Colonoscopy Screening for Colorectal Cancer: **Optimizing Quality**

Endoscopist Version

Part 2

National Center for Chronic Disease Prevention and Health Promotion
Division of Cancer Prevention and Control

PART 2:
COLONOSCOPY

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Topics to Be Covered

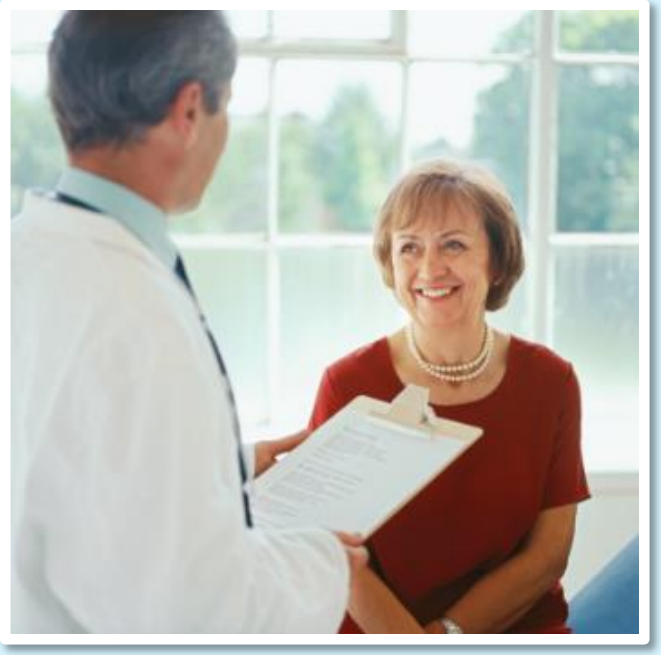
Colonoscopy

- Ensuring that colonoscopy is appropriate
- The importance of good bowel preparation
  - Split dosing
- The importance of complete documentation
  - Pre-procedure elements
  - Intra-procedure elements
  - Recommending appropriate follow-up
  - Communicating with patients and referring providers
- The need to improve the quality of colonoscopy
  - Monitoring quality indicators

ENSURING THAT COLONOSCOPY IS APPROPRIATE

Colonoscopy: Pre-Procedure Considerations

- Ensure that colonoscopy is appropriate for the patient.
  - Is colonoscopy medically appropriate for the patient?
  - Is the patient due for screening?
- Optimize bowel preparation.
- Manage patient medications.



Is Colonoscopy Appropriate Now?

- **Follow recommended screening intervals based on age and family history:**
  - Average risk
  - Positive family history
- **Follow recommended surveillance intervals for patients:**
  - Post-polypectomy
    - Adenoma surveillance
    - Surveillance after first surveillance colonoscopy
    - Serrated polyp surveillance
  - Post-cancer resection

Document reasons if deviate from the recommended intervals

Clearing Patients for Colonoscopy: Is Direct (Open) Access Appropriate?

Patients with the following characteristics should be medically cleared* prior to scheduling colonoscopy:

- Age 75 or older.
- On anti-platelet or anticoagulation therapy and cannot safely stop for one week.
- History of recent diverticulitis.
- History of severe cardiac, renal, pulmonary, or hepatic disease.
- High risk for sedation or anesthesia-related complications (for example, oxygen dependent).
- History of difficult, incomplete, or poorly prepped colonoscopy.
- History of difficulty with sedation or anesthesia.
- History of sleep apnea.
- Pregnant or possibly pregnant.

*Clearance can be performed by primary care provider, endoscopist, or other type of specialist, depending on the characteristic and setting.

BOWEL PREPARATION

Quality of Bowel Prep: Why Is It So Important?

- **Consequences of inadequate prep:**
  - Increased difficulty of colonoscopy.
  - Prolonged procedure time.
  - Reduced cecal intubation rates.
  - Repeat procedures and shortened follow-up intervals.
  - Reduced ability to detect polyps and cancer.

- **Bowel preparation is inadequate in up to 25% of patients undergoing colonoscopy.**

The impact of suboptimal bowel preparation on adenoma miss rates and the factors associated with early repeat colonoscopy

Impact of bowel preparation on efficiency and cost of colonoscopy

Impact of colonic cleansing on quality and diagnostic yield of colonoscopy: the European Panel of Appropriateness of Gastrointestinal Endoscopy European multicenter study

Optimizing Adequacy of Bowel Cleansing for Colonoscopy: Recommendations From the US Multi-Society Task Force on Colorectal Cancer

Types of Bowel Preps

- **Isosmotic full volume**
  - Examples: Colyte,®* GoLYTELY,®* NuLYTELY,®* TriLyte®*
- **Isosmotic low volume**
  - Examples: HalfLytely,®* Miralax,®* MoviPrep®*
- **Hyperosmotic**
  - Examples: OsmoPrep,®* Suprep,®* Prepopik®*

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

Provide Clear Prep Instructions to Patients

- Written instructions need to be at appropriate literacy level.
- Innovative approaches, including the use of patient navigators and videos, increase the likelihood of successful prep.
  - For a video on preparing for colonoscopy, see Preparing for a Colonoscopy.
  - For more on bowel prep, see Example 1 of Preparation Instructions for Your Colonoscopy and Example 2 of Preparation Instructions for Your Colonoscopy.

Using Patient Navigators to Improve Adherence and Quality of Screening

- Recent studies have demonstrated the effectiveness of patient navigators in improving screening adherence.
- Patient navigators are trained, culturally sensitive health care workers who provide individualized assistance to patients, families, and caregivers to help overcome health care system barriers and facilitate timely access to high-quality health care.
- Patient navigators can assist at many points in the screening process, including:
  - Getting patients scheduled for screening.
  - Explaining technique for completing FOBT/FIT tests or for bowel preparation for colonoscopy.
  - Assuring patient understanding and completion of testing.
  - Addressing patient barriers (for example, need for an escort, language, transportation).
  - Assuring patient receives test results promptly from provider.
  - Scheduling and preparing for follow-up procedures.
  - Identifying treatment resources and support networks when needed.

Colonoscopy Patient Navigation: A Resource Kit to Help Get You Started

Pop Quiz

What is the preferred bowel prep dosing schedule for colonoscopy?

New Advance: Split-Dose Preps

Split-Dose Preps

- Recommended in ACG guidelines for CRC screening as a key measure for improving the quality of screening.*
- Part (usually ½) of laxative taken the evening prior, and *remainder* taken *morning of procedure*.
- Colonoscopy should be performed 2–4 hours after the last dosing.
- More effective and better tolerated than full dose p.m.
- Demonstrated superiority:
  - PEG
    - High-volume (3L/1L or 2L/2L)
    - Low-volume (1L/1L)
  - Osmotics-NaP, Mg citrate, Na sulfate

*American College of Gastroenterology Guidelines for Colorectal Cancer Screening 2009

PEG Split-Dosing Meta-Analysis

Split-dose PEG is superior to full-dose PEG with respect to:

- Satisfactory colon cleansing.
  OR 3.70; 95% CI, 2.79–4.91; p<0.01
- Likelihood of discontinuing prep.
  OR 0.53; 95% CI, 0.28–0.98; p=0.04
- Willingness to repeat the same prep.
  OR 1.76; 95% CI,1.06–2.91; p=0.03
- Side effects (nausea)
  OR 0.55; 95% CI, 0.38–0.79; p<0.01.

Bowel preparation with split-dose polyethylene glycol before colonoscopy: a meta-analysis of randomized controlled trials

Alleged Barriers to Split Dosing: Not a Real Concern

- Patient acceptance of sleep disturbance.*
  - 85% surveyed willing to get up in middle of night to take 2nd dose.
  - 78% complied.
- Bowel activity requiring bathroom stops during transit to procedure.**
  - No difference taken PM or split dose PM/AM (5%–15%).
- Increased risk of aspiration during sedation because patients may have more liquid in their stomach.
  - ASA guideline allows ingestion of clear liquids until 2 hours before sedation.***

*Willingness to undergo split-dose bowel preparation for colonoscopy and compliance with split-dose instructions

**The timing of bowel preparation before colonoscopy determines the quality of cleansing, and is a significant factor contributing to the detection of flat lesions: A randomized study

**Patient Acceptance, Convenience and Efficacy of One-Day Versus Two-Day Colonoscopy Bowel Preparation

***Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: application to healthy patients undergoing elective procedures. An updated report by the American Society of Anesthesiologists Committee on Standards and Practice Parameters

Bowel Preps for Afternoon Exams: Timing Is Everything

Split dosing (PM/AM) or AM only is superior to PM only.

- End >2 hours prior to colonoscopy.

Pre-Procedure Diet

- Optimal pre-procedure diet with split-dose regimen is not well-defined.
- Most would consider a clear liquid diet for 24 hours prior to the exam or light low-fiber breakfast followed by clear liquids for full day before procedure as standard of care.

How to Predict a Bad Prep: Patient Characteristics

- Inpatient
- Elderly
- Obese
- Lower education
- History of constipation
- Use of antidepressants
- Chronic narcotic use
- Noncompliance with medications

Patient navigators can help address some of these issues.

How to Improve Prep for Patients with Prior Poor Prep

- No studies to provide evidence-based guidance.
- Navigator and patient education.
- Increase total volume of PEG (2 to 4 L or 4 to 6L).
- Split dosing.
- Adequate hydration.
- Add Mg citrate or Miralax®* evening before beginning prep.
- Add oral bisacodyl or senna.
- Extend period of diet modification from 24 to 48 hours.

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Managing Medications and Cardiac Devices

- Anticoagulants
- Diabetes medications
- Antibiotic prophylaxis
- Iron / opioid analgesics
- Cardiac devices (2 slides)

Propofol for Sedation

- Very rapid onset of action and recovery.
  - Patients are asleep throughout the procedure.
  - Patients awaken within a few minutes after test is done.
- Necessary for a small fraction of patients who cannot be sedated effectively with moderate sedation or are at increased risk.
- Major limitation: respiratory depression.
- In most states, requires anesthesia personnel, which can lead to a substantial increase in the cost of the procedure.
- Not covered by all insurers, and only for specific indications.

Indications for Propofol

- Dependence on opiates or sedatives.
- Neuropsychiatric disorder.
- Prior negative experience with conscious sedation or difficult procedure.
- Drug or alcohol abuse.
- Extremes of age.
- Pregnancy.
- Severe co-morbid disease or morbid obesity.
- Uncooperative patient or complex procedure.
- Increased risk for airway obstruction including previous problems with sedation, presence of sleep apnea, dysmorphic facial features, oral abnormalities (Mallampati>Class II), neck or jaw abnormalities.

Pop Quiz

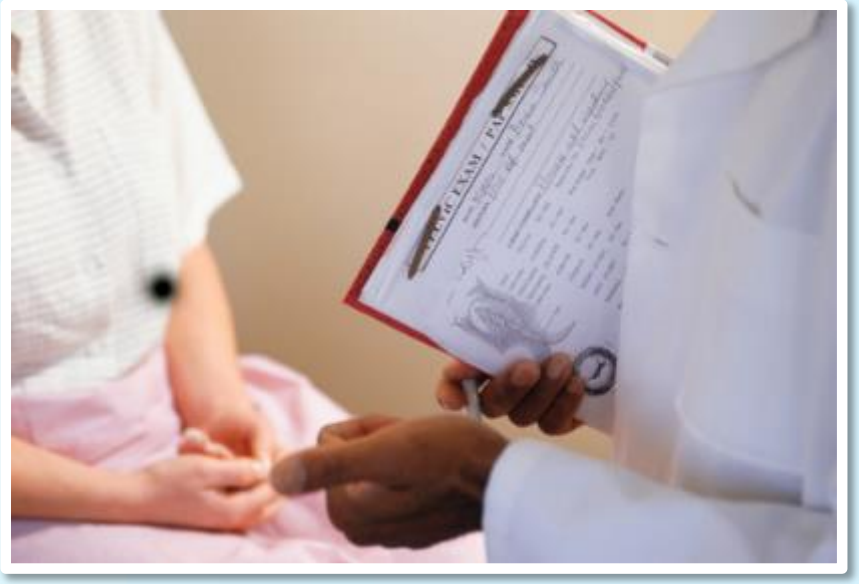
What elements should be documented in every colonoscopy report?

THE IMPORTANCE OF COMPLETE DOCUMENTATION

The Importance of Complete Documentation

Key procedure elements should be documented in the colonoscopy report to:

- Ensure that important elements are noted.
- Facilitate communication and follow-up needs with referring physician and patient.
- Allow monitoring of performance compared to other practices and targets to improve quality.



Standardized Colonoscopy Reporting and Data System (CO-RADS)

SPECIAL REPORT

Standardized colonoscopy reporting and data system: report of the Quality Assurance Task Group of the National Colorectal Cancer Roundtable

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Portland, Oregon, USA

Standardized colonoscopy reporting and data system: report of the Quality Assurance Task Group of the National Colorectal Cancer Roundtable

CO-RADS: Report Elements

Pre-procedure

- Patient demographics and history
- Assessment of patient risk and comorbidity
- Procedure indications

Intra-procedure

- Technical description
- Colonoscopic findings

Post-procedure

- Assessment
- Interventions/unplanned events (complications)
- Follow-up plan
- Pathology

See Appendix in Standardized colonoscopy reporting and data system: report of the Quality Assurance Task Group of the National Colorectal Cancer Roundtable

Pre-Procedure Report Elements

The endoscopist should document:

- ✓ Informed consent
- ✓ Patient demographics (age, sex)
- ✓ Appropriate measures for:
  - Anticoagulation status and INR
  - Defibrillator or pacemaker (magnet decisions)
  - Blood sugar for Type I DM
- ✓ Assessment of patient risk and comorbidity
  - ASA classification
- ✓ Airway evaluation (Mallampati) and recent H&P

Pre-Procedure Report Elements

- ✓ Indication
  - Screening
    - Patient is asymptomatic without a personal history of adenomas or CRC (includes patients with family history of CRC/adenomas)
    - Patient is asymptomatic and had a positive screening test (FOBT, FIT, sigmoidoscopy, barium enema, stool DNA or CT colonography)
  - Surveillance
    - Patient has personal history of CRC or adenomas
      - Specify details, including whether adenomas advanced or multiple
    - Includes follow up of ulcerative colitis or Crohn's colitis
  - Diagnostic
    - Patient has signs or symptoms of CRC or other disease
      - Specify the sign or symptom

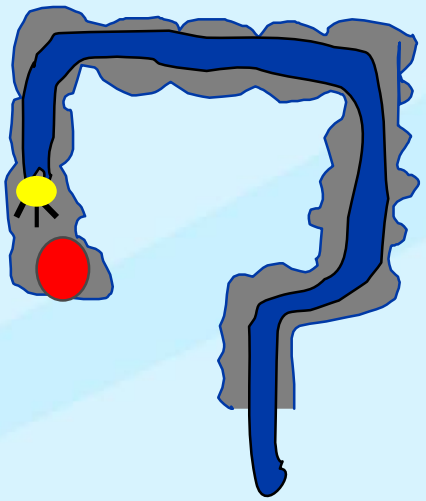
Pre-Procedure Report Elements

- ✓ Colonoscopy history, including date, pathology findings, and treatment at prior colonoscopies
  - Note if the most recent colonoscopy was incomplete or inadequate.
- ✓ Detailed family history
  - First-degree and other more distant relatives including number, relationship to patient, and age at CRC diagnosis.
  - First-degree relatives with known advanced adenomas and age at diagnosis.
  - HNPCC (Lynch syndrome), FAP, or other syndrome.

If the exam is performed before the recommended interval, provide the reason.

Intra-Procedure Report Elements

- ✓ Bowel prep type
- ✓ Assessment of bowel prep quality
  - Was final prep good-excellent for each segment of colon?
  - **Every effort should be made to convert a "fair" prep into good prep with cleaning during procedure.**
  - Describe/document the least well-prepped area ***after*** cleaning.



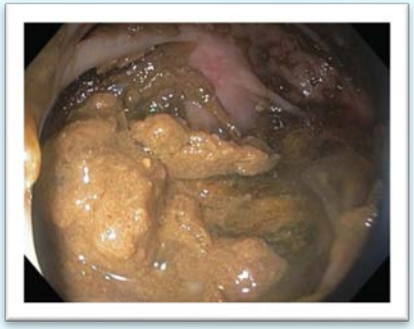
Intra-Procedure Report Elements

How to rate the bowel prep:

- Method #1 has four levels:
  - Excellent: Pristine.
  - Good: Clean, all surfaces visualized after cleaning.
  - Fair: Adequate to detect polyps >5mm after cleaning. Small polyps could be missed.
  - Poor: Inadequate; the exam should be repeated.
- Method #2 has two levels:
  - Adequate to detect lesions >5mm (excellent, good, or fair).
  - Inadequate to detect lesions >5mm.

Intra-Procedure Report Elements

- Method #3 Bowel prep – Boston Score (after clearing)

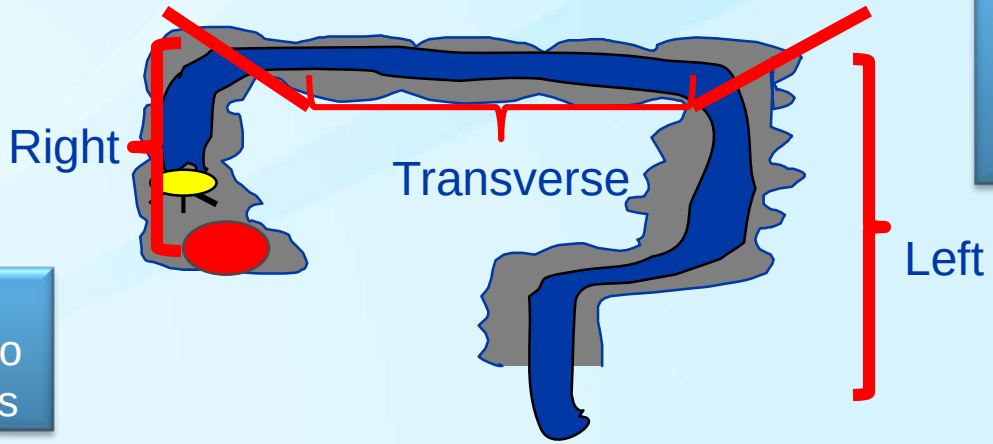


0= unprepared colon; solid stool

1 = portion seen but some obscured despite cleaning

2= minor residual staining, liquid; mucosa well seen

3 = clean

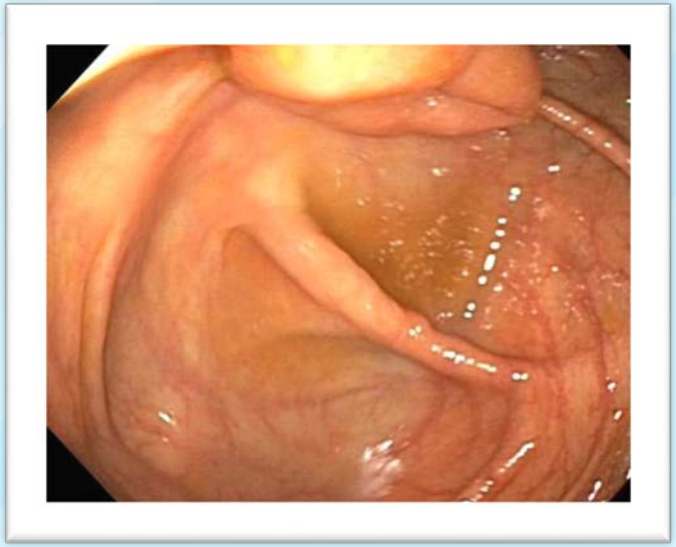


If the score is 0 or 1 for any segment, the exam should be repeated.

Score each segment from 0 to 3: sum the scores

Intra-Procedure Report Elements

- ✓ Extent of exam
  - Photo documentation of cecum, preferably with appendiceal orifice and ileo-cecal valve.
  - Anatomic segment reached, if not cecum.
  - If cecum not reached or exam aborted, give reason.



Intra-Procedure Report Elements

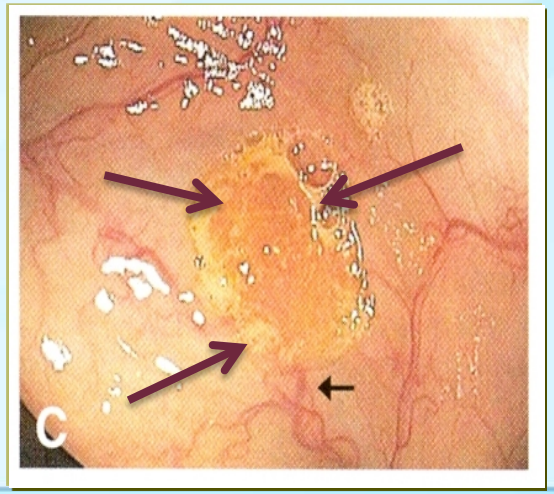
- ✓ Sedation used, dosage, and patient response.
- ✓ Withdrawal time, if measured.
  - Probably important to document for medico-legal reasons.
  - Defined as time from cecum to rectum in patients with clean colon and no polyps: goal >6 minutes.
- ✓ Retroflexion in rectum (most experts recommend).

Intra-Procedure Report Elements

- ✓ Detailed description of all findings, including mass, polyps, inflammation, and other.
- ✓ Polyp descriptors
  - Size estimate (in mm)
    - Ideal method is to compare with open biopsy forceps of known diameter – not practical in daily practice but could be part of training experience.
    - Size estimates have been studied – there is variability.
  - Location – segment of colon (+/- cm on scope)
  - Appearance including ulceration, friability

Intra-Procedure Report Elements

- ✓ Polyp descriptors (continued)
  - Morphology
    - Pedunculated
    - Sessile
    - Flat



Intra-Procedure Report Elements

- ✓ Polyp resection/retrieval
  - Method of removal or biopsy
    - Hot or cold snare, biopsy, injection.
  - Completeness of resection.
    - Note if piecemeal.
  - Suspicious lesion, large (>2cm), piecemeal resection: place tattoo.
    - Exceptions: cecum, rectum.
  - Was polyp retrieved for pathology?

Information for Pathologist

The colonoscopist must transmit each pathology specimen with sufficient information on the pathology laboratory slip for optimal interpretation and impression; namely:

- Colonoscopic description of the tissue in each vial;
- Section of the colon from which the lesion(s) was taken; and
- Whether the specimen is a biopsy or a complete removal.

Examples of “Description of Specimen” for submission to pathology:

- 2 cm friable, bleeding, sessile polyp, from mid transverse colon; piecemeal removal.
- Biopsies of 5 cm irregular polypoid lesion from the cecum.
- 1 cm pedunculated polyp from sigmoid at 19 cm. Completely removed with snare biopsy.

Can Pathology Specimens Be Pooled?

Expert opinion suggests:

- Any polyp >5mm should be placed in its own vial, with information on the section of the colon from which it was removed.
- It is reasonable to pool polyps ≤5mm taken from the same section of the colon.

Post-Procedure Tasks

- Provide a recommendation for follow-up based on patient history, age, and colonoscopic findings.
  - After pathology results are available, if any were pending.
  - Consistent with evidence-based guidelines or explanation if not consistent.
- Communicate specific results and follow-up recommendations to both patient and referring provider.
- Follow up for adverse events.

Recommending Appropriate Follow-Up: Was the Colonoscopy Complete?

To be complete:

- Cecum must be reached.
- Bowel prep quality adequate (excellent, good, fair).
- Any polypectomies must be complete.

Appropriate Follow-Up for Incomplete Exams

- Repeat incomplete exams in 2–6 months.
- In average-risk patients where cecum was not reached or prep quality was poor, could recommend HS-gFOBT/FIT to complete screening rather than repeating colonoscopy. Such patients would be due for their next screening in one year.

Appropriate Follow-Up for Incomplete Exams

- Other options for patients with adequate prep but where complete evaluation of the colon was not technically possible (for example, tortuous colon, previous surgery, various colon diseases)
  - PillCam COLON®* (www.givenimaging.com)
    - Approved by FDA in October 2014.
    - Patient swallows a disposable capsule containing a miniature camera that passes through the digestive system naturally.
  - CT Colonography
    - Diagnostic exams for incomplete colonoscopy are reimbursed by Medicare in most states.
- In patients with incomplete colonoscopy due to ineffective sedation (using moderate sedation), the exam can be repeated with deeper sedation using Propofol or other sedation medications.

Pop Quiz

In an average-risk patient who has a complete colonoscopy with no findings, should you recommend an interim stool blood test before his or her next colonoscopy?

Appropriate Follow-Up for Complete Exams

- Average-risk patients with negative colonoscopies:
  - Screening in 10 years with any screening option.
- Patients with family history with negative exams
- Patients with adenomas
- Patients with serrated / hyperplastic polyps
- Patients with colon or rectal cancer

  - Individualize recommendations based on age and comorbidity.
  - There is no evidence to support performing an interim HS-gFOBT or FIT prior to the next colonoscopy.

Appropriate Follow-Up for Fair Preps

- Little (no) published guidance / evidence base.
- Follow-up should be individualized based on the patient's age, comorbidity, goals, and risk.
- In selected cases, it may be appropriate to recommend that patients with fair prep return earlier than the interval recommended for good prep, because of risk of missed lesions.*

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

Goals of Communication with Patients and Referring Providers

Ensure that the patient and the referring physician know in a timely manner:

- Any specific implications of the results:
  - For the patient
  - For family members
- Any next steps/treatments needed for:
  - Neoplastic findings
  - Incomplete removal of lesions
  - Poor bowel preparation
  - Non-neoplastic findings (for example hemorrhoids, diverticula, inflammatory bowel disease)
- The interval to the recall for the next screening or surveillance colonoscopy. If no further colonoscopy is indicated, provide the reason (for example, patient age, comorbidities, colonoscopy risk, etc.).

Post-Procedure: Communication with Patient

After colonoscopy, discuss with the awake patient:

- The procedure and major findings,
- Whether the exam was adequate,
- Whether any pathology is pending,
- What to do in the following days (diet, medications, driving, etc.), and
- What to look out for and what do/who to call if there are post colonoscopy problems (such as pain, bleeding, fainting, etc.).

Follow-up for adverse events:

- Give written discharge instructions that reiterate where to call/what to do if problems (for example, “call 911 if…”; “call my office if…”).
- Contact patient in 24–48 hours to ascertain any adverse events.
- Follow up in 30 days for adverse events, if possible.

Communication with Patients and Referring Providers

After colonoscopy and after the pathology results have returned (if any were pending), the colonoscopist should:

- Report findings and recall interval to patient *in writing.* This allows the patient to:
  - Keep a copy of report for reference,
  - Share results with provider(s), and
  - Share results accurately with family members.
- Send referring provider a copy of:
  - The full colonoscopy report and findings,
  - The pathology findings,
  - The recall interval, and
  - Confirmation that the results and recall information were conveyed to the patient.

Communication with Patients and Referring Providers (continued)

- *Possibly* include with results letter to the patient:
  - Information about when to return **earlier than the recall interval if symptoms or risk history changes.**
  - Information that the patient may need to convey to family members.
  - Web sites for more information.

Post-Colonoscopy Reminder Systems

Reminder systems are important!

Reminder systems for recalling patients for surveillance or screening colonoscopy are complex. Intervals are often as long as 10 years. Screening and surveillance recommendations and intervals may change over time.

- The patient needs to be aware of the recommended date for repeat colonoscopy and needs to contact his/her provider at that time to discuss the need for testing.

- The colonoscopist and the primary care provider could both have patient reminder systems to track appropriate screening intervals and recall patients when they are due for their next screen.

IMPROVING THE QUALITY OF COLONOSCOPY

Pop Quiz

1. Are some endoscopists better than others at finding adenomas?
2. What is the minimum Adenoma Detection Rate (ADR) you should achieve for screening exams in average-risk patients?
3. What should you do if bowel prep quality is fair or poor for >10% of your patients?

The Need to Improve the Quality of Colonoscopy

There is wide variation among endoscopists in the quality of colonoscopy.

- Detection of polyps.
- Ability to reach cecum.
- Bowel prep quality.
- Appropriateness of screening and surveillance recommendations.
- Completeness of reporting.

How Can the Quality of Colonoscopy Be Improved?

- **Every colonoscopy practice should have a continuous quality improvement (CQI) program.**
  - Monitor performance.
  - Compare to targets.
  - Take steps to improve, when needed.
- **Recommended by the US Multi-Society Task Force on Colorectal Cancer and the National Colorectal Cancer Roundtable.**
  - Quality Indicators for Colonoscopy 2014
  - Quality in the technical performance of colonoscopy and the continuous quality improvement process for colonoscopy: recommendations of the U.S. Multi-Society Task Force on Colorectal Cancer
  - Quality Indicators for Colonoscopy 2006
  - Standardized colonoscopy reporting and data system: report of the Quality Assurance Task Group of the National Colorectal Cancer Roundtable

What Should Be Monitored?

Highest priority indicators of quality:

- Adenoma detection rate (ADR)
- Cecal intubation rate
- Quality of bowel preparation
- Use of appropriate intervals for screening and surveillance

Some of these measures are included in CMS' Quality Programs:

- Physician Quality Reporting System (PQRS)
- Ambulatory Surgery Center Quality Reporting Program (ASCQR)
- Hospital Outpatient Quality Reporting Program (OQR)

What Should be Monitored: Adenoma Detection Rates

- Definition: The percent of screening exams with at least one adenoma detected.

CURRENT TARGET*

ADR should be: ≥30%: male screening patients
≥20%: female screening patients

- Probably the most important quality indicator.
  - Multiple studies** have demonstrated that the rate of subsequent development of CRC is inversely related to the endoscopist's ADR.

What is your ADR?

*Quality Indicators for Colonoscopy
**Quality Indicators for Colonoscopy and the Risk of Interval Cancer
**Adenoma detection rate and risk of colorectal cancer and death

What Should Be Monitored: Cecal Intubation Rate

- Definition: percent of exams in which the cecum was reached.

TARGET

All exams: >90%

Screening and surveillance exams: >95%

- Important lesions can be missed if colonoscopy is not complete to the cecum.
- Failure to reach the cecum constitutes an incomplete exam.

What Should Be Monitored: Quality of Bowel Prep

- Monitor the percent of patients with bowel prep quality adequate to detect lesions >5mm.

TARGET

≥ 90% good-excellent or adequate

- Poor bowel prep results in missed lesions and need to
  repeat exam sooner, increasing risk and cost.
- If <90% of exams are good, practice should be examined and remediated.
  - For example, enhance patient instruction / use patient navigator, use different type of prep / timing (split-dose regimen).

What Should Be Monitored: Appropriateness of Screening and Surveillance Recommendations

- Monitor the percent of exams with recommended interval in agreement with guidelines.
- Too frequent screening or surveillance is common.
  - Wastes scarce resources (personnel/financial).
  - Increases potential for harm.
- Longer than recommended follow-up is a risk to the patient.

What Should Be Monitored?

Other important indicators:

- Polyp descriptors
  - Goal: 100% of time important descriptors included in report.
- Polyp retrieval rate
  - Goal: 100% of time polyps >10mm are retrieved.
- Rate of repeat exams in less than 1 year for poor/inadequate preps
- Tattoo placement
  - Goal: all polyps >2cm or suspicious for malignancy are tattooed, except in cecum or rectum.

Referring Physicians Should Ask About Colonoscopy Quality

The Quality of Colonoscopy Services—Responsibilities of Referring Clinicians

A Consensus Statement of the Quality Assurance Task Group, National Colorectal Cancer Roundtable

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Primary care clinicians initiate and oversee colorectal screening for their patients, but colonoscopy, a central component of screening programs, is usually performed by consultants. The accuracy and safety of colonoscopy varies among endoscopists, even those with main-

programs—for screening, for diagnostic evaluation of positive test results regardless of the initial screening test, and for surveillance of patients at increased risk. Most colonoscopies in the U.S. are performed by gastroenterologists and colorectal surgeons, although other specialists also do this procedure[4].

The Quality of Colonoscopy Services—Responsibilities of Referring Clinicians

Final Take-Home Points

- Follow evidence-based screening and surveillance guidelines to ensure that colonoscopy is performed at the appropriate time, based on each patient's personal and family history.

- Achieving good bowel prep quality is critical.
  - Split dosing is recommended.
  - Every effort should be made to convert a "fair" prep into good prep with cleaning during procedure.
  - If bowel prep quality is inadequate in >10% of patients, take steps to improve.

Final Take-Home Points (continued)

- Complete colonoscopy reports are important for clear communication with patients and referring providers and for appropriate patient management.
- The quality of colonoscopy is highly variable: monitor your performance with quality indicators and take steps to remediate when benchmarks are not met.

Thanks for viewing Part 2

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

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.

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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 ≥1cm, 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

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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.

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

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Recommendations for Adenoma Surveillance After First Surveillance Colonoscopy

Baseline Colonoscopy Finding	First Surveillance Colonoscopy Finding	Interval for Second Surveillance (years)
Low risk adenoma (LRA)	• HRA • LRA • No adenoma	• 3 • 5 • 10
High risk adenoma (HRA)	• HRA • LRA • No adenoma	• 3 • 5 • 5

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

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Surveillance of Patients with Serrated Polyps at Prior Colonoscopy

Hyperplastic polyps <10mm in rectum or sigmoid	Rescreen in 10 years with any screening option*
Hyperplastic polyp(s) ≤ 5mm and proximal to sigmoid	Colonoscopy in 10 years (weak evidence)*
Hyperplastic polyp(s) >5mm and proximal to sigmoid	Colonoscopy in 5 years (weak evidence)
Serrated polyp(s) <10mm and no dysplasia	Colonoscopy in 5 years (weak evidence)
Serrated polyp(s) ≥10mm or with dysplasia	Colonoscopy in 3 years (weak evidence)
Serrated polyposis/ Hyperplastic polyposis	Colonoscopy in 1 year

*10 year recommendation is only for average-risk people

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Serrated Lesions of the Colorectum: Review and Recommendations From an Expert Panel

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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

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Isosmotic Full Volume Preps

Preparation	Active Ingredient	Recommended Use
Colyte®* (SchwarzPharm)	PEG-ELS	• 240 mL (8 oz) every 10 min beginning at 5 to 6 pm evening before colonoscopy (total, 4 L); or • Split dosing as (3L pm/1L am or 2L pm/2L am) with second dose 3-6 h before procedure)
GoLYTELY ®* (Braintree Lab)	PEG-ELS	
NuLYTELY®* (Braintree Lab)	PEG (sulfate free)	
TriLyte®* (SchwarzPharm)	PEG (sulfate free)	

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

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Isosmotic Low Volume Preps

Preparation	Active Ingredient	Recommended Use
HalfLytely®* (Braintree Labs)	PEG and bisacodyl	• 2 bisacodyl delayed-release tablets at noon the day before colonoscopy; • 240 mL (8 oz) PEG every 10 min at 5 to 6 PM (total, 1 L); • Repeat 240 mL (8 oz) every 10 min beginning 3 to 4 h before colon (1 L)
Miralax®* (Schering-Plough)	PEG and bisacodyl	• Mix in Gatorade®* • Instructions same as for HalfLytely® (Note: Miralax® is not FDA-approved for bowel preparation; hyponatremia is a potential risk but has not been shown in clinical trials.)
MoviPrep®* (Salix)	PEG and ascorbic acid	• 240 mL (8 oz) every 15 min at 5 to 6 PM evening before colonoscopy (total, 1 L), followed by at least 16 oz of fluid; • 240 mL (8 oz) every 15 min at least 3 to 4 h before colon (1 L) followed by 16 oz fluid

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Hyperosmotic Preps

Preparation	Active Ingredient	Recommended Use
OsmoPrep®*,** (Salix)	NaP tablets	• 20 tablets (4 every 15 min) at 5 to 6 PM the evening before colonoscopy; • Repeat with 12 tablets 10 to 12 h later (at least 3 h before colonoscopy)
Suprep®* (Braintree Labs)	Na Sulfate	• 6 oz bottle diluted with 16 oz of water followed by 32 oz water over the next hour ; take the evening before and repeat the morning of colonoscopy
Prepopik®* (Ferring)	Na Picosulfate/ Mg citrate	• Step 1: dissolve 1 packet in 5 oz. og liquid and consume followed by 5, 8 oz glasses of clear liquids at 4 to 6 PM; • Step 2: repeat step 1 followed by 3, 8 oz glasses of clear liquids (later that evening, or 4 to 6 hr before procedure)

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** **Black box warning:** OsmoPrep may cause acute phosphate nephropathy, which can result in permanent impairment of renal function and possible need for long-term dialysis.

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Pre-procedure: Anticoagulation

Medication	Risk of Thromboembolism	
	High	Low
Anticoagulant agents-warfarin (See Barron et al. for newer antithrombotic agents)	Discontinue warfarin 5 days; Consider bridging therapy with heparin or low-molecular-weight heparin	Discontinue warfarin 5 days; Re-institute warfarin after procedure
Antiplatelet therapy (for example, ticlodipine, clopidrogel)	Consider discontinuing for 7-10 days prior	Discontinue 7-10 days prior
Aspirin/NSAIDs	Continue	Consider discontinuing 5-7 days prior

Management of antithrombotic therapy in patients undergoing invasive procedures

Guideline on the management of anticoagulation and antiplatelet therapy for endoscopic procedures

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Diabetes Medications

From the start of the bowel preparation and until the first meal after colonoscopy:

- Instruct the patient to discontinue oral hypoglycemic agents.
- Patients on long- or intermediate-acting insulin or combination insulin products should administer them on their usual schedule, but only at half the usual dose.
- Patients on short-acting insulin may use a sliding scale, and administer short-acting insulin sparingly as needed to keep their blood glucose between 100 and 250.

The primary goal is to avoid dangerous levels of hypoglycemia during the bowel prep and procedure. This advice may need to be tailored based on individual characteristics.

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Pre-procedure: Antibiotic prophylaxis

- Colonoscopy ± polypectomy = low risk procedure
- Risk of bacteremia < routine daily activities
- Revised AHA guideline (**AHA Guideline: Prevention of Infective Endocarditis**).

  "Antibiotic prophylaxis to solely prevent infective endocarditis is not recommended for GU or GI procedures"
- Not recommended for synthetic vascular grafts or orthopedic prostheses (**Antibiotic prophylaxis for GI endoscopy**)

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Pre-procedure: Miscellaneous Medications

Medication	Indication
Iron	Discontinue 7–10 days prior
Opioid analgesics	Continue Increase fluid consumption for 1–2 days prior

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Pre-procedure: Cardiac Devices

- Determine the type of cardiac device, indication for the device, the patient's underlying cardiac rhythm, and degree of pacemaker-dependence before endoscopy.
- Use continuous electrocardiographic rhythm monitoring in addition to pulse oximetry during the procedure.
- Some patients with cardiac pacemakers may undergo routine uses of electrocautery (for example, polypectomy, hemostasis) with no alterations in management.

Pre-procedure: Cardiac Devices

- For patients in whom prolonged electrocautery is anticipated, consider reprogramming the pacemaker to an asynchronous mode via application of a magnet over the pulse generator during the use of electrocautery.
- If a magnet is used, the device should be interrogated before the patient leaves the unit.
- For patients with an implantable cardioverter-defibrillator (ICD) in whom the use of any electrocautery may be anticipated, consultation with a cardiologist or a heart-rhythm specialist is recommended. Deactivation of the ICD function by qualified personnel should be considered, unless a specific protocol has been developed and accepted.

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TABLE 2. ASA classification system

Class	
1	Patient has no organic, physiologic, biochemical, or psychiatric disturbance (healthy, no comorbidity).
2	Mild-to-moderate systemic disturbance caused either by the condition to be treated surgically or by other pathophysiologic processes (mild-to-moderate condition, well controlled with medical management; examples include diabetes, stable coronary artery disease, stable chronic pulmonary disease).
3	Severe, systemic disturbance or disease from whatever cause, even though it may not be possible to define the degree of disability with finality (disease or illness that severely limits normal activity and may require hospitalization or nursing home care; examples include severe stroke, poorly controlled congestive heart failure, or renal failure).
4	Severe systemic disorder that is already life threatening, not always correctable by the operation (examples include coma, acute myocardial infarction, respiratory failure requiring ventilatory support, renal failure requiring urgent dialysis, bacterial sepsis with hemodynamic instability).
5	The moribund patient, who has little chance of survival.

Standardized colonoscopy reporting and data system: report of the Quality Assurance Task Group of the National Colorectal Cancer Roundtable

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