

Update in Internal Medicine 2022

Colorectal Cancer Prevention and Polyp Management

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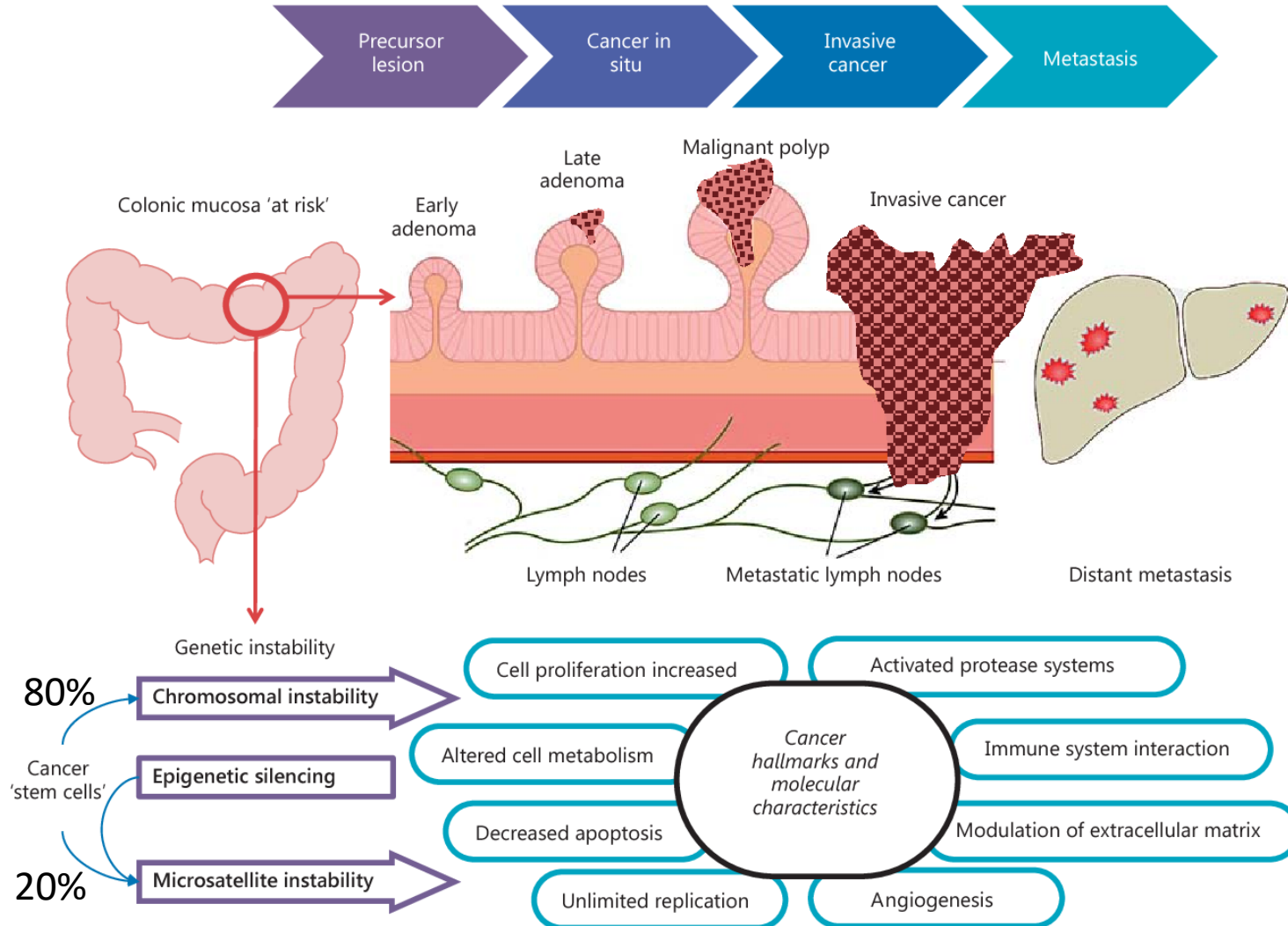
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Outline

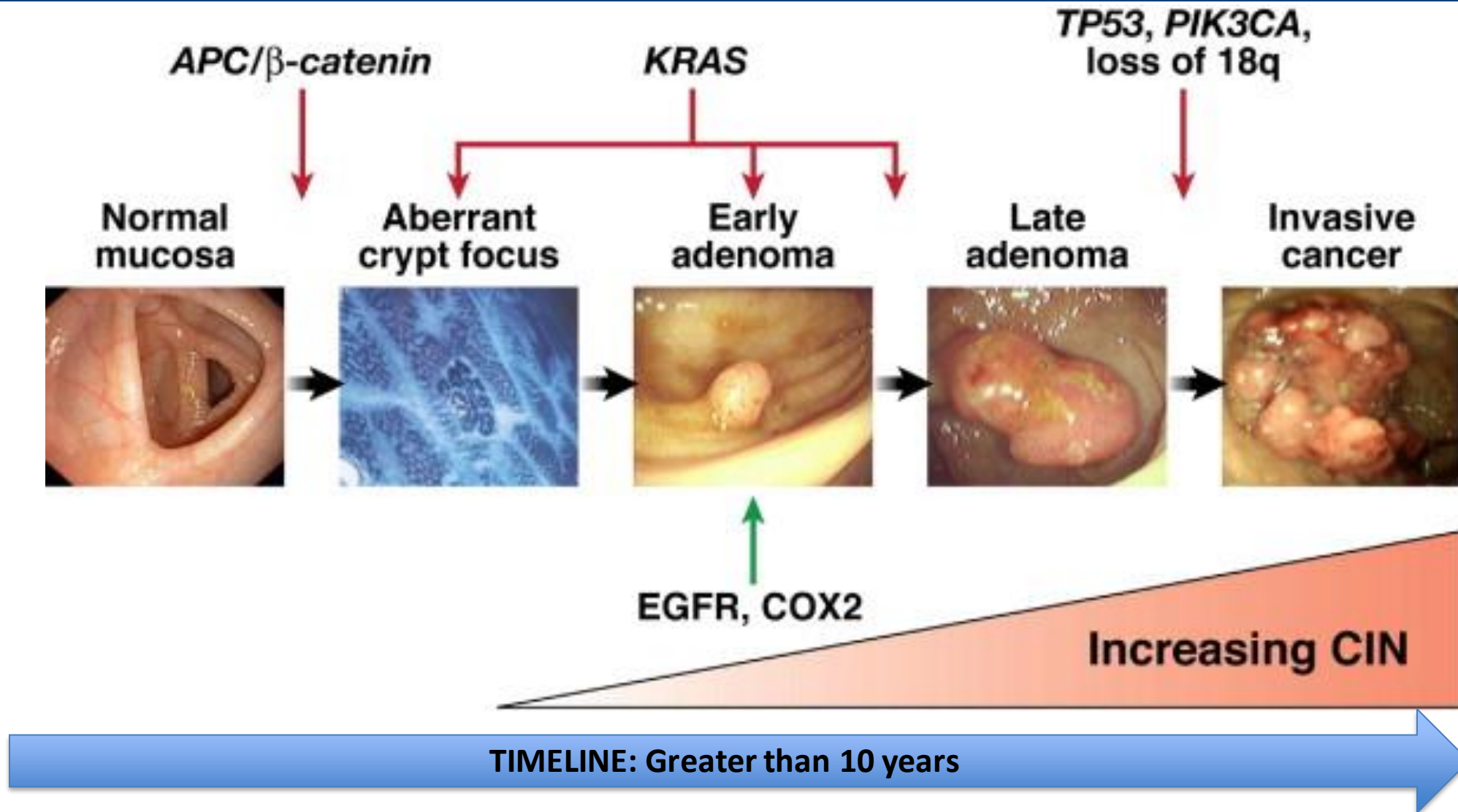
- Colorectal Cancer (CRC) Overview
- CRC Screening Modalities
- Who Should Be Screened?
- High-Risk Populations
- Colon Polyp Surveillance Intervals
- Effectiveness of Screening
- Next Steps

Colorectal Cancer (CRC) Overview

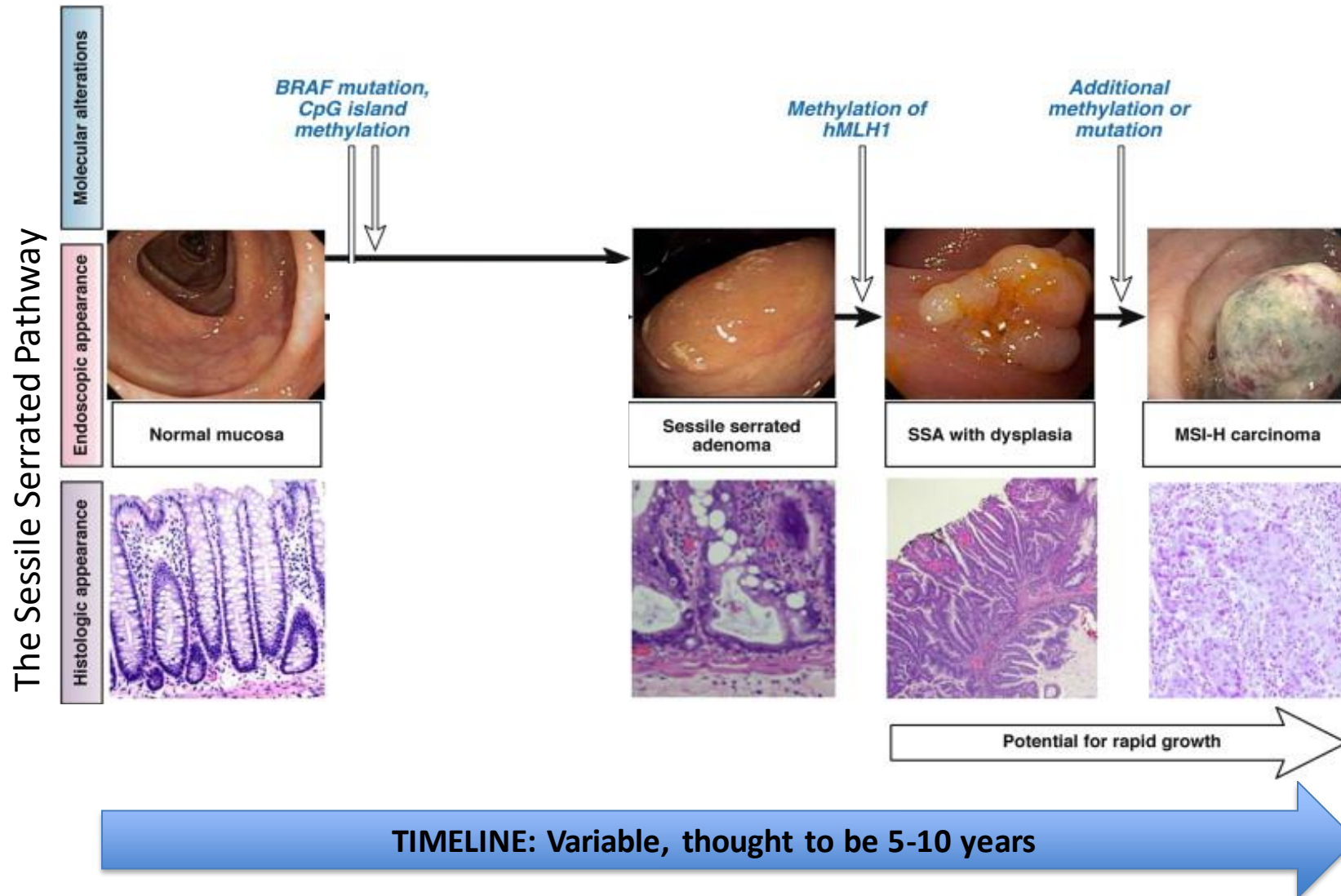


CRC Progression: Chromosomal Instability (CIN) Tumors

The Adenoma-Carcinoma Pathway



CRC Progression: Microsatellite Instability (MSI) Tumors

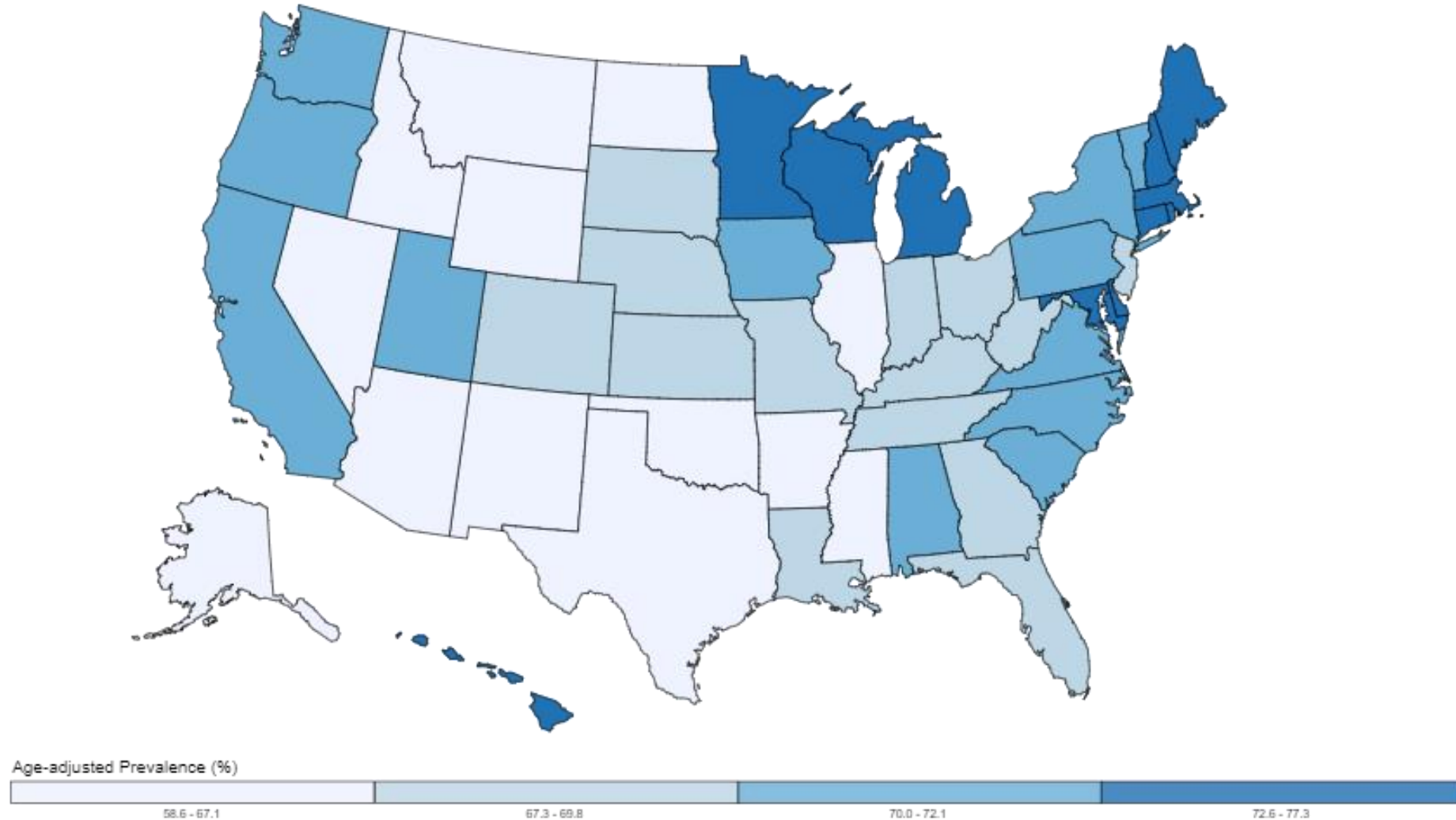


CRC: Epidemiology

- Colorectal Cancer (CRC) is the second most common cause of cancer death in the United States among men and women combined
 - In 2021, approximately 149,500 Americans were diagnosed with CRC, with 52,980 deaths
 - 65% of cases occur in individuals with no family history or predisposing conditions e.g. Inflammatory Bowel Disease (IBD)
 - >80% of cases are preventable with timely screening

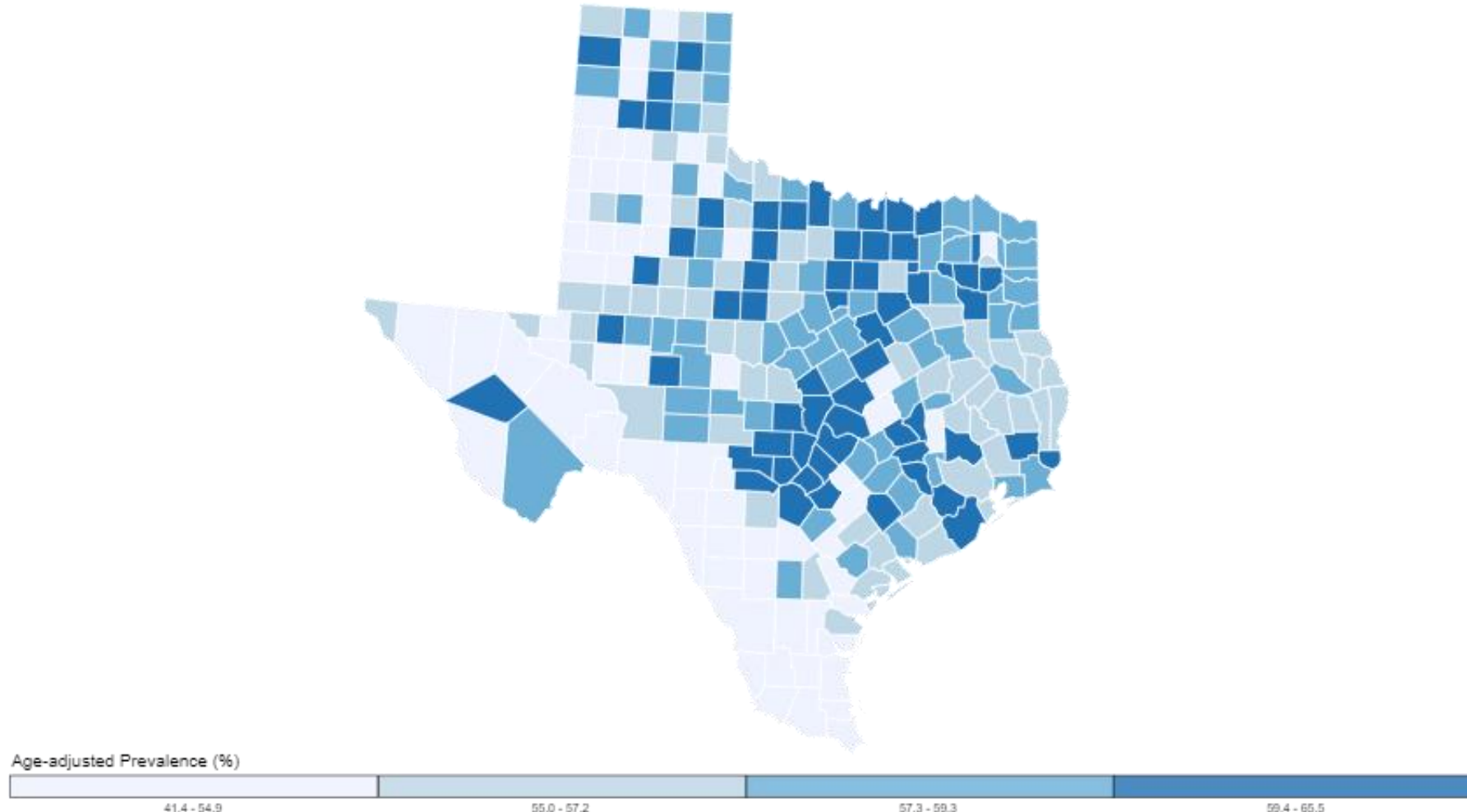
CRC Screening: United States

Adults aged 50-75 years (percentage) who reported being up-to-date with colorectal cancer screening



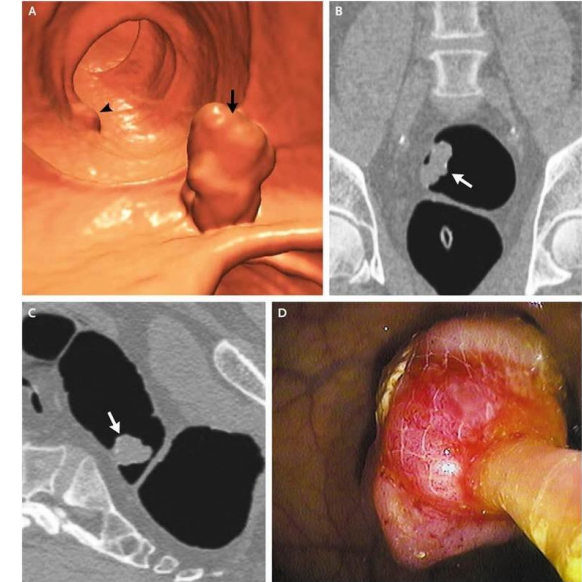
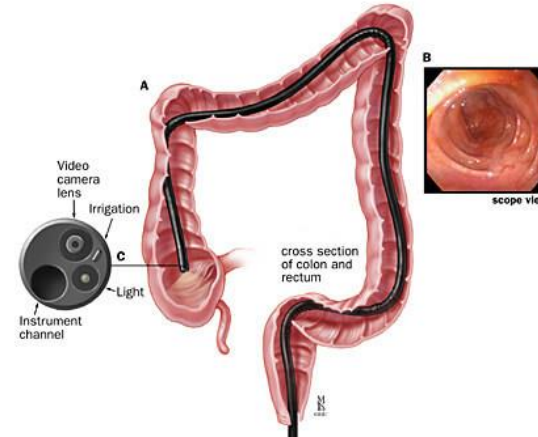
CRC Screening: Texas

Adults aged 50-75 years (percentage) who reported being up-to-date with colorectal cancer screening



CRC Screening Modalities

- Stool-based testing:
 - Fecal Immunochemical Test (FIT)
 - Multi-target stool DNA test (e.g. Cologuard)
- Serum tests:
 - Septin9
 - Circulating tumor DNA
- Radiologic imaging:
 - CT Colonography
- Direct imaging:
 - Capsule colonoscopy
 - Flexible sigmoidoscopy
 - Colonoscopy



CRC Screening: Stool and Serum Tests

Test	Characteristics	Pros	Cons
Fecal Immunochemical Test (FIT)	<ul style="list-style-type: none"> - 79% sensitivity, 94% specificity for CRC 	<ul style="list-style-type: none"> - Non-invasive - No bowel prep - No fasting/diet change - Can be done at home 	<ul style="list-style-type: none"> - Positive result requires colonoscopy - Repeat annually - Low sensitivity for advanced adenomas - Does not detect serrated lesions - Costs about \$8.00
Multi-target Stool DNA Test (ex: Cologuard)	<ul style="list-style-type: none"> - 92% sensitivity and 87% specificity for CRC 	<ul style="list-style-type: none"> - Non-invasive - No bowel prep - No fasting/diet change - Can be done at home 	<ul style="list-style-type: none"> - Positive result requires colonoscopy - Recommended 3 year interval - More expensive than FIT (about \$500.00)
Septin 9 serum test	<ul style="list-style-type: none"> - 48% sensitivity and 91% specificity for CRC 	<ul style="list-style-type: none"> - No bowel prep - No fasting/diet change - Can be added to routine labs 	<ul style="list-style-type: none"> - Positive result requires colonoscopy - Repeat interval unknown (annually?) - Low sensitivity for CRC - Costs about \$170.00

- Stool based testing is useful when screening large numbers of average risk patients
- Serum testing is not an appropriate stand-alone screening test at this time
- **IMPORTANT: Any abnormal test should be followed by a colonoscopy!**

CRC Screening: Direct and Indirect Visualization

Test	Characteristics	Pros	Cons
CT Colonography	<ul style="list-style-type: none"> - 90-100% sensitivity for CRC - Poor sensitivity for flat lesion and sessile serrated lesions 	<ul style="list-style-type: none"> - Minimally invasive - No sedation 	<ul style="list-style-type: none"> - Positive result requires colonoscopy - Requires bowel prep - Air needed to inflate colon - IV contrast frequently used - Limited availability - Follow-up may be required for extra-colonic findings - Repeat every 5 years - Costs \$330 - \$1081.00 (not covered by Medicare)
Capsule colonoscopy	<ul style="list-style-type: none"> - 81% sensitivity and 93% specificity for polyps >6mm 	<ul style="list-style-type: none"> - Minimally invasive - No sedation 	<ul style="list-style-type: none"> - Positive result requires colonoscopy - Requires bowel prep - Repeat interval unknown - Costs about \$2700.00 (not covered by Medicare)
Flexible sigmoidoscopy	<ul style="list-style-type: none"> - 90-100% sensitivity for left-sided CRC - 21% reduction in CRC incidence - 26% reduction in CRC mortality 	<ul style="list-style-type: none"> - Low risk of complications 	<ul style="list-style-type: none"> - Positive results require colonoscopy - Requires enemas - Requires fasting if sedation given - Repeat every 5-10 years - Costs about \$1500 in Texas (usually covered by Medicare)
Colonoscopy	<ul style="list-style-type: none"> - 100% detection rate for CRC - Up to 71% reduction in CRC incidence - Up to 88% reduction in CRC mortality 	<ul style="list-style-type: none"> - Diagnostic and therapeutic - Can detect and remove precancerous polyps - Infrequent repeat interval possible 	<ul style="list-style-type: none"> - Requires bowel prep - Usually requires sedation - Requires fasting if sedation given - Risk of complications 8/10,000 (0.08%) - Operator dependent - Costs about \$3000.00 (usually covered by Medicare)

Who Should Be Screened?

- Adults aged 45 to 75 years
- Patients expected to live another 10 years
- Very healthy patients aged 75 to 85 can discuss risks/benefits of CRC screening



CCI: Risk Stratification

Charlson Comorbidity Index (CCI) ☆

Predicts 10-year survival in patients with multiple comorbidities.

Myocardial infarction History of definite or probable MI (EKG changes and/or enzyme changes)	No 0	Yes +1
CHF Exertional or paroxysmal nocturnal dyspnea and has responded to digitalis, diuretics, or afterload reducing agents	No 0	Yes +1
Peripheral vascular disease Intermittent claudication or past bypass for chronic arterial insufficiency, history of gangrene or acute arterial insufficiency, or untreated thoracic or abdominal aneurysm (≥6 cm)	No 0	Yes +1
CVA or TIA History of a cerebrovascular accident with minor or no residua and transient ischemic attacks	No 0	Yes +1
Dementia Chronic cognitive deficit	No 0	Yes +1
COPD	No 0	Yes +1
Connective tissue disease	No 0	Yes +1
7 points Charlson Comorbidity Index	0 % Estimated 10-year survival	

Family History of CRC



- Patients with a family history of CRC should undergo screening colonoscopy
 - One first-degree relative diagnosed prior to age 60 or in 2 or more first-degree relatives of any age
 - Start screening age 40 or 10 yrs before youngest relative's age of diagnosis
 - If first-degree relative diagnosed prior to age 60, screen every 5 years
 - If first-degree relative diagnosed after age 60, start early but follow polypectomy guidelines
 - Patients with one second-degree relative or third-degree relative should be screened as average-risk

Family History of CRC

- A 36 yo M is referred to GI for consideration of colonoscopy. He reports that his mother's father was diagnosed with CRC at age 82, and his mother's brother was diagnosed with CRC at age 69. When should he start screening, and what mode of screening should he undergo?
- A. Colonoscopy, age 45
- B. Fecal immunochemical testing, age 45
- C. Colonoscopy, age 40
- D. Fecal immunochemical testing, age 40
- E. Colonoscopy now

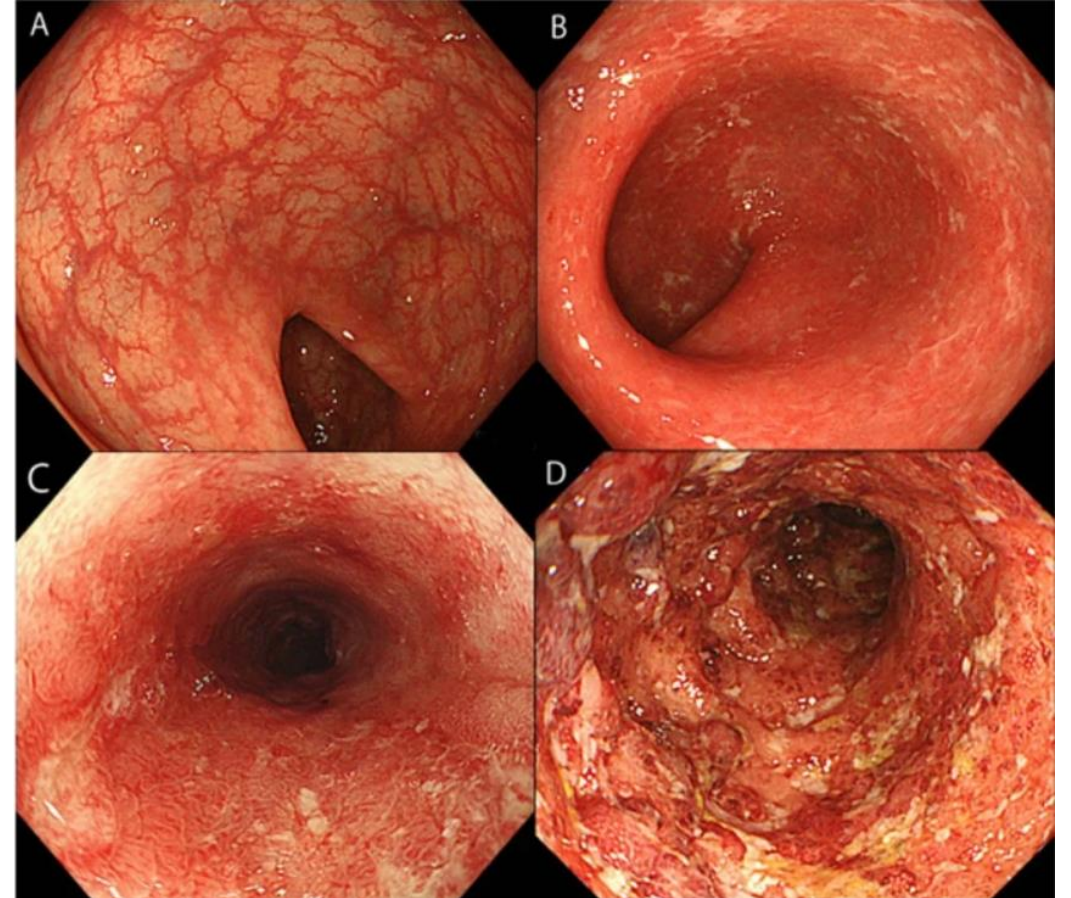
Family History of CRC

■ The same gentleman undergoes colonoscopy at age 40, which is normal except for external hemorrhoids. The bowel prep is excellent and the procedure was performed by an experienced endoscopist. When should he undergo repeat screening?

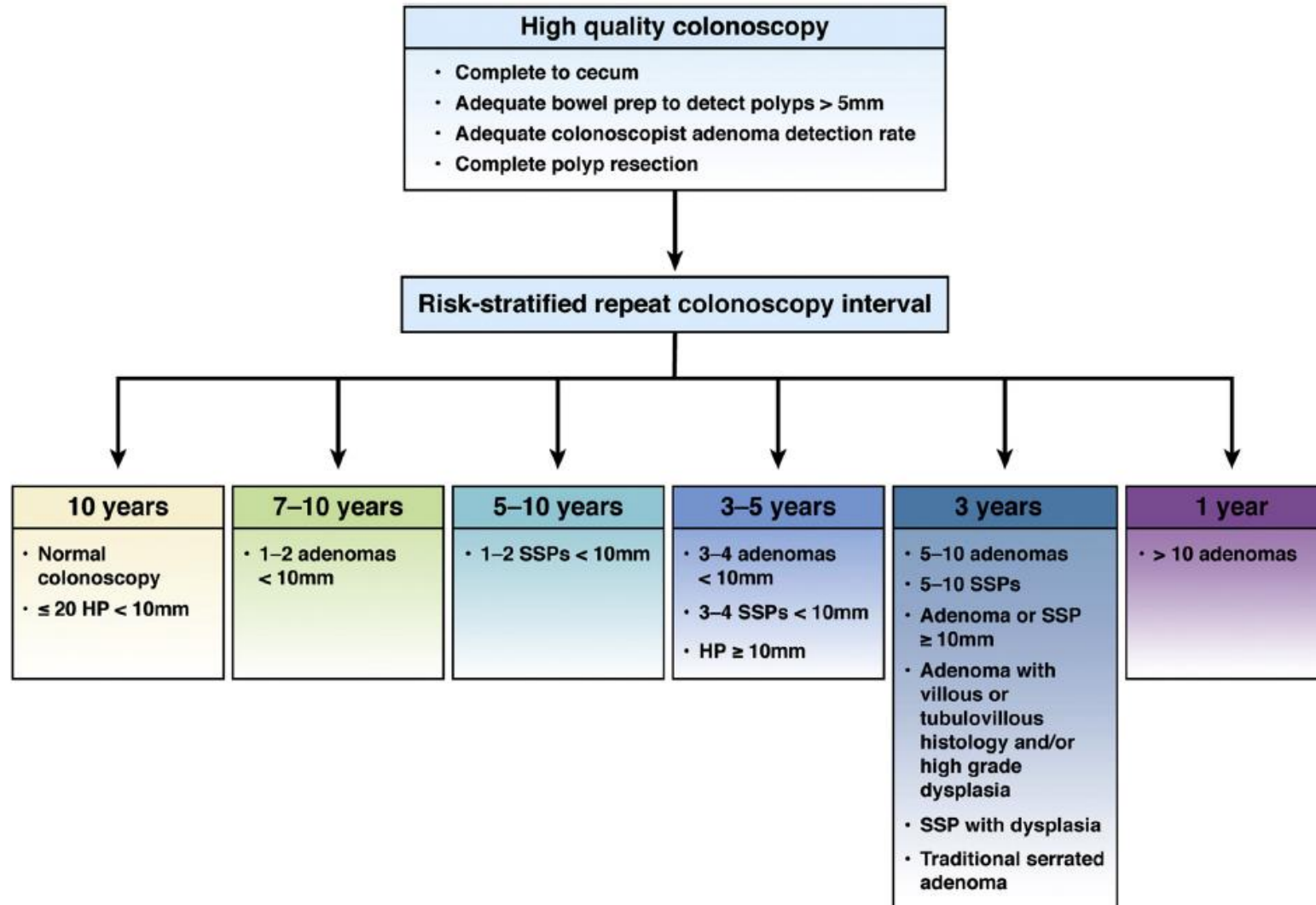
- A. Colonoscopy in 10 years
- B. Colonoscopy in 5 years
- C. Colonoscopy in 3 years
- D. Fecal immunochemical testing in 5 years
- E. Fecal immunochemical testing in 10 years

Populations at High Risk for CRC

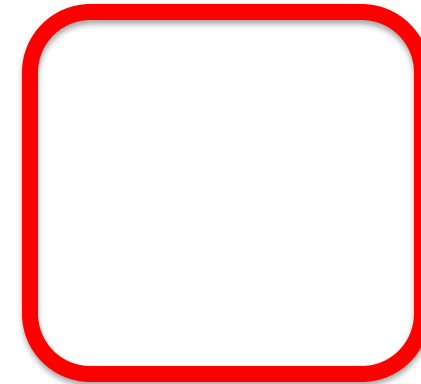
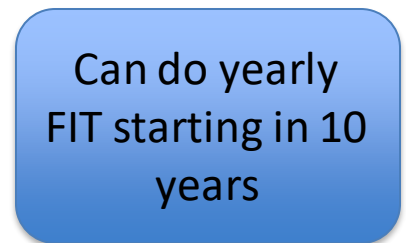
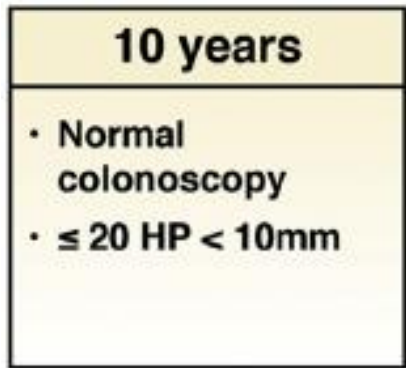
- Patients with Inflammatory Bowel Disease should also undergo colonoscopy rather than non-invasive CRC screening
 - Generally, these patients undergo colonoscopy every 1-3 years for IBD disease activity surveillance and CRC screening
- Patients with history of adenomatous polyps or non-metastatic CRC should undergo surveillance colonoscopy rather than non-invasive CRC screening
 - MSTF 2020 polyp surveillance guidelines
 - History of CRC s/p resection: colonoscopy within 1 year, then 3 years, then q5 years while healthy



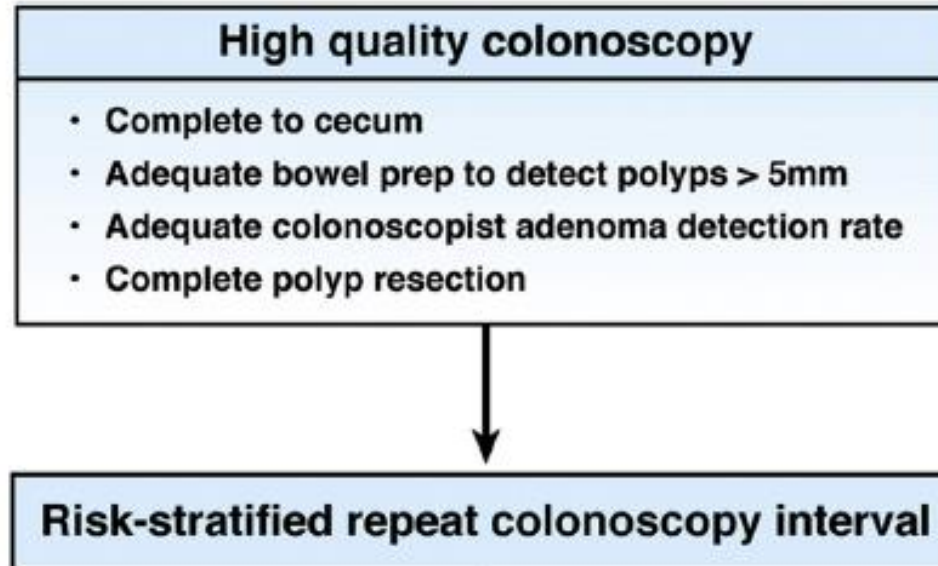
Colon Polyp Surveillance Intervals



Colon Polyp Surveillance Intervals

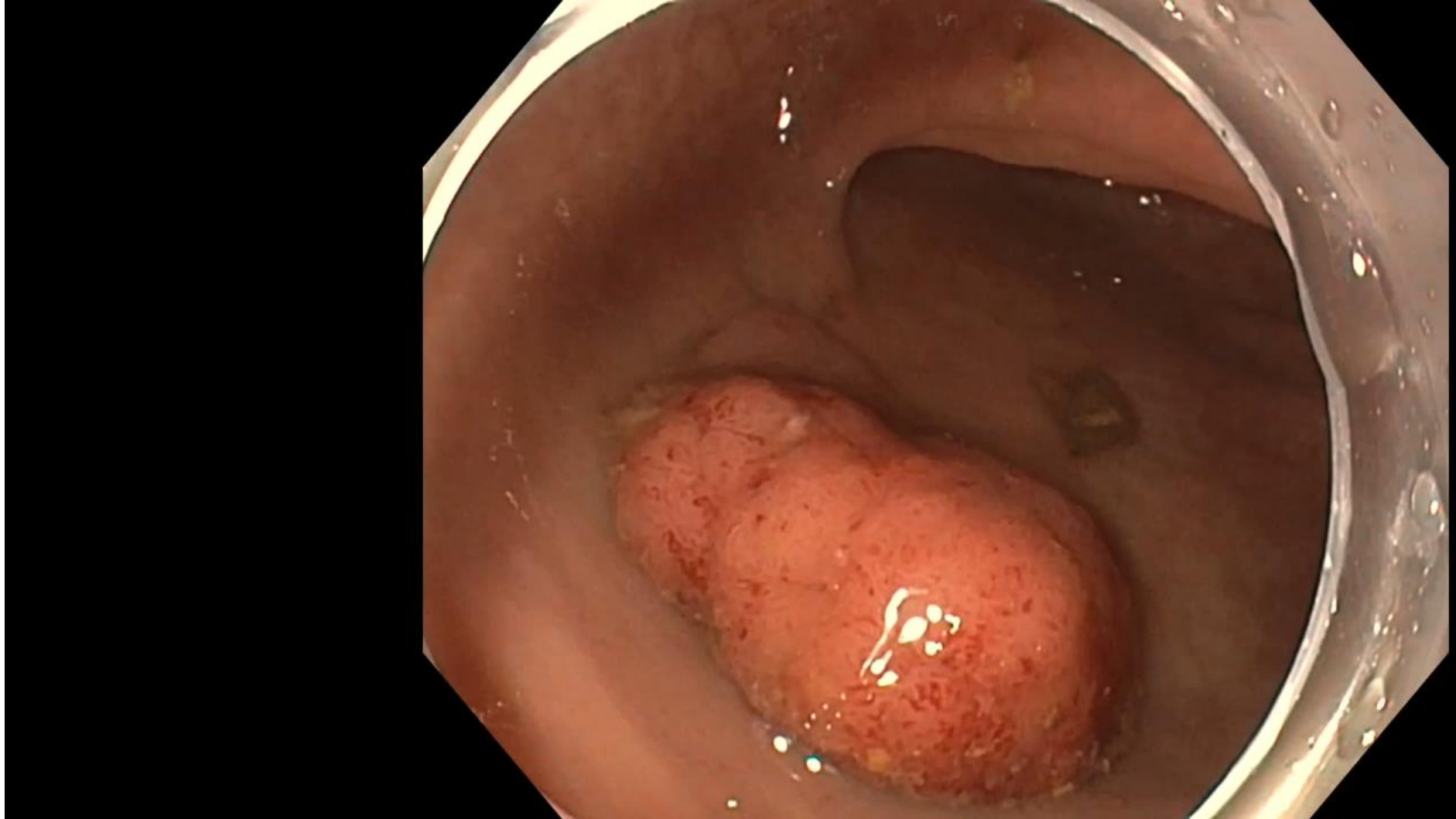


Colon Polyp Surveillance Intervals



- Often, polyps with high-grade dysplasia are larger (>1cm) and are removed in piecemeal fashion
 - Given high risk of progression to malignancy, many endoscopists will elect to bring the patient back in 6-12 months to ensure that the polyp is completely removed
- Polyps that are biopsied but are not removed showing HGD may be malignant and warrant close follow-up

Colon Polyp Resection Video



Effectiveness of Screening



- Undergoing a single colonoscopy reduces the risk of CRC mortality by 67%
- 90% of patients live 5 years or longer if CRC is diagnosed early through screening
- 1 out of 10 patients who underwent screening completed a non-invasive stool test
 - Non-invasive screening has help mitigate the backlog exacerbated by the COVID-19 pandemic

Summary and Conclusions

- Colorectal cancer is the 2nd leading cause of cancer death among U.S. men and women combined
 - This is largely preventable with screening
 - There are many screening options available
 - An abnormal non-invasive screen should be followed by colonoscopy
 - Patients with limited life expectancy should participate in shared decision-making regarding CRC screening



Next Steps

- More non-invasive screening options
 - Serum tests with higher sensitivity
- Better tasting/smaller volume bowel prep!!!
- Improving colonoscopy completion rates after an abnormal non-invasive screening test



Thank You!

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