

Colonoscopy Screening for Colorectal Cancer: Optimizing Quality

Endoscopist Version Part 1



Colonoscopy Screening for Colorectal Cancer: Optimizing Quality

- ❑ **Two-part course presented by Dr. David Lieberman:**
 1. Colorectal cancer and the value of screening / Screening and surveillance guidelines
 2. Colonoscopy

- ❑ **Each part includes:**
 - Narrated presentation with slides
 - PDF file of slides for reference

Links

The slides in this presentation include [links](#) to:

- ❑ External Web sites that contain the abstract or full text, when available, of pertinent articles.
- ❑ External documents that provide supplemental information.
- ❑ Other slides within this presentation.

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Acknowledgments

- ❑ **This presentation was developed by the following group of experts in colorectal cancer screening:**
 - Lynn Butterly, MD (gastroenterology)
 - Diane Dwyer, MD (public health, primary care)
 - David Lieberman, MD (gastroenterology)
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- ❑ **Dr. Lieberman served on the Scientific Advisory Board of Exact Sciences Corporation.**
- ❑ **The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention or the American Cancer Society.**

Introduction

- ❑ Screening for colorectal cancer (CRC) saves lives.
- ❑ CRC screening is a complex process that achieves the maximum benefit for the patient when all steps are implemented appropriately.
- ❑ Problems with screening implementation have been well documented for all screening options.



What Are Some Implementation Problems?

With Colonoscopy:

- × Polyps are missed.
- × The cecum is not reached.
- × Bowel preparation is sub-optimal.
- × The colonoscopy report is missing important elements.
- × Recommendations for screening and surveillance intervals are not consistent with guidelines.
- × Endoscopists do not monitor their performance, so they are not aware when they are not meeting quality standards.

What Are Some Implementation Problems?

With Fecal Occult Blood Testing (FOBT):

- × FOBT not offered as a good option for screening average-risk patients.
- × Patient preferences for FOBT not taken into account.
- × Use of tests that are no longer recommended.
- × Use of in-office tests.
- × Abnormal tests not followed up with colonoscopy.
- × FOBT tests not repeated annually.

Goal of This Presentation

To improve screening quality by providing up-to-date guidance on ways to optimize the screening process, with particular emphasis on the areas where current practice often falls short.

Learning Objectives

Upon completion of this course, learners will be able to:

1. Recommend appropriate testing for each patient, consistent with screening and surveillance guidelines for different population subgroups.
2. Recognize ways to achieve good preparation quality.
3. Identify the elements required for a complete colonoscopy report.
4. Explain which quality indicators should be monitored to improve colonoscopy performance.

“80% by 2018”

- ❑ Many eligible patients are not being screened.
- ❑ Efforts to raise screening rates should be enhanced.
 - The National Colorectal Cancer Roundtable proposed the goal of increasing screening rates to at least **“80% by 2018”**.
 - More than 150 organizations have signed a pledge to achieve this goal.
 - Attention to quality must be maintained.
- ❑ This presentation will focus on providing high-quality testing for those who are screened.

Part 1: Topics to Be Covered

- ❑ CRC and the value of screening
- ❑ Screening and surveillance guidelines –
who / how / when
 - Stratifying by risk
 - Average risk
 - Increased risk
 - Family history
 - Personal history
 - High / highest risk



Part 2: Topics to Be Covered

□ Colonoscopy

- Ensuring that colonoscopy is appropriate.
- The importance of good bowel preparation.
- The importance of complete documentation.
 - Recommending appropriate follow-up.
- The need to improve the quality of colonoscopy.

**PART 1:
COLORECTAL CANCER AND THE
VALUE OF SCREENING**

Facts About Colorectal Cancer

- ❑ 135,260 new cases and 51,783 deaths in 2011 in the United States.*
- ❑ Second leading cause of cancer death overall, after lung cancer.
- ❑ Can be prevented or detected early through screening.
- ❑ Incidence and mortality have been declining in the United States.
 - 30% decrease in incidence during past decade among adults aged 50 and older.**
- ❑ Screening has been an important contributor to U.S. declines in incidence and mortality.

*US Cancer Statistics Working Group. 2014, see [Colorectal Cancer Statistics](#).

**[Colorectal cancer statistics, 2014](#).

Where Does Colorectal Cancer Come From?

- ❑ Most cancers of the colon and rectum develop over years from adenomatous or serrated polyps.
- ❑ Polyps are very common and increase with age, but very few progress to cancer.
- ❑ Polyps that are larger or have dysplasia or villous histology have a higher risk of progression to cancer than other polyps.
- ❑ Estimate of polyp dwell time from a <1 cm adenomatous polyp to an invasive cancer is at least 10 years.



Prevention and Early Detection Through Screening

Detection and Removal of
Clinically Significant Polyps

Decreased Incidence,
Decreased Mortality

Detection and Treatment of Early-
Stage Colorectal Cancer

Decreased Mortality

Screening for Colorectal Cancer Gets an “A”

The U.S. Preventive Services Task Force (USPSTF) recommends screening for adults beginning at age 50 until (at least) age 75.

■ “A” Grade

- There is high certainty that the net benefit is substantial.
- Suggestion for practice: offer or provide this service.



SCREENING AND SURVEILLANCE GUIDELINES: WHO / HOW / WHEN

Is Screening Appropriate for Your Patient?

Need to know patient's:

- Risk level
- Screening and surveillance history
- Age
- Comorbidities
- Preferences



Risk Stratification to Ensure Appropriate Screening and Surveillance*

- ❑ **Average Risk**
 - No signs or symptoms of CRC.
 - None of the risk factors below.

- ❑ **Increased Risk**
 - Family history of CRC or adenomas in a first-degree relative or CRC in two second-degree relatives.
 - Personal history of adenomas, certain serrated polyps, or CRC.

- ❑ **High Risk**
 - Inflammatory bowel disease: chronic ulcerative colitis or Crohn's colitis.

- ❑ **Highest Risk**
 - Confirmed or suspected genetic syndromes (FAP, HNPCC).

*The term “surveillance” is used for testing patients with a personal history of colorectal adenomas, certain serrated polyps, or cancer. “Diagnostic testing” is appropriate for patients with signs or symptoms.

Screening for Colorectal Cancer

AVERAGE RISK

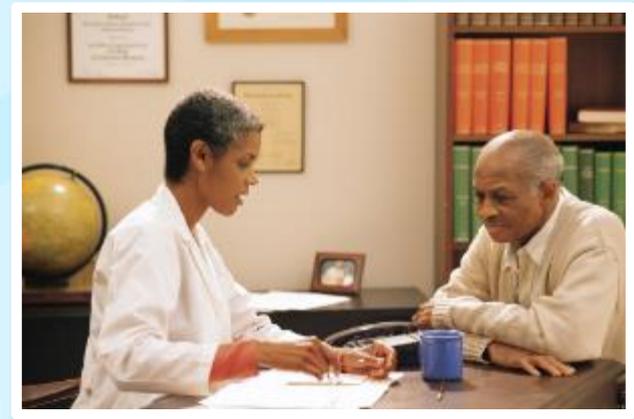
Pop Quiz

1. What is the best CRC screening test for average-risk patients?
2. When should an average-risk patient with a normal colonoscopy be screened next?
3. At what age should patients no longer be screened?

Patients at Average Risk: 2016 Screening Guidelines

- ❑ Multiple screening strategies are available.
- ❑ Different strategies have varying levels of evidence to support their effectiveness.
- ❑ Each strategy has different advantages and limitations.
- ❑ No empirical data to demonstrate that any of the strategies provide a greater net benefit than others.

- ❑ Goal is to **maximize the number of people who are screened.**



[Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement.](#)

Patients at Average Risk: Colorectal Cancer Screening Strategies

Stool-Based Tests

- ❑ Highly sensitive gFOBT every year
- ❑ FIT every year
- ❑ FIT-DNA every 1 or 3 years

Visualization Tests

- ❑ Colonoscopy every 10 years
- ❑ CT colonography every 5 years
- ❑ Flex Sig every 5 years
- ❑ Flex Sig with FIT Flex sig every 10 years plus FIT every year

Abbreviations: gFOBT, guaiac-based fecal occult blood test; FIT, fecal immunochemical test; FIT-DNA, multi-targeted stool DNA test; Flex Sig, flexible sigmoidoscopy.

[Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement.](#)

Multi-Targeted Stool DNA Testing (FIT-DNA)

- ❑ Combines a FIT with a stool DNA test (Cologuard^{®*}).
- ❑ Higher single-test cancer and polyp detection than FIT alone (Multitarget Stool DNA Testing for Colorectal-Cancer Screening).
- ❑ Lower specificity than FIT alone, resulting in more false-positive results and more diagnostic colonoscopy.
- ❑ Insufficient evidence on the appropriate follow-up of positive findings after a negative colonoscopy.
 - May lead to overly intense surveillance due to concerns over the DNA component.
- ❑ Medicare reimburses every 3 years.

*Use of trade names is for identification only and does not imply endorsement by the US Department of Health and Human Services.

CT Colonography (Virtual Colonoscopy)

- ❑ Requires bowel preparation.
- ❑ Sensitive for polyps $\geq 6\text{mm}$ and cancer.
- ❑ Incidental extracolonic findings (ECFs) are common, but most do not require additional evaluation.
- ❑ ECFs have potential for both benefit and harm.
 - Limited evidence about potential benefits (e.g., discovery of abdominal aortic aneurysms and extracolonic cancers) and harms (overdiagnosis and overtreatment).
- ❑ Facility should have capacity to provide same-day colonoscopy when needed to remove polyps.
- ❑ As of July 2016, not covered for screening by Medicare, but coverage is being reconsidered. (check website* for updates)
- ❑ Covered for screening by some private insurers.

*American College of Radiology: Quality and Safety: CT Colonography Resources

Average Risk: Ages to Screen

- ❑ Most adults aged 50–75 (Grade A: offer or provide this service).
- ❑ In the elderly, screening is associated with decreased benefits and increased harms.
 - Screen ages 76–85 on a case-by-case basis (Grade C: offer or provide this service for selected patients depending on individual circumstances).
 - Do not routinely screen adults in this age group who have a history of adequate screening.
 - Consider screening if not up-to-date with screening and life expectancy at least 5–10 years.
 - Do not screen adults aged >85 (Grade D: discourage the use of this service).

Should African Americans Start Screening Before Age 50?

- ❑ Rationale for earlier screening:
 - Higher age-specific rates of CRC among African Americans.
- ❑ Rationale against earlier screening:
 - Most CRC cases in African Americans occur after age 60.
 - Prevalence of polyps >9mm similar for whites and African Americans.
 - No evidence supporting effectiveness of earlier screening.
 - Increasing screening rates by >10% among African Americans over age 50 is more effective than earlier screening.
- ❑ Guidelines vary:
 - USPSTF, ACS-MSTF-ACR*: age 50
 - ACG,** ASGE***: age 45
 - ACP: age 40
- ❑ Coverage varies:
 - Medicare and states with mandatory screening requirement: age 50

**Recommendation:
begin screening
at age 50**

*ACS-MSTF-ACR: American Cancer Society –Multi-Society Task Force on Colorectal Cancer – American College of Radiology

**ACG: American College of Gastroenterology

***ASGE: American Society for Gastrointestinal Endoscopy

Do Not Screen Patients with Severe Comorbidities

Estimated life expectancy <5 years
such as metastatic cancer, Alzheimer's,
or class III or IV congestive heart failure

High-risk conditions
such as neutropenia, unstable angina,
or a high risk for operative complications

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graph TD; A[Estimated life expectancy <5 years] --> C[Do Not Screen!]; B[High-risk conditions] --> C;
```

Do Not Screen!

Screening and Surveillance for Colorectal Cancer
INCREASED RISK

Screening Patients with a Family History

- If patient has either:
 - CRC or adenomas* in a first-degree relative diagnosed at **age ≥ 60** OR
 - Two second-degree relatives with CRC



Begin screening at age 40 with any test recommended for average risk; repeat at usual intervals based on type of test and findings.**

- If patient has either:
 - CRC or adenomas* in a first-degree relative diagnosed **before age 60** OR
 - Two or more first-degree relatives diagnosed at any age (with family history not suggestive of genetic syndrome)



Colonoscopy every 5 years starting at age 40, or 10 years before the youngest case in the family was diagnosed, whichever comes first.**

*Our expert opinion is that this applies to relatives with advanced adenomas (adenomas that are ≥ 1 cm, villous, or with high-grade dysplasia) only, recognizing that this information is often unavailable.

**The evidence base for these guidelines was not strong and some aspects are controversial.

Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology

Pop Quiz

1. What is the recommended surveillance interval to the next colonoscopy for a patient with one 7mm tubular adenoma?
2. What is the recommended surveillance interval for a patient with three 5mm adenomas?

Surveillance of Patients with Adenomas at Prior Colonoscopy

❑ Low-risk adenomas*

- 1–2 tubular adenomas <10mm



Colonoscopy in 5–10 years

❑ High-risk adenomas*

- 3–10 adenomas <10mm OR
- ≥1 adenoma ≥10mm OR
- ≥1 adenoma with villous features OR
- ≥1 adenoma with high-grade dysplasia



Colonoscopy in 3 years

- >10 adenomas



Colonoscopy in <3 years
(consider syndrome)

❑ Any adenoma with piecemeal or possibly incomplete excision



Colonoscopy in 2–6 months

*These recommendations assume that the prior colonoscopy was complete and adequate. For serrated polyps, see [Surveillance of Patients with Serrated Polyps at Prior Colonoscopy](#).

[Guidelines for Colonoscopy Surveillance After Screening and Polypectomy: A Consensus Update by the US Multi-Society Task Force on Colorectal Cancer](#)

Recommendations for Adenoma Surveillance After First Surveillance Colonoscopy

Baseline Colonoscopy Finding	First Surveillance Colonoscopy Finding	Interval for Second Surveillance (years)
Low-risk adenoma (LRA)	<ul style="list-style-type: none"> • HRA • LRA • No adenoma 	<ul style="list-style-type: none"> • 3 • 5 • 10
High-risk adenoma (HRA)	<ul style="list-style-type: none"> • HRA • LRA • No adenoma 	<ul style="list-style-type: none"> • 3 • 5 • 5

Guidelines for Colonoscopy Surveillance After Screening and Polypectomy: A Consensus Update by the US Multi-Society Task Force on Colorectal Cancer

Pop Quiz

1. Do serrated polyps ever develop into cancer?
2. What is the recommended surveillance for serrated polyps?

Serrated Polyps: New Guidance

- ❑ Serrated lesions are characterized histologically by a serrated (saw-toothed) appearance of the crypt epithelium.*
- ❑ In the past, most serrated lesions were called *hyperplastic polyps* and were thought to have no malignant potential.
- ❑ More recently, a subset of serrated lesions has been identified as the precursor of 20%–30% of CRCs, primarily in the proximal colon.

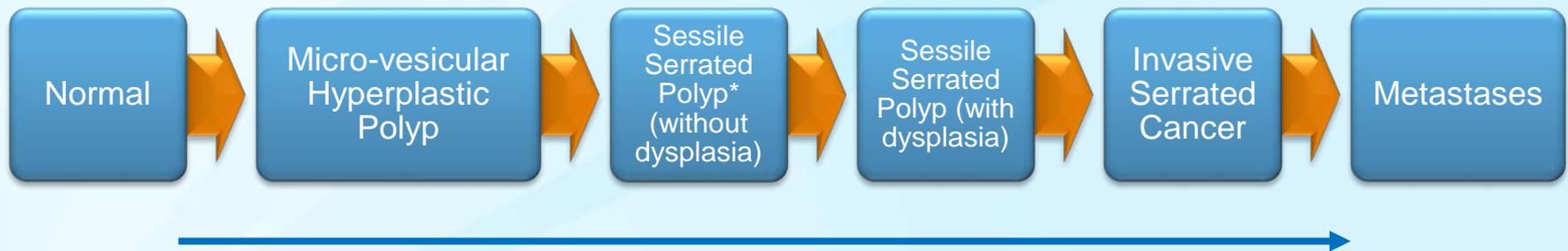
[*Serrated Lesions of the Colorectum: Review and Recommendations From an Expert Panel](#)

Natural History of Colorectal Cancer

Adenoma-Carcinoma Pathway



Serrated Polyp Pathway

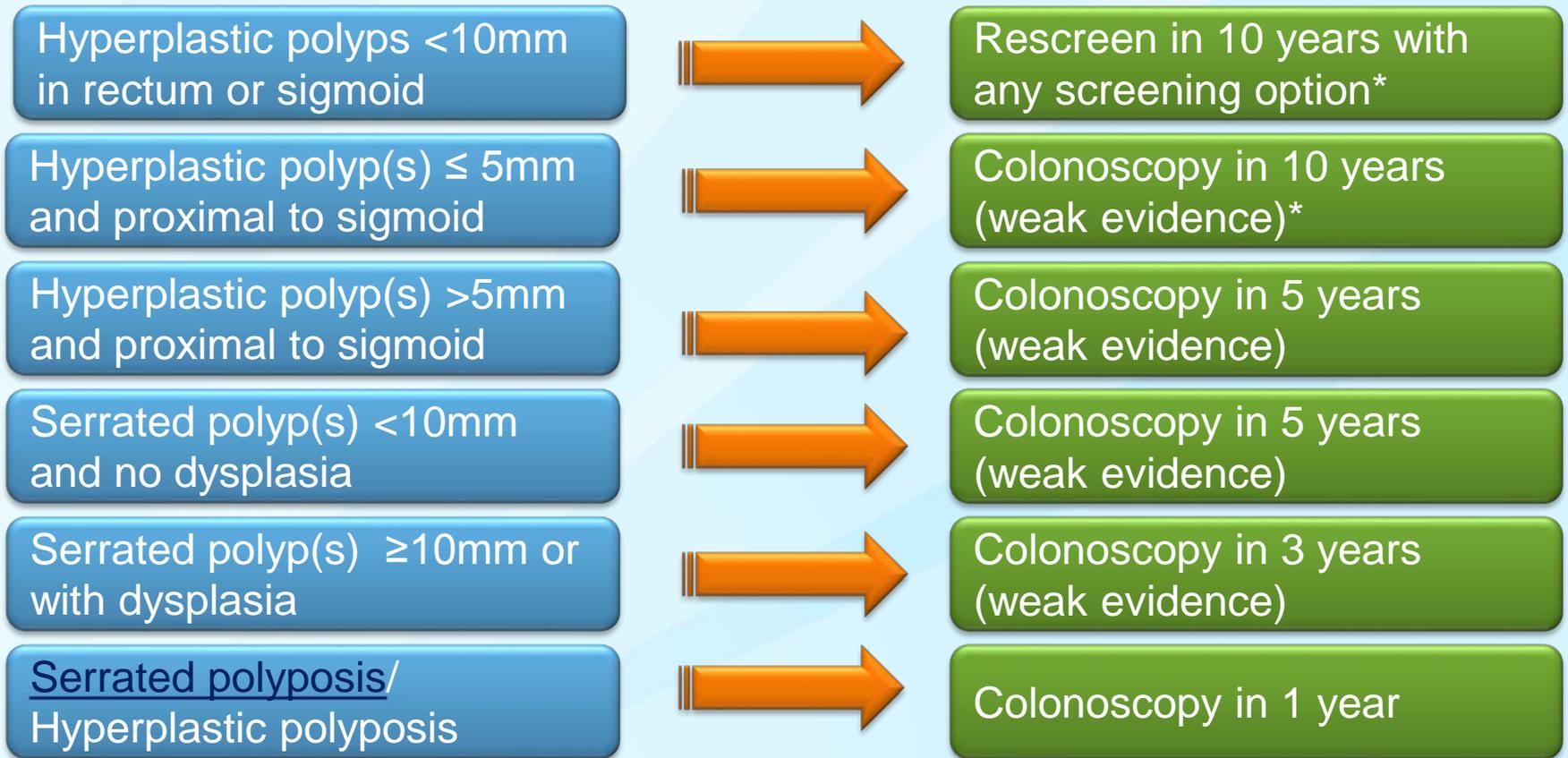


*Formerly referred to as Sessile Serrated Adenoma/Polyp

Serrated Polyps

- ❑ Serrated polyps, especially sessile serrated polyps, may be difficult to detect at endoscopy.
 - May be the same color as surrounding mucosa and have indistinct edges.
 - Nearly always flat or sessile.
 - May have a layer of adherent mucus that obscures the vascular pattern.
- ❑ There is substantial variability in distinguishing hyperplastic from other serrated polyps with malignant potential (such as sessile serrated polyps), even among expert pathologists.
- ❑ The understanding of serrated polyps is evolving and current management guidelines are based on weak evidence.

Surveillance of Patients with Serrated Polyps at Prior Colonoscopy



*10 year recommendation is only for average-risk people

[Guidelines for Colonoscopy Surveillance After Screening and Polypectomy: A Consensus Update by the US Multi-Society Task Force on Colorectal Cancer](#)

[Serrated Lesions of the Colorectum: Review and Recommendations From an Expert Panel](#)

Surveillance of Patients Post-Cancer Resection

Category	Next Examination
Colon or rectal cancer	Within 6 months if not completed preoperatively*; otherwise 1 year after curative resection; if the 1 year exam is negative, the interval to next colonoscopy is 3 years, and then at 5-year intervals.
Rectal cancer (optional)	For purpose of identifying local recurrence, flexible sigmoidoscopy, rigid proctoscopy, or rectal ultrasound every 3–6 months for first 2–3 years may also be considered in addition to colonoscopic surveillance noted above.

***Every effort should be made to clear the colon of synchronous lesions preoperatively using colonoscopy for non-obstructing tumors and, for obstructing tumors, CT colonography, or if not available, CT or gastrograffin enema.**

Colonoscopy Surveillance After Colorectal Cancer Resection: Recommendations of the US Multi-Society Task Force on Colorectal Cancer

Screening and Surveillance for Colorectal Cancer
PATIENTS AT HIGH / HIGHEST RISK

Patients at High Risk

Patients with inflammatory bowel disease (IBD): chronic ulcerative colitis or Crohn's colitis

Refer to a center with experience in IBD surveillance and management.



For detailed recommendations for testing, see [Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline From the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology](#)

Patients at Highest Risk

Patients with family history of or suspected Hereditary Non-Polyposis Colon Cancer ([HNPCC](#)), Familial Adenomatous Polyposis ([FAP](#)), or other syndrome:

- Refer for genetic counseling and testing.
- Obtaining a complete family history is critical.
- Testing may begin in late teens and 20s, so family history must be known early.

For detailed recommendations for testing, see [Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline From the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology.](#)

Thanks for viewing Part 1

**The following slides are not part of this presentation,
but rather serve as links for users.**

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WHO Criteria for Serrated Polyposis (formerly Hyperplastic Polyposis)

1. At least 5 histologically diagnosed hyperplastic and/or serrated polyps proximal to the sigmoid colon, at least 2 of which are >1 cm in size; OR
2. Any number of serrated polyps occurring proximal to the sigmoid colon in a patient who has a first-degree relative with serrated polyposis; OR
3. >20 serrated polyps of any size but distributed throughout the colon.

Snover D Ahnen D, Burt RW, et al. Serrated polyps of the colon and rectum in serrated polyposis. In: Bozman FT, Carneiro F, Hruban RH, Theise ND (eds). WHO Classification of Tumors of the Digestive System. Lyon: IARC, 2010, 160-5.

HNPCC

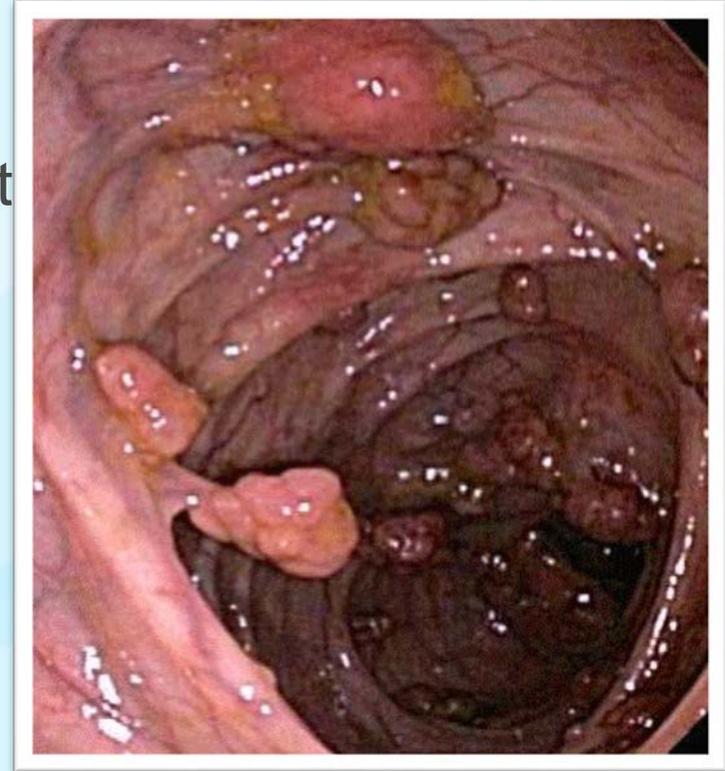
- ❑ **3-2-1 rule to identify patients with Lynch Syndrome (HNPCC) – meeting Amsterdam Criteria**
 - 3 closely related relatives with CRC or Lynch-related cancers.¹
 - 2 generations involved (at least).
 - 1 person < age 50 at time of developing the cancer.

For more information, see [New clinical criteria for hereditary nonpolyposis colorectal cancer \(HNPCC, Lynch syndrome\) proposed by the International Collaborative group on HNPCC.](#)

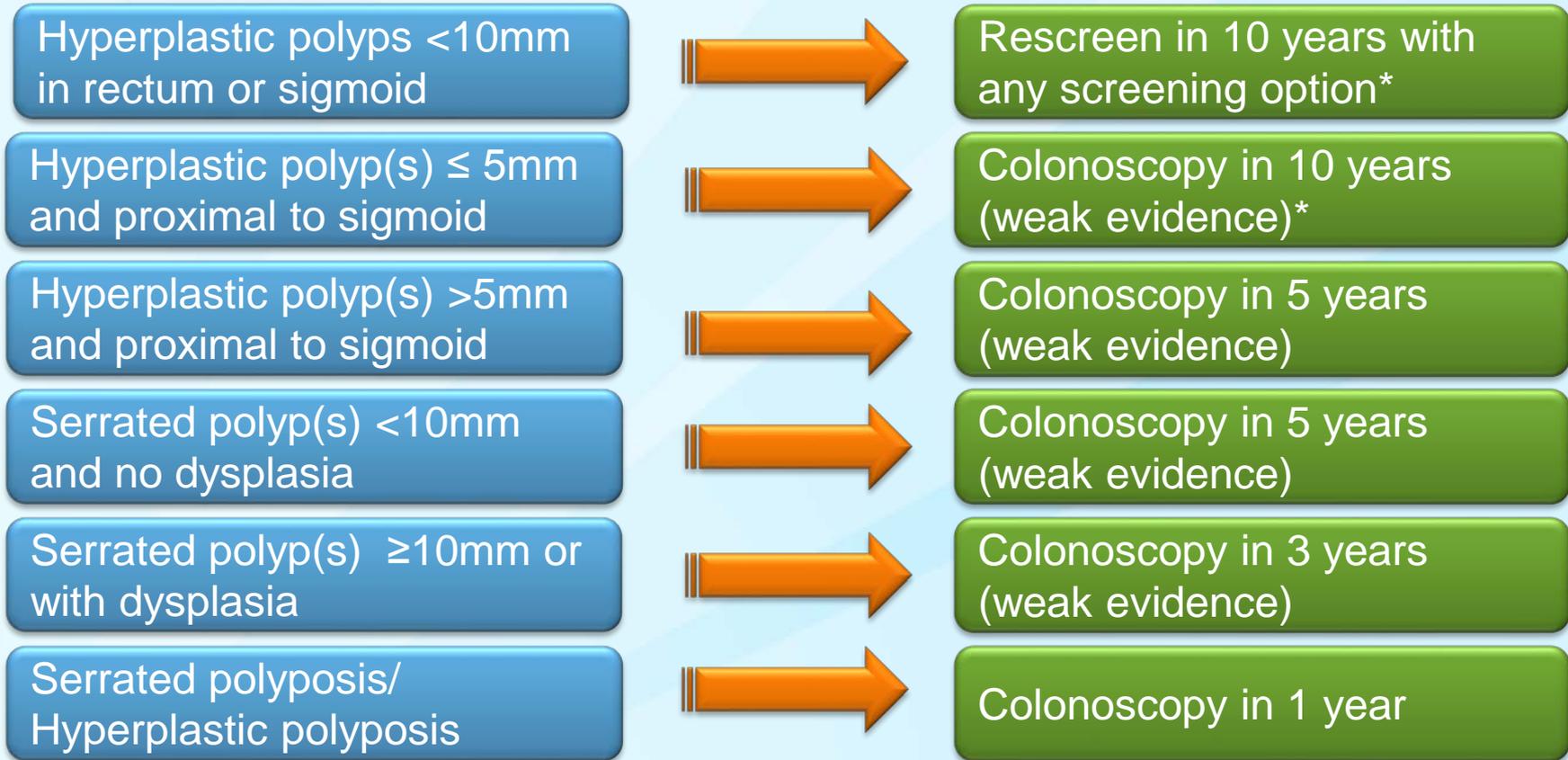
1. Cancers of the endometrium stomach, ovary, small bowel, ureter, renal-pelvis, hepatobiliary tract and brain

Familial Adenomatous Polyposis (FAP)

- ❑ Multiple adenomas
- ❑ Polyps not present at birth but appear during 2nd and 3rd decades
- ❑ Risk of colorectal cancer ~100% by age 40
- ❑ Autosomal dominant



Surveillance of Patients with Serrated Polyps at Prior Colonoscopy



*10 year recommendation is only for average-risk people

[Guidelines for Colonoscopy Surveillance After Screening and Polypectomy: A Consensus Update by the US Multi-Society Task Force on Colorectal Cancer](#)

[Serrated Lesions of the Colorectum: Review and Recommendations From an Expert Panel](#)