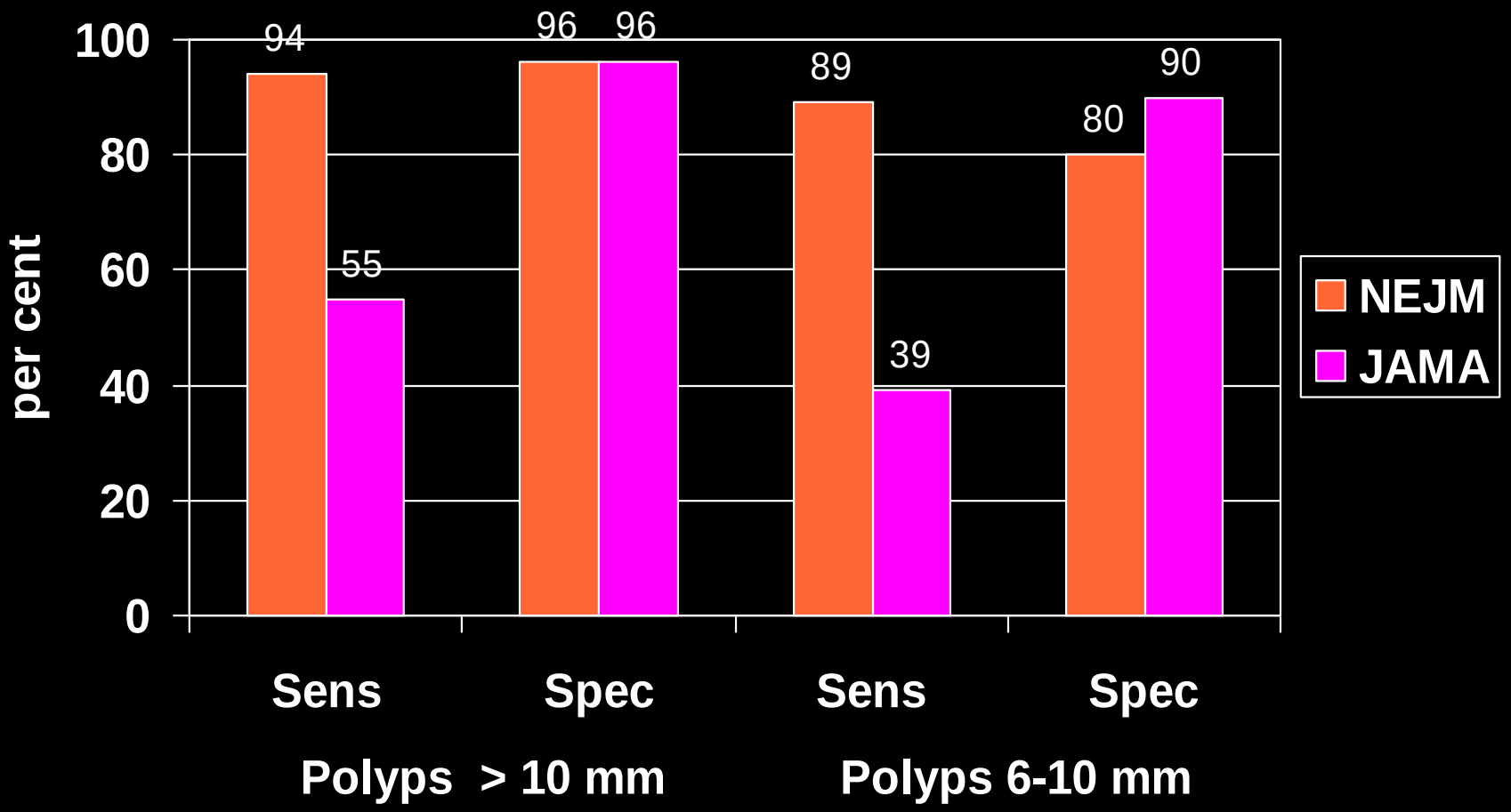
CT Colonography



Solitary 16-mm Pedunculated Cecal Polyp in a 55-Year-Old Man at Average Risk for Colorectal Neoplasia

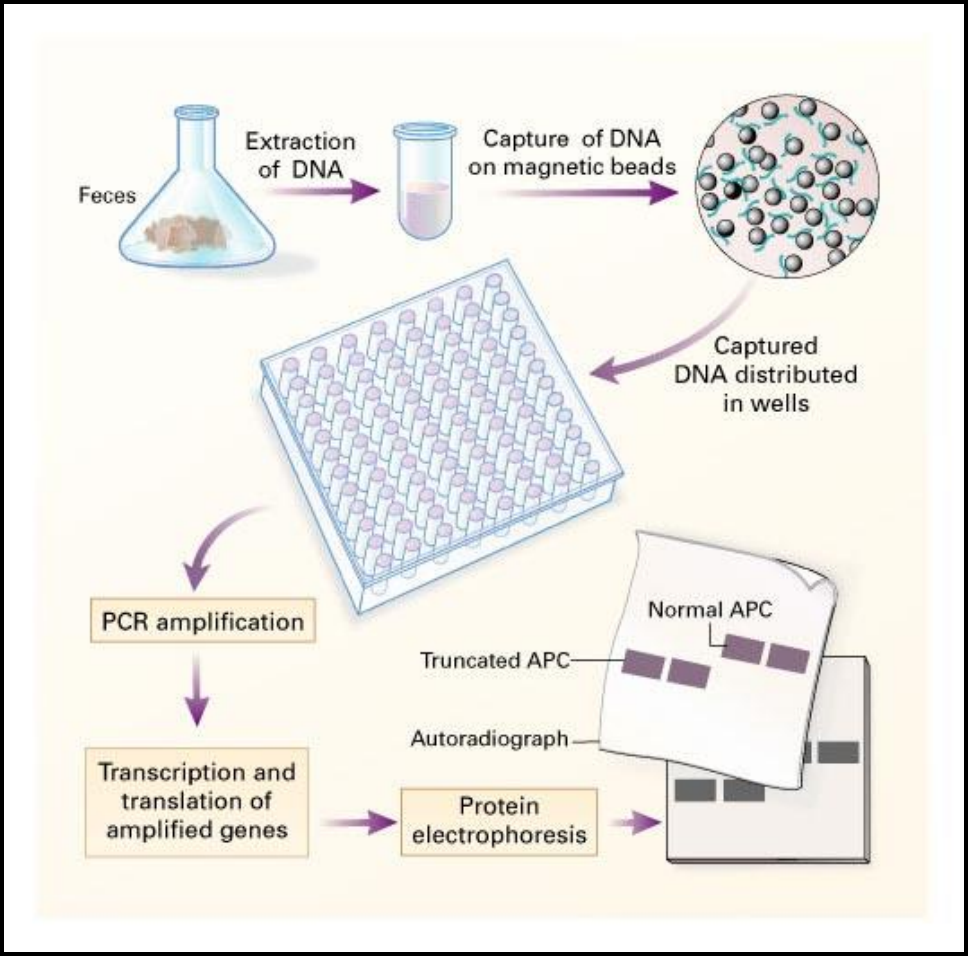
Pickhardt et al. N Engl J Med 2003;349:2191-2200

Virtual Colonoscopy Results are Variable



Pickhardt et al. N Engl J Med 2003;349:2191
Cotton et al. JAMA 2004, 291:1731

Stool DNA Testing



Schwartz. N Engl J Med 2002;346:302-4

Stool DNA Testing

- Pros
  - No sedation or preparation necessary
  - Home-based (patient mails sample)
  - No risk
- Cons
  - Limited clinical availability
  - Optimal frequency unknown
  - False negatives occur

Colorectal Cancer Screening

Test	Interval
Detects cancer and adenomatous polyps	
Colonoscopy	Every 10 years
Flexible sigmoidoscopy	Every 5 years
CT colonography	Every 5 years
Primarily detects cancer	
Fecal occult blood testing with immunochemical test	Every year on 1-2 samples
Fecal occult blood testing with guaiac reagent	Every year on 3 samples

Barriers to Screening

- Cost and lack of access to health care
- Lack of awareness of need for colorectal cancer screening
- Inadequate communication by health care providers
- Differences between patient and provider preferences for screening
- Low levels of education and income
- Personal barriers – fear and embarrassment

Colorectal cancer facts and figures 2011-2013. http://www.cancer.org/acs/groups/content/@epidemiologysurveilance/documents/document/acspc-028323.pdf. Accessed 2/10/14

MARCH IS

Colorectal Cancer Awareness Month

MORE THAN 1/2

the patients who will

DIE OF CRC THIS YEAR

could have

BEEN SAVED BY EARLY SCREENING.

Age 50+? Talk to a gastroenterologist about screening.

BROUGHT TO YOU BY THE AMERICAN GASTROENTEROLOGICAL ASSOCIATION

Take Home Points

- CRC is common
- CRC screening works
- Best test is the test that gets done!