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Supplement

Colombian Clinical Practice Guideline for Colorectal Cancer Screening in Adults: 2025 Update

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Abstract

Objective: To update the Colombian Clinical Practice Guideline for Colorectal Cancer (CRC) Screening in asymptomatic adults at average risk, incorporating the most recent evidence and adapting it to the national context. **Materials and Methods**: The Colombian Association of Gastroenterology, in collaboration with Universidad CES, led the 2025 update of the 2015 guideline. The GRADE methodology and Evidence-to-Decision (EtD) frameworks were applied, based on systematic searches of international guidelines, systematic reviews, and meta-analyses published between 2015 and 2024. Final consensus was achieved through a multidisciplinary panel of experts, considering applicability, resource availability, and equity within the Colombian healthcare system. The complete methodology and technical appendices are available in the full version of the guideline at www.gastrocol.com. **Results:** Nine recommendations and five good clinical practice points were formulated. The main updates include: initiating screening at 45 years of age for individuals at average risk; discontinuing screening at age 75 or earlier in patients with a life expectancy of 10 years or less; colonoscopy as the preferred screening strategy and test of choice for high-risk subgroups; annual FIT as an alternative for population-based screening; and a post-colonoscopy surveillance scheme stratified by risk level (low, high, very high) with differentiated follow-up intervals. **Conclusions**: This update incorporates new recommendations and establishes a quality standard for colorectal cancer screening in Colombia. The guideline provides clear criteria to determine who, when, and how to screen within the Colombian healthcare system.

Keywords

Screening, Colorectal Cancer, Clinical Practice Guidelines, GRADE Approach.

INTRODUCTION

Colorectal cancer (CRC) is a major public health concern worldwide and in Colombia. This malignant neoplasm, originating in the colon or rectum, affects millions of people and ranks among the leading causes of cancer-related mortality worldwide. It is, in fact, the third most common cancer and the second leading cause of cancer death, with over 1.9 million new diagnoses each year[1,2]. Despite these alarming figures, CRC is preventable and curable when detected at

early stages—or even before it develops—through the identification and removal of precancerous polyps. In this regard, screening plays a crucial role. It involves administering tests or examinations to asymptomatic individuals to detect the disease or potentially malignant lesions at an early stage. The effectiveness of CRC screening has been widely demonstrated. In countries that have implemented large-scale screening programs, both incidence and mortality rates have significantly decreased[3,4]. Early detection of polyps or cancer at initial stages allows for more effective and often less invasive treatment options, which markedly improve survival rates[5].

Risk factors for CRC include advanced age, family history, inflammatory bowel disease, and lifestyle habits such as smoking, unhealthy diet, obesity, excessive alcohol consumption, Black race, intake of red and processed meats, and physical inactivity, among others[6,7]. In Colombia, both CRC incidence and mortality have increased in recent decades, making it one of the five most frequent cancers in the country[8]. This upward trend underscores the urgency of strengthening nationwide screening strategies to contain disease progression and improve health outcomes in the Colombian population.

Nevertheless, the implementation of CRC screening programs in Colombia faces serious challenges. These include the need to increase public awareness of the importance of early screening, improve access to diagnostic tests, ensure procedural quality, and overcome geographical and socioeconomic barriers[9,10].

In this context, the Clinical Practice Guideline (CPG) for Colorectal Cancer Screening seeks to provide updated recommendations based on the best available scientific evidence, supporting healthcare professionals in clinical decision-making, standardizing protocols, optimizing test selection, and facilitating their implementation within the Colombian health system. Its application aims to enhance early CRC detection, expand opportunities for curative treatment, and ultimately improve patient prognosis and survival.

OBJECTIVES

- Establish evidence-based recommendations for initiating, discontinuing, and following up colorectal cancer screening in asymptomatic adults at average risk in Colombia, based on the best available scientific evidence.
- Define endoscopic surveillance intervals according to risk level (low, high, very high), with operational criteria to facilitate clinical application.
- Promote equitable and feasible implementation of CRC screening within the Colombian health system, taking into account available resources, access barriers, and regional needs.

TARGET USERS

Throughout the guideline's development, we involved potential users—healthcare professionals such as specialists in clinical gastroenterology, coloproctology, surgery, internal medicine, general and family medicine, nursing, endoscopy, and other professionals engaged in CRC prevention.

TARGET POPULATION

We included asymptomatic adults aged 45 years or older, of both sexes, with or without risk factors for colon cancer, in whom screening strategies can be applied to detect and treat precancerous and early cancerous lesions. We did not include patients with manifestations related to genetic syndromes, multiple hereditary polyposis, or other high-risk conditions for CRC.

HEALTHCARE SETTINGS

This CPG is intended for healthcare professionals involved in the prevention or early detection of CRC, as well as for those indirectly involved in health decision-making, including insurers. It also addresses healthcare payers and policymakers, with the goal of promoting comprehensive disease management. We aim to achieve appropriate screening, diagnosis, treatment, and follow-up for asymptomatic individuals or those at average risk for CRC.

COMPOSITION OF THE DEVELOPMENT GROUP

The group included an update panel composed of three gastroenterologists (D. A., F. G., and R. C.), together with five expert gastroenterologists who form the Guideline Committee of the Colombian Association of Gastroenterology, all with clinical and scientific experience in the prevention, diagnosis, and treatment of colorectal cancer. The panel also had methodological support from medical epidemiologists (J. B., E. V.) and an internist-epidemiologist (J. I.). All participants submitted conflict of interest declarations.

DECLARATION OF CONFLICT OF INTEREST

All members of the development group and expert panel, as well as individuals participating in the external review, signed a conflict of interest disclosure form. Conflicts were analyzed, and decisions regarding full participation, partial participation, or exclusion from the guideline development process were made accordingly. The detailed analysis is included in the full version of the guideline, available at www.gastrocol.com[11].

DECISION ON THE UPDATE

The first guideline was developed by a multidisciplinary team with support from the Colombian Association of Gastroenterology, Grupo Cochrane ITS, and the Clinical Research Institute of Universidad Nacional de Colombia: *Clinical Practice Guideline for Colorectal Cancer Screening – 2015*. By consensus, the current development group decided to update that guideline, incorporating new questions regarding screening, follow-up, and future trends in asymptomatic patients at average risk in Colombia, in accordance with quality standards that maximize the impact on the national burden of colorectal cancer.

METHODOLOGY FOR ADOPTION/ADAPTATION OF THE CLINICAL PRACTICE GUIDELINE

Based on the Methodological Guide for the *Adoption and Adaptation of Evidence-Based Clinical Practice Guidelines* (2017), developed by the *Colombian Ministry of Health and Social Protection and the Institute for Technological Health Assessment* (IETS)[12], we adopted and adapted an evidence-based methodological approach for the CPG.

Adoption of a recommendation by the guideline development group was carried out when an existing CPG was applicable to the national context, considering the limited time and resources available for developing a *de novo* guideline and acknowledging that this document constitutes an update (a previous version was published in 2015). Consequently, the literature search was restricted to the past five years (specifically from 2022 onward). For CPG selection, we required a score of ≥60% in the rigor of development and editorial independence domains (AGREE II) as well as the use of the GRADE methodology for rating the certainty of evidence[13].

Adaptation, in turn, involved modifying recommendations from a CPG developed in a particular cultural and organizational context to make them suitable for a different one. We performed this when adjustments were necessary to ensure applicability within the national healthcare system. When the original CPG used GRADE, we adapted the recommendations using the GRADE EtD (Evidence-to-Decision) framework[14]. Criteria influencing the strength and direction of the recommendation in the EtD included the clinical problem, values and preferences, certainty of evidence, balance of benefits and harms, resource use, equity, and feasibility.

When the original CPG had not used GRADE, we evaluated it using AGREE II; if the underlying systematic literature review (SLR) supporting the recommendation had not been assessed, we used tools such as AMSTAR-2. Adapted recommendations underwent a formal consensus process with the clinical experts participating in the development group. This guideline followed the CheckUp process and reporting standards for updating CPG recommendations.

UPDATING THE CLINICAL QUESTIONS OF THE GUIDELINE

To begin the update process, we received 23 clinical questions proposed by the subject-matter expert group. We verified that these questions did not exceed the defined scope of the guideline and reformulated them into the PICO format (population, intervention, comparison, outcome). A comparison was also made with the questions asked in the 2015 version of the GPC.

As a result:

- 1 question remained unchanged,
- 13 questions were modified, and
- 9 questions were considered new.

Subsequently, we organized the questions into three thematic sections: screening, follow-up, and new advances. The prioritized outcomes from the 2015 guideline were maintained.

Finally, we conducted a systematic literature search across databases, followed by completion of the corresponding methodological template to document and assess each question.

LITERATURE SEARCH

Search and Selection of Guidelines

We carried out a systematic and rigorous information search to identify and retrieve available evidence for each proposed PICO clinical question. We then designed and validated the initial search strategy, which was executed in Ovid databases. We did not apply date restrictions other than setting 2015—the year of the previous update—as the starting point, and we included studies in any language through May 2025. Additionally, we consulted the subject-matter expert group and used reference lists and expert contacts to identify relevant unpublished literature.

The search for recommendations from clinical practice guidelines and consensus documents (CPG/CD) was conducted in Medline and TripDatabase, as well as in repositories of the Guidelines International Network (GIN), the National Institute for Health and Care Excellence (NICE), the Scottish Intercollegiate Guidelines Network (SIGN), the American College of Physicians (ACP), the World Health Organization (WHO), and government websites from Spain, Mexico, Canada, and the United States. The Medline search strategy (via Ovid) used the term "colo-

rectal cancer" combined with the "broad" CPG search filter from the Canada's Drug Agency[15,16]. Searches were performed in Medline and Scopus, and the PubMed strategy was: "colorectal cancer" [Title/Abstract] AND "screening" [Title/Abstract] AND "systematic review" [Title/Abstract]. The initial search was performed on February 17, 2025, and updated through May 2, 2025. Additional sources included citation and reference tracking from included documents and expert consultation. From the list of reports identified through the systematic search, we prioritized inclusion of CPGs and CDs addressing the proposed questions, and when necessary, we extended the strategy to "other indexed databases."

Selection Process

Metadata for all records were exported to Excel, and duplicates were removed using unique identifiers and manual verification. Two independent reviewers (D. F. R. G. and J. B. S.) screened titles and abstracts. Potentially eligible records were reviewed in full text to make final inclusion or exclusion decisions. When disagreement arose between reviewers, we discussed the document jointly until reaching consensus.

Data Extraction and Variables

One researcher extracted the data of interest, which were subsequently verified by a second reviewer (J. A. I. B. and J. B. S.). When specific information was not explicitly reported, we recorded it as "Not reported." From each document, we extracted identification data, objectives, scope of the SR or CPG/CD, sponsoring institution or association, clinical questions, and practice recommendations with evidence levels, recommendation strength (GRADE), or degree of consensus as reported by the authors. For SLRs, we extracted information on population, intervention, comparator, outcome, and meta-analysis estimates. In all cases, we verified the reporting of conflicts of interest.

Assessment of Methodological Quality and Clinical Applicability

All CPGs/CDs included in the review were independently appraised by two researchers (J. B. S. and J. A. I. B.) using the AGREE II instrument[17]. Those incorporated into the evidence synthesis were further evaluated with the AGREE REX instrument[18]. Additionally, clinical and scientific experts (D. A. and F. G.) assessed the suitability of the recommendations for the Colombian context. The methodological quality was independently assessed by two researchers (J. B. S. and J. A. I. B.) using the AMSTAR-2 tool[19] for systematic literature reviews (SRs) of interventions, and the ReMarQ instrument[20,21] for SLRs with other synthesis objectives. For each instrument, the assessments were conducted considering all their dimensions and the grading methodology recommended by the respective manual. In the case of SLRs, the overall quality of evidence was classified into four levels:

1. Very low – More than one critical item unmet, with or without non-critical items.
2. Low – One critical item unmet, with or without non-critical items.
3. Moderate – No critical items unmet, more than one non-critical item unmet.
4. High – No critical items unmet, at most one non-critical item unmet.

Characteristics of the Included Studies

From the initial search of CPGs/CDs, we screened 236 records and included 14 studies, of which eight were guidelines and six were consensus documents. In addition, after consultation with the expert panel, two more documents were added: one systematic literature review (SR) and one consensus document suggested by the subject-matter experts. After performing the duplication analysis, we defined the final set of documents and decided to retain them as the basis for updating the guideline, extracting recommendations and evidence syntheses from the most recent and methodologically robust sources. We cross-referenced all documents (guidelines and consensus statements) to ensure that each question initially had at least one corresponding reference; for some newly proposed questions, however, no relevant documents were identified.

From these documents, we extracted recommendations and their supporting evidence, shared the compiled material with the thematic leads, and requested their expert evaluation. Based on their professional judgment, each recommendation was classified as adopt, adapt, or insufficient. We consolidated all recommendations into a single document: the vast majority were recommended for adoption, a small percentage for adaptation, and some were excluded when they exceeded the scope of the update or were not feasible to implement due to costs, availability, or limited national resources.

Search and Selection of SRs and Meta-Analyses

To develop the recommendations, we carried out a new literature search and updated the search strategy. The revision and update of clinical practice recommendations classified as adapt and good practice points were based on evidence from SLRs corresponding to each clinical question, appraised using the GRADE (Grading of Recommendations, Assessment, Development, and

Evaluation) methodology[22], taking into account both the certainty of evidence and the strength of recommendation (**Table 1**). Differences between practice recommendations and good practice points across guideline versions were highlighted to indicate whether they were only reviewed but unchanged (Reviewed, 2025), revised with modifications (Modified, 2025), or newly formulated (New, 2025).

When evidence was available from Latin American or Colombian populations, we prioritized it for formulating recommendations. In the absence of local or regional data, we used international studies complemented by consensus among Colombian experts. The guideline also incorporates good practice points derived from national clinical experience, even when these could not be evaluated using GRADE.

Systematic Literature Review Methodology

We based the protocol on Johnston's methodological guideline (2019)[24] for reviewing clinical practice recommendations and on the Joanna Briggs Institute Manual for Evidence Synthesis[25] for the systematic review (umbrella review) component. Reporting followed the PRISMA-2020 collaboration recommendations[26].

Eligibility Criteria

We considered eligible all systematic reviews of practice recommendations and CPGs/CDs meeting the following PICAR criteria:

1. Population: Asymptomatic patients or those with suspected colorectal cancer aged > 18 years. Populations of particular interest included those who could benefit from these screening approaches.
2. Intervention: Any technique, method, or technology for diagnosis, verification of cure, treatment, or susceptibility testing.
3. Comparator: Any comparator.
4. Attribute of the Guideline: CPGs or scientific statements from national or international institutions or associations published from 2020 onward (past five years).
5. Recommendation: Evidence-based recommendations or good practice points.

We also included SLRs with meta-analyses that met the inclusion criteria for population, intervention, comparator, and outcomes (treatment adherence and adverse effects), published since 2022. To avoid double-counting, we excluded evidence syntheses derived from:

- CPGs/CDs already included in SRs of practice recommendations,
- SLRs already incorporated in CPGs/CDs, and
- SLRs with lower methodological quality or older publication dates.

Extraction of Effect Measures

Whenever possible, we extracted meta-analytic estimates expressed as risk ratios (RRs) with 95% confidence inter-

Table 1. GRADE criteria for strength of recommendation and quality of evidence

Dimension	Meaning
Strength of Recommendation	
Strong in favor	The desirable consequences clearly outweigh the undesirable ones: we recommend doing it.
Conditional in favor	The desirable consequences probably outweigh the undesirable ones: we suggest doing it.
Conditional against	The undesirable consequences probably outweigh the desirable ones: we suggest not doing it
Strong against	The undesirable consequences clearly outweigh the desirable ones: we recommend not doing it.
Certainty of Evidence	
High	It is very unlikely that new studies will change our confidence in the estimated effect.
Moderate	It is likely that new studies will have an important impact on our confidence in the estimated effect and may change it.
Low	It is very likely that new studies will have an important impact on our confidence in the estimated effect and may change it.
Very low	Any estimated effect is very uncertain.
Good practice point*	Recommended practice based on the clinical experience of the CPG Development Group.

*Not included in the GRADE system. Adapted from: Aguayo-Albasini JL et al., Cir Esp. 2014; 92(2): 82–8[23].

vals (95% CI) for comparative treatment outcomes and strength of associations; rates for non-comparative studies assessing cure; and sensitivity and specificity estimates for diagnostic studies. When authors did not report this information, we extracted their estimated measure of effect or, if necessary, performed manual calculations.

Synthesis Methods

We conducted narrative syntheses of recommendations and good practice points reported in the various SRs or CPGs/CDs, emphasizing the degree of agreement among associations, meta-analysis estimates, and conclusions from SLRs. When discrepancies were found between documents, we reviewed the underlying evidence to determine possible causes. To prevent duplication of evidence, we included only SLRs and recommendations extracted from the CPGs/CDs with the highest methodological quality. For evidence synthesis, we followed a hierarchical order:

- Practice recommendations from high-quality CPGs appraised using GRADE,
- The most recent, methodologically robust SLRs with meta-analyses, and
- Good practice points from the most recent, high-quality consensus documents.

Assessment of Certainty of Evidence

We re-evaluated GRADE criteria for the synthesis of recommendations using the most recent, high-quality CPGs and SLRs with meta-analyses. When no newer SLRs were available beyond those included in the CPGs, we verified the GRADE assessments reported in those documents.

The guideline follows the methodology proposed by the GRADE system (Grading of Recommendations, Assessment, Development and Evaluation) and recommended by the Handbook for the Development of Clinical Practice Guidelines[27], which defines the levels of evidence and grades of recommendation presented in **Table 1**.

CONTEXTUALIZATION OF THE EVIDENCE

The Evidence-to-Decision (EtD) frameworks are available in the full version of the guideline. They present the decision-making process regarding desirable and undesirable effects, certainty of evidence, variability, risk–benefit balance, resource use, cost-effectiveness, equity, acceptability, and feasibility. Each section also includes the value judgments that we considered when formulating the recommendations.

INCLUSION OF COSTS AND ACCESS

We considered the costs associated with the administration of diagnostic aids and medications, as well as their availability in the country. Detailed information is provided in the full version of the guideline, which includes GRADE evidence profiles and EtD tables. Users who require this information may contact the corresponding author.

RECOMMENDATIONS

The following recommendations are based on the questions developed in the previous version and on newly formulated questions for the 2025 update of the Clinical Practice Guideline (CPG) for colorectal cancer (CRC) screening in adults.

FORMULATION OF THE RECOMMENDATIONS

We formulated the recommendations in two steps. First, the guideline development group drafted preliminary recommendations, taking into account the risk–benefit balance, patient preferences, and the context of implementation. Second, the recommendations were discussed and refined in an expert panel composed of representatives from scientific associations, government entities, and patient groups, who contributed to determining the strength of the recommendations.

The GRADE methodology provides two levels of recommendation strength: strong and conditional. After considering the risk–benefit balance, evidence quality, patient values and preferences, and the implementation context, we determined the strength of each recommendation according to the structure presented in **Table 1**.

Finally, we confirmed that the expert panel agreed with the proposed recommendations and that they reflected participants' perspectives. The strength and wording of each recommendation were determined through electronic voting. During the expert panel meeting, all recommendations received majority approval.

QUESTION 1. AT WHAT AGE SHOULD COLORECTAL CANCER SCREENING BEGIN AND END IN THE GENERAL POPULATION?

Recommendation 1

We recommend initiating CRC screening in asymptomatic adults at average risk at 45 years of age.
Certainty of Evidence: Moderate
Strength of Recommendation: Strong

Evidence Summary

The U.S. Preventive Services Task Force (USPSTF)[28] concludes with moderate certainty that CRC screening in adults aged 45–49 years provides a moderate net benefit.

The justification for this new recommendation is the increased incidence of CRC among individuals under 50 years of age. In adults aged 40–49 years, incidence has risen by nearly 15% between 2000–2002 and 2014–2016.

Although there are no studies specifically reporting the benefits of screening in this age group, modeling analyses suggest that beginning screening at 45 years moderately increases life-years gained and reduces both CRC cases and deaths compared to starting at 50 years.

The potential harms of screening in this age group are also considered small. Evidence indicates that the risk of complications, such as bleeding or perforation during colonoscopy, may be lower in younger adults.

The combination of a rising incidence in this age group and evidence of a moderate net benefit led the USPSTF to issue a recommendation to start screening at 45 years of age.

Additional Text (EtD)

In the 2025 update of this guideline, we advanced the starting age for CRC screening in the general population. This decision is based on new evidence showing an increased incidence of CRC in individuals under 50 years of age. Although the certainty of the evidence is rated as moderate—due to the smaller number of studies including this population compared with those starting at age 50, where evidence is high—the recommendation remains strong. Its strength is supported by local economic evaluations suggesting that initiating screening at 45 years yields a significant net benefit[27].

Recommendation 2

We recommend discontinuing CRC screening in asymptomatic adults at average risk at 75 years of age, or in those with a life expectancy of 10 years or less.

Certainty of Evidence: High

Strength of Recommendation: Strong

Evidence Summary

The recommendation to discontinue screening is based on balancing the risks and benefits of CRC detection in older adults and those with limited life expectancy[29]:

- Increased risks with age: The risk of harm—particularly serious complications—from CRC screening tests such as colonoscopy increases with age. For example, major complications such as perforation and significant bleeding are more frequent in adults over 75 years.
- Low or no benefit: The benefits of CRC screening take considerable time to materialize. On average, preventing one CRC death per 1,000 screened individuals requires approximately 10.3 years. Therefore, individuals with a life expectancy of 10 years or less are unlikely to live long enough to experience the benefit of screening. Modeling data: Modeling studies for the USPSTF indicate that any additional benefit of screening adults aged 75 years or older—especially those who have been previously screened—is minimal and unlikely to outweigh the associated harms.
- Limited life expectancy: The average life expectancy at age 75 in the United States is 9.9 years for men and 12 years for women. Moreover, individuals aged 70 years with severe comorbidities have even shorter life expectancies (8.9 years for men and 10.8 years for women). For these individuals, screening is considered unnecessary, burdensome, potentially harmful, and costly.
- Lack of direct trial evidence: There is limited information from randomized controlled trials (RCTs) regarding when to discontinue screening. Nonetheless, the decision relies on weighing the increasing risk of CRC and cancer mortality with advancing age against the higher likelihood of harm, the screening burden, and competing causes of death associated with older age and comorbidities.

Additional Text (EtD)

It is important to emphasize that this recommendation is not universal; rather, it is based on a careful balance between benefits (small to moderate) and harms (small to moderate), which vary significantly according to individual health status and medical history. This recommendation applies specifically to screening and not to surveillance in patients with a history of adenomatous polyps or CRC, nor to diagnostic evaluation in individuals presenting with signs or symptoms suggestive of CRC.

Recommendation 3

The decision to continue CRC screening in individuals aged 76 to 85 years should be tailored to each case, based on an assessment of risks, benefits, screening history, and comorbidities.

Certainty of Evidence: Low

Strength of Recommendation: Strong

Evidence Summary

The 2021 USPSTF guideline[27] for CRC screening in adults over 75 years justifies its recommendation as follows:

- Grade C recommendation: The USPSTF advises that clinicians selectively offer CRC screening to adults aged 76–85 years.
- Small net benefit: Evidence indicates that the overall benefit of screening in this age group is small.

- Increased risks with age: The harms of screening—particularly those associated with colonoscopy, such as bleeding and perforation—increase with age.
- Individualized decision: To determine whether screening is appropriate, patients and clinicians should consider the patient's overall health, prior screening history, and preferences. Life expectancy and comorbidities are key factors in this decision.
- No benefit after age 85: Screening should be discontinued after 85 years of age, as the potential benefits are unlikely to outweigh the harms, and competing causes of mortality likely offset any survival advantage.

Additional Text (EtD)

This recommendation is not universal. It is based on a careful balance between benefits (small to moderate) and harms (small to moderate), which vary substantially according to each individual's health status and medical history. It must be emphasized that this recommendation applies to screening and not to surveillance in patients with previous adenomatous polyps or CRC, nor to diagnosis in individuals with signs or symptoms suggestive of CRC.

Good Practice Point 1

We should not perform CRC screening tests after 85 years of age.

Additional Text (EtD)

This good practice recommendation is based on a careful balance of benefits (small to moderate) and harms (small to moderate), which vary substantially depending on each individual's health status and medical history. It must be emphasized that this recommendation applies to screening and not to surveillance in patients with previous adenomatous polyps or CRC, nor to diagnosis in individuals with signs or symptoms suggestive of CRC. In addition, we must take into account the country's available resources and individual considerations.

QUESTION 2. WHAT ARE THE APPROPRIATE METHODS AND INTERVALS FOR COLORECTAL CANCER SCREENING?

Recommendation 4

We recommend colonoscopy as the primary strategy for CRC screening.
Certainty of Evidence: High
Strength of Recommendation: Strong

Evidence Summary

Four studies (n = 4,821) assessed the diagnostic accuracy of colonoscopy, and three studies (n = 2,290) evaluated undetected CRC cases using follow-up CT colonography or CT colonography combined with repeat colonoscopy when discrepancies were found. Across these four studies, sensitivity for detecting adenomas ≥10 mm ranged from 0.89 (95% CI: 0.78–0.96) to 0.95 (95% CI: 0.74–0.99), while one study reported a specificity of 0.89 (95% CI: 0.86–0.91). Two of the accuracy studies included patients under 50 years of age, although outcomes for this subgroup were not reported separately[27].

Additional Text (EtD)

This recommendation is universal and based on a careful balance between benefits (small to moderate) and harms (small to moderate), which vary according to each individual's health status and history. It should be emphasized that this recommendation applies to screening and not to surveillance in patients with previous adenomatous polyps or CRC, nor to diagnosis in individuals with symptoms or at elevated risk for CRC.

Recommendation 5

For patients with a normal, high-quality colonoscopy, we recommend repeating CRC screening every 10 years.
Certainty of Evidence: High
Strength of Recommendation: Strong

Evidence Summary

Individuals with a normal colonoscopy have a lower risk of developing CRC and a lower risk of CRC-related mortality than the general population[30]:

- Long-term risk reduction: A cohort study of over 300,000 individuals found that a normal colonoscopy was associated with a sustained reduction in incident and fatal CRC risk over the long term. This reduced risk persisted even 12 years after the initial examination.
- Recommended interval: Based on this persistently lower risk, screening should be repeated every 10 years, provided that the initial colonoscopy was of high quality. A high-quality colonoscopy is defined as one that reaches the cecum and has adequate bowel preparation to detect polyps larger than 5 mm.
- Absence of neoplasia: Patients with no neoplastic lesions detected during a high-quality colonoscopy have the lowest risk of developing advanced metachronous neoplasia (new lesions appearing later). By contrast, patients with polyps are stratified according to

risk based on the number, location, size, and histology of the polyps. The article defines a normal colonoscopy as one in which no adenomas, sessile serrated polyps (SSP), traditional serrated adenomas (TSA), hyperplastic polyps (HP) ≥10 mm, or CRC are detected.

This recommendation remains applicable even when colonoscopy is performed for another indication, unless the patient has an elevated risk of CRC due to conditions such as family history of CRC, hereditary CRC syndromes, inflammatory bowel disease, or malignant polyps.

Additional Text (EtD)

This recommendation is universal and is based on a careful balance between benefits (small to moderate) and harms (small to moderate), which vary substantially depending on each individual's health status and medical history. It must be emphasized that this recommendation applies to screening and surveillance in patients who have not had previous adenomatous polyps or CRC, and not to diagnosis in individuals with signs or symptoms of CRC or at elevated risk.

Recommendation 6

For patients with an abnormal colonoscopy, we recommend repeating the test according to the findings, as outlined below:

- In patients with one or two tubular adenomas <10 mm in size, completely removed during a high-quality examination, we recommend repeating colonoscopy in seven to 10 years.
- In patients with three or four tubular adenomas <10 mm, completely removed during a high-quality examination, colonoscopy should be repeated in three to five years.
- In patients with five to 10 tubular adenomas <10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
- In patients with one or more adenomas ≥10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
- In patients with an adenoma showing villous histology, completely removed during a high-quality examination, repeat colonoscopy in three years.
- In patients with an adenoma with high-grade dysplasia, completely removed during a high-quality examination, we recommend repeating colonoscopy in three years.
- In patients with more than 10 adenomas completely removed during a high-quality examination, repeat colonoscopy in one year.
- In patients with ≤20 hyperplastic polyps (HPs) <10 mm in size in the rectum or sigmoid colon, completely removed during a high-quality examination, repeat CRC screening in 10 years.
- In patients with ≤20 HPs <10 mm in size proximal to the sigmoid colon, completely removed during a high-quality examination, repeat colonoscopy in 10 years.
- In patients with one or two sessile serrated polyps (SSPs) <10 mm, completely removed during a high-quality examination, repeat colonoscopy in five to 10 years.
- In patients with one traditional serrated adenoma (TSA), completely removed during a high-quality examination, repeat colonoscopy in three years.
- In patients with three to four SSPs <10 mm, completely removed during a high-quality examination, repeat colonoscopy in three to five years.
- In patients with any combination of five to 10 SSPs <10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
- In patients with SSPs ≥10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
- In patients with HPs ≥10 mm, repeat colonoscopy in three to five years. A 3-year follow-up is recommended if there are concerns regarding the pathologist's consistency in distinguishing between SSP and HP, the adequacy of bowel preparation, or the completeness of polyp removal. A 5-year follow-up is recommended if there is little concern about the pathologist's consistency, bowel preparation was adequate, and complete polyp excision was confirmed.
- In patients with a prior adenoma resection at baseline and a subsequent colonoscopy, recommendations for ongoing surveillance should take into account previous findings.

Certainty of Evidence: Low
Strength of Recommendation: Conditional in favor

Evidence Summary[19]

- This recommendation represents a change from the 2012 guidelines, which suggested a 5–10-year interval. The decision to extend this to 7–10 years is based on new studies showing that individuals with low-risk adenomas also have a reduced risk of advanced neoplasia and CRC during follow-up.
  - Risk of metachronous advanced neoplasia: A recent meta-analysis including data from over 10,000 individuals found that the 5-year cumulative incidence of metachronous advanced adenoma—defined as the appearance of new neoplastic lesions (adenomas or CRC) after an initial colonoscopy in which polyps were removed, as opposed to those present at the baseline examination (synchronous

lesions)—was 4.9% in the low-risk adenoma group, compared with 3.3% in the group without adenomas. The risk between these two groups is similar and much lower than the 17.3% risk observed in individuals with high-risk adenomas. The risk between these two groups is similar and much lower than the 17.3% risk observed in individuals with high-risk adenomas.
    - Risk of fatal CRC: A Norwegian cohort study found that the long-term risk of fatal CRC in patients with a single adenoma without advanced histology was 25% lower than in the general population. Another French study also reported that non-advanced adenomas were associated with a reduced risk of CRC compared with the general population.

  The Task Force established a 7–10-year surveillance interval because, although uncertainty remains regarding whether more frequent follow-up could further reduce CRC risk, colonoscopic surveillance has contributed to the low risks reported in multiple studies. This range also allows clinicians to reassess patients previously recommended for shorter intervals, adjusting follow-up to 7–10 years. Such decisions should consider individual factors, including the quality of the baseline examination and the patient's polyp history.
- This recommendation is supported by emerging evidence showing that the risk of metachronous advanced neoplasia in this group is low, which may justify a longer surveillance interval than previous guidelines suggested. Several studies support this view.
    - Risk of advanced neoplasia: A cohort study of 561 individuals with 3–4 adenomas <10 mm found that the risk of metachronous advanced neoplasia was below 5%. Another retrospective study reported a 1.8% risk of metachronous advanced neoplasia in patients with 3–4 small adenomas, similar to the 1.4% risk seen in patients with 1–2 small adenomas.
    - Need for further research: Despite these findings, the quality of evidence remains very low. Further studies are needed to determine whether, in the modern era of colonoscopy, the risk of metachronous advanced neoplasia in this group is sufficiently low to support a 5-year or longer surveillance interval.
    - The Task Force favors a 5-year interval but acknowledges that the current evidence is inconclusive.

  The recommendation is weak due to the limited amount of available data and the lack of consensus among studies. This means that patients' decisions may vary according to their values and preferences, and we must ensure that care aligns with these.
- Evidence since the 2012 guidelines has consistently shown that individuals with three to 10 adenomas have an increased risk of advanced neoplasia on follow-up.
    - Risk of metachronous neoplasia: A retrospective study found that 5% of patients with five or more adenomas <10 mm developed metachronous advanced neoplasia during follow-up. In comparison, the risk was only 1.8% in patients with 3–4 small adenomas and 1.4% in those with 1–2 small adenomas, underscoring a considerably higher risk for the 5–10 adenoma group.
    - Recommended interval: Based on these findings, the Task Force recommends follow-up colonoscopy at three years for this group. This recommendation recognizes that the detection of multiple small adenomas may indicate a very thorough examination; however, the elevated risk still warrants closer surveillance.

  The Task Force also emphasizes the importance of considering the total number of adenomas throughout a patient's lifetime, as having more than 10 adenomas may require a different management approach, including consideration of genetic testing for hereditary polyposis syndromes.
- This recommendation also draws on additional studies published since the 2012 guidelines that have confirmed and expanded the evidence that adenomas ≥10 mm are a high-risk feature.
    - Increased risk of metachronous neoplasia: A Dutch study of 2,990 patients found that a size ≥10 mm was associated with a 1.7-fold higher risk of metachronous advanced neoplasia. Another study of 3,300 patients in a U.S. health system independently associated adenoma size ≥10 mm with a 3.6-fold higher risk of advanced adenoma and a 5.2-fold higher risk of CRC on follow-up.
    - Increased risk of incident and fatal CRC: A U.S. cohort study demonstrated that individuals with advanced adenomas—most of whom met the size criterion—had a higher risk of both incident and fatal CRC compared with those without adenomas.

  Importance of polyp size: This article underscores the importance of accurate polyp size estimation for this recommendation and suggests that photographic documentation of polyps ≥10 mm should be compared against a biopsy forceps or an open snare of known size.
- Evidence published since the 2012 guidelines continues to support villous histology as a risk factor for advanced neoplasia on follow-up.
    - Risk of advanced neoplasia: Although the article does not provide specific numerical data for risk associated

solely with villous histology, it cites large U.S. and Dutch cohort studies confirming this finding.
    - Histology as a risk factor: The document defines *advanced adenoma* as an adenoma ≥10 mm, one with tubulovillous or villous histology, or one with high-grade dysplasia. Patients with these features are considered to have a significantly higher risk of metachronous advanced neoplasia and therefore require closer surveillance.

  Although the certainty of evidence is rated as moderate, the consistency of findings across multiple studies identifying villous histology as a risk factor justifies a strong recommendation for a three-year surveillance interval.
- Cohort evidence has also confirmed that high-grade dysplasia is a risk factor for metachronous advanced neoplasia and CRC. Although high-grade dysplasia is relatively uncommon—leading to variability among study results—its presence indicates increased risk.

  The three-year recommendation assumes that resection of the neoplastic lesion, including high-grade dysplasia, was complete and not fragmented during the initial examination. The Task Force strengthened the evidence supporting close three-year surveillance for patients with adenomas containing high-grade dysplasia.
- The rationale for this recommendation (weak recommendation, low certainty) is based on scarce available evidence—primarily a single cohort study—and the higher risk of hereditary polyposis syndromes.
    - Risk of metachronous advanced neoplasia: A Korean cohort study of 214 patients with more than ten adenomas found that 26.6% developed metachronous advanced adenomas during a mean follow-up of 4.3 years.
    - Suspicion of hereditary syndromes: The article notes that patients with more than 10 adenomas may be at increased risk for hereditary polyposis syndromes such as familial adenomatous polyposis or MUTYH-associated polyposis (MAP). MAP, caused by mutations in the MUTYH gene, is one of the hereditary syndromes to consider in patients presenting with more than 10 adenomas over their lifetime. For this reason, in such cases, we recommend considering genetic testing for patients with more than 10 cumulative adenomas, depending on the absolute number of adenomas, patient age, and family history of CRC.
    - Simplified follow-up: The recommendation to repeat colonoscopy after one year was made to simplify follow-up, replacing the previous, less specific guidance of "less than three years," even though the evidence base has not been substantially strengthened.

  Given the very limited evidence supporting this strategy, the recommendation is considered weak. Nevertheless, it serves as a clinical guide, since conventional wisdom and available observational evidence suggest that some patients remain at risk of developing CRC despite initial polypectomy.
- The rationale (weak recommendation, moderate certainty) is based on the lack of new data contradicting previous findings and on the similarity in risk to that observed after a normal colonoscopy.
    - Low risk of metachronous neoplasia: Prior literature has suggested that these patients have a risk of metachronous advanced neoplasia similar to that of individuals with a normal examination.
    - Absence of new evidence: Since the 2012 review, no new data have been identified regarding the risk of advanced neoplasia associated with hyperplastic polyps (HPs). These polyps are usually located in the rectum and sigmoid colon and are considered low-risk for the development of small CRCs in the rectosigmoid segment.
    - Recommendation unchanged: Therefore, the recommendation to repeat the examination at 10 years remains unchanged.

  This recommendation assumes that the initial examination was of high quality—that is, complete to the cecum, with adequate bowel preparation, and performed by a colonoscopist with an appropriate adenoma detection rate (ADR). This recommendation does not apply to individuals with hereditary CRC syndromes, inflammatory bowel disease, malignant polyps, a prior history of CRC, or a family history of CRC.
- The rationale (weak recommendation, low certainty) for this recommendation is based on the absence of strong evidence in the reviewed literature for this specific group of patients.
    - Lack of direct data: The authors found no published studies examining the risk of metachronous advanced neoplasia or large serrated polyps in patients with isolated HPs <10 mm proximal to the sigmoid colon and without synchronous adenomas.
    - Risk similarity to distal HPs: The recommendation is based on the inference that, similar to patients with small HPs in the rectosigmoid region, this group likely also has a low risk of advanced neoplasia. This is supported by a cohort study showing that most individuals with isolated HPs (without concurrent adenomas) belong to a low-risk group, although stratified data by size and location were not provided.
    - Concerns regarding diagnosis: The document notes that in routine practice, some SSPs may be

misclassified as HPs. Therefore, if there are concerns about the pathologist's ability to consistently distinguish between SSPs and HPs, clinicians may choose to follow the more aggressive surveillance recommendations used for SSPs.

Given the scarcity of specific data and the inherent uncertainties, the recommendation is classified as weak and supported by very low–quality evidence, indicating that further research is needed to strengthen this guideline.

- The rationale (weak recommendation, low certainty) for this recommendation is due to the limited and variable scientific evidence available. The guideline highlights several challenges in interpreting existing studies on this topic, including inconsistent definitions of serrated polyps and follow-up outcomes.
  - Low but uncertain risk of conventional advanced neoplasia: The largest study to date, from a colonoscopy registry, suggests that patients with isolated SSPs have low rates of conventional high-risk adenomas on follow-up. Specifically, the risk was 2.9% among patients with isolated SSPs, which is low, but risk estimates remain imprecise due to the small number of patients in higher-risk subgroups.
  - Elevated risk of large serrated polyps: Patients with SSPs at the initial examination appear to have a higher risk of developing large serrated polyps (≥10 mm) during follow-up, regardless of whether they also had conventional adenomas. For example, the risk of developing a serrated polyp ≥10 mm on follow-up was 9.6% among patients with isolated SSPs at baseline, compared with only 0.7% in those without adenomas or serrated polyps. However, the article notes that the implications of having a large serrated polyp on follow-up for subsequent CRC risk remain uncertain.

  The recommendation urges caution, because the proposed 5–10-year interval is more aggressive than the 7–10-year recommendation for low-risk conventional adenomas. This is due to weaker evidence for SSPs and greater uncertainty regarding adequate detection and complete excision of these lesions in clinical practice.
- The rationale (weak recommendation, low certainty) is based on the limited new evidence available for this type of polyp. One study compared 186 patients with a prior isolated TSA with 372 patients with a prior conventional adenoma and found that the proportion of patients with metachronous high-risk adenomas was significantly higher in the TSA group (47.3% vs. 32.0%).

  This finding, along with a 2.37-fold increased risk of high-risk adenoma in adjusted analyses, supports the recommendation for a 3-year follow-up colonoscopy. However, because additional data are lacking and the evidence is limited, the recommendation is considered weak and based on very low–quality evidence. This indicates that follow-up decisions may vary according to patient preferences and clinician judgment, and that more research is needed to strengthen this guideline.
- The rationale (weak recommendation, low certainty) is based on extrapolating findings from other risk groups and the lack of specific data for this population.
  - Risk of metachronous neoplasia: No published studies were found examining the specific risk of metachronous neoplasia in patients with 3–10 SSPs. Therefore, the recommendation aligns with the guideline for individuals with 3–4 conventional adenomas (recommended interval: 3–5 years) and those with 5–10 adenomas (recommended interval: three years).
  - Alignment with adenoma guidelines: Because specific data are lacking, the Task Force has chosen to apply the same follow-up recommendations used for conventional adenomas, which are also based on the number of small polyps.

  The article suggests that future research should clarify whether patients with a combination of SSPs and conventional adenomas have a distinct risk profile that would justify a different management approach.

  Challenges and cautions: The authors note difficulties within the serrated polyp literature, including the lack of data on the most important outcomes (i.e., CRC), inconsistent definitions of serrated polyps, and variability in follow-up results. The recommendation is issued despite this uncertainty in order to guide patient care, given that observational evidence suggests that some patients with serrated polyps remain at risk.
- The rationale (weak recommendation, low certainty) is based on extrapolation from the guidance for conventional adenomas and on the absence of specific evidence for this subgroup of patients.
  - Absence of direct studies: No published studies were found that specifically examined the risk of metachronous neoplasia in patients with 3–10 SSPs, nor in those with a combination of SSPs and conventional adenomas.
  - Alignment with adenoma guidelines: In the absence of specific data, the Task Force has chosen to apply the same 3-year follow-up recommendation used for patients with 5–10 conventional adenomas <10 mm.
  - Indirect evidence: Unpublished data cited in the article suggest that patients with a combination of low-risk adenomas and SSPs at baseline may have an increased risk of metachronous advanced neoplasia and large SSPs, supporting the need for closer follow-up.

Given the very limited evidence, the recommendation is considered weak, indicating that further research is needed to firmly guide management for this patient group.

- The rationale (weak recommendation, low certainty) is based on the limited new evidence available and on uncertainties surrounding these polyps:
  - Risk of metachronous neoplasia: One study from the New Hampshire Colonoscopy Registry found that, although the risk of high-risk adenoma on follow-up was low (3.1%), having a large serrated polyp (≥10 mm) on the initial examination was associated with an increased risk of finding another large serrated polyp on follow-up (12.3%).
  - Uncertainty in differentiation and resection: The article highlights the challenges pathologists face when distinguishing SSPs from hyperplastic polyps (HPs), as well as the difficulty of achieving complete resection for SSPs ≥10 mm, with incomplete resection rates reported as high as 47%.

  A conservative approach is recommended. Because of these uncertainties and the lack of data separating outcomes for SSPs, HPs, and TSAs ≥10 mm, the Task Force recommends a 3-year follow-up. This recommendation is conservative and accounts for observed risk as well as potential technical and diagnostic challenges.
- This rationale (weak recommendations, low certainty) stems from the limited evidence available to guide management of these polyps and from diagnostic and resection-related uncertainties:
  - Risk of neoplasia: The New Hampshire Colonoscopy Registry study (also cited in the previous recommendation) found that among 65 patients with large serrated polyps (HP, SSP, or TSA), 3.1% had high-risk adenomas on follow-up, compared with 4.8% among patients without adenomas at the initial examination. However, having a serrated polyp ≥10 mm was associated with an increased risk of having another large serrated polyp on follow-up, with an absolute risk of 12.3%.
  - Diagnostic uncertainty: The article notes that pathologists often struggle to consistently differentiate SSPs from HPs. A conservative approach may be to assume that all HPs ≥10 mm are SSPs, which may lead to over-surveillance in some patients.
  - Determining the follow-up interval: The 3- to 5-year interval is offered to provide clinicians with flexibility. A 3-year interval is recommended when there are concerns about the pathologist's ability to distinguish SSPs from HPs, bowel preparation quality, or complete resection. A 5-year interval may be favored when these concerns are minimal.

  This acknowledges that although the evidence is weak, care should be tailored based on risk factors and examination quality.
- This recommendation (weak recommendation, low certainty) is based on the variability in the risk of recurrent neoplasia, which changes depending on the findings of serial colonoscopies:
  - Risk of neoplasia at second surveillance: Reviewed studies show that individuals with low-risk adenomas at baseline and no adenomas at first surveillance have low rates of high-risk adenomas on follow-up, ranging from 1% to 6.6%. In contrast, those with high-risk adenomas at both the baseline and first surveillance colonoscopies have a metachronous high-risk adenoma rate of more than 18%.
  - Variability of results: Despite these findings, results for other clinical scenarios (such as low-risk at baseline and high-risk at first surveillance) vary more widely across studies. Thus, the Task Force concluded that more evidence is needed to clarify optimal follow-up intervals, especially for patients with low-risk adenomas at both examinations.
  - Practical application: The recommendation implies that the surveillance plan should be dynamic, adjusting to the findings of each procedure. The tables in the article summarize specific recommendations for second surveillance by combining findings from the first two colonoscopies to guide the timing of the next examination.

Additional Text (EtD)

Because of the variability in the results and the need for additional data, this recommendation is classified as weak and based on low-quality evidence. Nevertheless, it underscores the importance of considering the patient's complete polyp history to make informed decisions about follow-up.

Good Practice Point 2

In patients with sessile serrated lesions (SSLs) with dysplasia, when dysplasia is reported, colonoscopy should be repeated at one year.

The 2020 guideline from the American Society for Gastrointestinal Endoscopy (ASGE)[31] recommends that in patients with SSPs showing dysplasia on a high-quality examination, colonoscopy be repeated at three years, based on the following evidence:

- Uncommon finding: SSPs with dysplasia are uncommon. In a series of more than 179,000 patients, 2,139 SSPs were identified, of which only 302 contained low- or high-grade dysplasia.

- High-risk features: SSPs with dysplasia exhibit more features consistent with CRC than SSPs without dysplasia.
- Alignment with other recommendations: In the absence of data demonstrating whether the risk of metachronous neoplasia differs between patients with SSPs with dysplasia and those without, the Task Force recommends a 3-year follow-up colonoscopy.

This recommendation assumes that a complete and high-confidence resection of the lesion was performed during the initial examination. The expert panel for this guideline considers that, because dysplasia is present, surveillance colonoscopy should be performed at one year.

Additional Text (EtD)

This recommendation is not considered universal, but it is based on a careful balance between benefits (moderate to large) and harms (small), which vary significantly depending on each individual's health status and history. It should be noted that this recommendation applies to screening and surveillance in patients who have received the diagnosis, as well as in individuals with signs or symptoms of CRC and in patients with or without risk factors.

Recommendation 7

We recommend annual fecal occult blood testing (fecal immunochemical test [FIT]), with or without DNA testing (FIT-DNA), for population-based screening programs.
Certainty of Evidence: High
Strength of Recommendation: Conditional in favor

Evidence Summary

Two studies (n = 3,503) provided data on accuracy. A larger evidence base was available for the accuracy of FIT, with the most substantial evidence for the OC-Sensor family of FITs (13 studies; n = 44,887)[27]. Using the manufacturer's recommended threshold (20 μg of hemoglobin per gram of stool), the pooled sensitivity for CRC detection was 0.74 (95% CI: 0.64–0.83; nine studies; n = 34,352) and the pooled specificity was 0.94 (95% CI: 0.93–0.96; nine studies; n = 34,352). Accuracy estimates for another nine types of FITs were similar, although generally reported in individual studies only.

In four studies (n = 12,424) reporting accuracy of sDNA-FIT, the pooled sensitivity for CRC detection was 0.93 (95% CI: 0.87–1.0) and pooled specificity was 0.84 (95% CI: 0.84–0.86). Sensitivity for detecting advanced adenomas was lower (0.43; 95% CI: 0.40–0.46), while specificity was higher (0.89; 95% CI: 0.86–0.92). Two studies suggested lower specificity for CRC detection in adults aged 70 years or older, while a single sDNA-FIT study suggested decreasing specificity with increasing age[9,10].

Additional Text (EtD)

It is important to highlight that this recommendation is universal, based on several factors, including the high availability of the test, and on a careful balance of benefits (moderate to large) and harms (small), which vary significantly according to each individual's health status and history. This recommendation applies to screening and to surveillance in patients with CRC.

Recommendation 8

We do not recommend CT colonography as a first-line CRC screening method.
Certainty of Evidence: Weak
Strength of Recommendation: Conditional against

Evidence Summary

The U.S. Preventive Services Task Force (USPSTF)[27] reported that seven studies (n = 5,328) provided data on the accuracy of CT colonography[9,10]. These studies were heterogeneous regarding study design, population, imaging technique, and reader experience or protocol. Sensitivity for CRC detection was reported in six studies and ranged from 0.86 to 1.0 (95% CI: 0.21–1.0); specificity was not reported. The pooled sensitivity for detecting adenomas ≥10 mm was 0.89 (95% CI: 0.83–0.96), and the pooled specificity was 0.94 (95% CI: 0.89–1.0). One study reported CT colonography accuracy by age and suggested lower sensitivity in adults aged 65 years or older; however, this finding was not statistically significant.

Based on the provided source (the recommendations of the U.S. Multi-Society Task Force), no conclusions can be drawn regarding findings on CT colonography. The documents neither address nor mention CT colonography (also known as *virtual colonoscopy*) as a screening method nor analyze accuracy statistics such as sensitivity or specificity.

Additional Text (EtD)

Because of the variability in results and the need for additional data, this recommendation is classified as weak. Nevertheless, it highlights the importance of considering CT colonography as an excellent option when a complete colonoscopy with adequate preparation cannot be performed and for informed decision-making when follow-up is required.

QUESTION 3: WHICH POPULATION SUBGROUPS REQUIRE DIFFERENTIATED SCREENING STRATEGIES?

Recommendation 9

Individuals with a first-degree relative (parent, sibling, or child) diagnosed with CRC—especially when the diagnosis occurred before age 50—are considered high risk. For this reason, we recommend initiating screening at age 40, or 10 years before the age at diagnosis of the youngest affected relative, whichever comes first.

Certainty of Evidence: High

Strength of Recommendation: Conditional in favor

Evidence Summary[32]

- A family history of CRC increases an individual's risk, even in the absence of an established hereditary CRC syndrome.
- Risk varies according to degree of relatedness, number of affected relatives, and the age of the relative at diagnosis.
- Meta-analyses published between 2001 and 2006 reported a pooled relative risk (RR) of 2.24 to 2.26 for developing CRC when at least one first-degree relative was affected.
- A 2018 meta-analysis reported a pooled RR of 1.76.
- A 2019 systematic review and meta-analysis by Roos et al. found that CRC risk was significantly higher when the first-degree relative was diagnosed before age 50, with an RR of 3.57 in pooled case–control studies and 3.26 in pooled cohort studies.
- In contrast, when the first-degree relative was diagnosed after age 50, the RR associated with family history was more modest: 1.88 in pooled case–control studies and 1.83 in pooled cohort studies.

This document from the American Gastroenterological Association (AGA) considers any family history of CRC—in particular in first-degree relatives—as high risk, regardless of the relative's age at diagnosis, and suggests more intensive screening. This approach is based on several factors, including the difficulty many individuals have recalling the exact age at which their relatives were diagnosed, which may complicate the implementation of screening recommendations that depend on this information. The document also highlights the need for additional data on advanced neoplasia in adults aged 40–50 with a family history of CRC.

Additional Text (EtD)

It is important to emphasize that this recommendation is universal, given individuals' backgrounds and conditions, and is based on a careful balance of benefits (moderate to high) and harms (small to moderate), which vary significantly according to each person's health status and history. We highlight that this recommendation applies to screening and surveillance in patients with relatives who have received this diagnosis, in family members with signs or symptoms of CRC, and in individuals with risk factors.

Good Practice Point 3

In higher-risk population subgroups, colonoscopy should be the preferred screening strategy, given its diagnostic and therapeutic capabilities.

The evidence strongly and explicitly supports colonoscopy as the recommended screening strategy for individuals with increased CRC risk: "colonoscopy should be the screening strategy used for individuals with increased CRC risk."

This justification is supported by its high sensitivity for detecting both polyps and cancer and by a favorable risk–benefit balance in this population. Higher-risk groups tend to have a greater prevalence of advanced polyps and cancer; therefore, using less sensitive tests may result in a greater number of missed neoplasias.

In summary, pending additional studies that may complement and further demonstrate its impact, colonoscopy remains the primary recommended screening strategy in individuals at increased risk due to family history and at minimal procedural risk.

Good Practice Point 4

To maximize the preventive capacity of CRC screening and reduce cancer incidence, implementing colonoscopy-based screening programs must include continuous monitoring of key quality indicators to ensure a high standard for every procedure. Colonoscopy quality is fundamental to the effectiveness of follow-up and to accurate patient risk stratification.

Evidence Summary[32]

- Adenoma detection rate (ADR): A minimum ADR of 35% is recommended in the general screening population (40% in men and 30% in women). The ADR should include colonoscopies performed for screening, surveillance, or symptom evaluation. A high ADR is directly associated with a lower incidence of interval cancer.
- Sessile serrated lesion detection rate (SSLDR): A minimum SSLDR of 6% should be monitored. This indicator complements the ADR because good performance in both is critical for predicting interval cancer risk.

- Mean withdrawal time: The mean colonoscope withdrawal time should be at least eight minutes in examinations where no polyps are detected. Adequate withdrawal time reflects a thorough examination and is associated with higher adenoma detection.
- Cecal intubation rate (CIR): The CIR should exceed 95% in all colonoscopies performed in patients with an intact colon. Complete cecal intubation, documented with a photograph, ensures that lesions in the most proximal colon are not missed.
- Adequate bowel preparation rate: The percentage of procedures with adequate bowel preparation should exceed 90%. Adequate colon cleansing is essential for detecting small lesions.

QUESTION 4: WHAT IS THE IMPACT OF ARTIFICIAL INTELLIGENCE ON IMPROVING ADENOMA AND COLORECTAL CANCER DETECTION DURING COLONOSCOPY?

Good Practice Point 5

To improve the detection rate of abnormal findings during colonoscopy, artificial intelligence (AI) may be used; however, it must always be accompanied by the clinical judgment of an expert and should never be used in isolation to determine appropriate management decisions.

Evidence Summary

- The application of AI for detecting colorectal polyps reached a sensitivity of 0.95 (95% CI: 0.89–0.98) and an area under the curve (AUC) of 0.79 (95% CI: 0.79–0.82). For AI-assisted classification, sensitivity was 0.92 (95% CI: 0.88–0.95), with a specificity of 0.82 (95% CI: 0.71–0.89) and an AUC of 0.94 (95% CI: 0.92–0.96). For the classification of diminutive polyps, AI-assisted techniques yielded a sensitivity of 0.95 (95% CI: 0.94–0.97), a specificity of 0.88 (95% CI: 0.74–0.95), and an AUC of 0.97 (95% CI: 0.95–0.98). For AI-assisted classification under magnifying endoscopy, sensitivity was 0.954 (95% CI: 0.92–0.96), with a specificity of 0.95 (95% CI: 0.80–0.99) and an AUC of 0.97 (95% CI: 0.95–0.98)[33].
- Across six prospective studies (five full publications, one abstract)[6,11–13,16,18], the adenoma detection rate (ADR) was significantly higher with computer-aided detection (CADe) compared with no CADe (37.3% vs. 35.2%; RR: 1.15, 95% CI: 1.01–1.32; $p = 0.04$). Conversely, in six retrospective studies (five full publications, one abstract)[7,8,14,15,17–19], the ADR did not differ between CADe and no CADe (35.7% vs. 36.2%; RR: 1.12, 95% CI: 0.92–1.36; $p = 0.27$). In the five fully published retrospective studies[7,8,14,15,17], there were likewise no differences in detection with CADe versus without CADe (RR: 1.04, 95% CI: 0.88–1.23; $p = 0.65$)[34].
- A total of 795 patients were analyzed: 400 in the AI group and 395 in the control group. The AI group demonstrated a significantly higher ADR than the control group (59.1% vs. 46.6%, $p < 0.001$). This improvement was significant among experts (59.9% vs. 47.3%, $p < 0.002$), but not among non-experts. AI assistance significantly improved the ADR (74.4% vs. 58.1%, $p = 0.003$) in screening colonoscopies. The polyp detection rate (PDR) was also higher in the AI group (69.8% vs. 56.2%, $p < 0.001$). No significant differences were observed in the non-neoplastic resection rate (15.1% vs. 56.2%; $p < 0.001$) [35].

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The contributors and participants involved in developing the recommendations of this guideline declare that they have no conflicts of interest, are not involved as researchers in ongoing clinical trials on the topic, have not received donations or benefits from groups with vested interests in the recommendations, and are not part of professional organizations with conflicts of interest. The development, preparation, and publication of the recommendations were supported exclusively by funding from the Colombian Association of Gastroenterology, and the copyright belongs to this institution.

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Declaration of Editorial Independence

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ANNEX

The Clinical Practice Guideline (CPG) for colorectal cancer (CRC) screening presents the following key points: initiate screening at age 45 for individuals at average risk; discontinue screening at age 75; and position colonoscopy as the primary and preferred method. It offers the annual fecal immunochemical test (FIT) as an alternative for population-based programs (**Figure 1**). It establishes clear screening intervals: 10 years after a normal colonoscopy and a detailed stratification (one to 10 years) for abnormal findings. Additionally, CT colonography and sigmoidoscopy are not recommended.

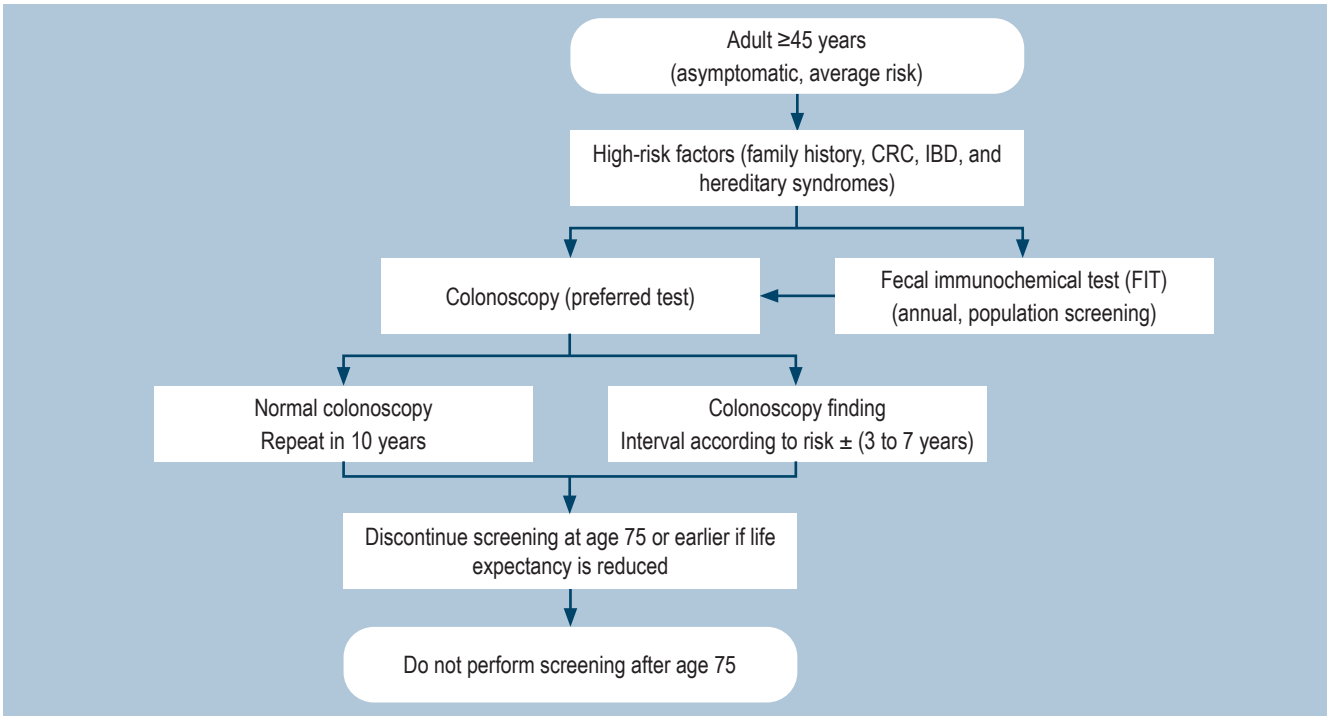


Figure 1. Visual Clinical Decision Algorithm. CRC: colorectal cancer; IBD: inflammatory bowel disease; FIT: fecal immunochemical test. Author's file.

SUMMARY OF RECOMMENDATIONS

Recommendation 1	
We recommend initiating CRC screening in asymptomatic adults at average risk at 45 years of age.	
Certainty of Evidence: Moderate	**Strength of Recommendation:** Strong

Recommendation 2	
We recommend discontinuing CRC screening at age 75 in asymptomatic adults at average risk, or earlier in those with a life expectancy of 10 years or less.	
Certainty of Evidence: High	**Strength of Recommendation:** Strong

Recommendation 3	
The decision to continue CRC screening in individuals older than 75 years should be individualized, based on an assessment of risks, benefits, screening history, and comorbidities.	
Certainty of Evidence: Low	**Strength of Recommendation:** Strong

Good Practice Point 1
We should not perform CRC screening tests after 85 years of age.

Recommendation 4

We recommend colonoscopy as the primary strategy for CRC screening.

Certainty of Evidence: High

Strength of Recommendation: Strong

Recommendation 5

In patients with a normal, high-quality colonoscopy, we recommend repeating CRC screening every 10 years.

Certainty of Evidence: High

Strength of Recommendation: Strong

Recommendation 6

For patients with an abnormal colonoscopy, we recommend repeating the test according to the findings, as outlined below:

1. In patients with one or two tubular adenomas <10 mm in size, completely removed during a high-quality examination, we recommend repeating colonoscopy in seven to 10 years.
2. In patients with three or four tubular adenomas <10 mm, completely removed during a high-quality examination, colonoscopy should be repeated in three to five years.
3. In patients with five to 10 tubular adenomas <10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
4. In patients with one or more adenomas ≥10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
5. In patients with an adenoma showing villous histology, completely removed during a high-quality examination, repeat colonoscopy in three years.
6. In patients with an adenoma with high-grade dysplasia, completely removed during a high-quality examination, we recommend repeating colonoscopy in three years.
7. In patients with more than 10 adenomas completely removed during a high-quality examination, repeat colonoscopy in one year.
8. In patients with ≤20 hyperplastic polyps (HPs) <10 mm in size in the rectum or sigmoid colon, completely removed during a high-quality examination, repeat CRC screening in 10 years.
9. In patients with ≤20 HPs <10 mm in size proximal to the sigmoid colon, completely removed during a high-quality examination, repeat colonoscopy in 10 years.
10. In patients with one or two sessile serrated polyps (SSPs) <10 mm, completely removed during a high-quality examination, repeat colonoscopy in five to 10 years.
11. In patients with a traditional serrated adenoma (TSA), completely removed in a high-quality examination, repeat colonoscopy at three years.
12. In patients with three to four SSPs <10 mm, completely removed during a high-quality examination, repeat colonoscopy in three to five years.
13. In patients with any combination of five to 10 SSPs <10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
14. In patients with SSPs ≥10 mm, completely removed during a high-quality examination, repeat colonoscopy in three years.
15. In patients with HPs ≥10 mm, repeat colonoscopy in three to five years. A 3-year follow-up is recommended if there are concerns regarding the pathologist's consistency in distinguishing between SSP and HP, the adequacy of bowel preparation, or the completeness of polyp removal. Additionally, a 5-year follow-up is recommended if there is little concern about the pathologist's consistency, bowel preparation was adequate, and complete polyp excision was confirmed.
16. In patients with a prior adenoma resection at baseline and a subsequent colonoscopy, recommendations for ongoing surveillance should take into account previous findings.

Certainty of Evidence: Low

Strength of Recommendation: Conditional in favor

Good Practice Point 2

In patients with SSPs in whom dysplasia is reported, colonoscopy should be repeated at one year.

Recommendation 7

We recommend annual fecal occult blood testing (fecal immunochemical test [FIT]), with or without DNA testing (FIT-DNA), for population-based screening programs.

Certainty of Evidence: High

Strength of Recommendation: Conditional in favor

Recommendation 8

CT colonography is not recommended for CRC screening.

Certainty of the Evidence: Weak

Strength of Recommendation: Conditional against

Recommendation 9

Individuals with a first-degree relative (parent, sibling, or child) diagnosed with colorectal cancer—particularly when the diagnosis occurred before age 50—are considered high risk. For this reason, we recommend initiating screening at age 40, or 10 years before the age at diagnosis of the youngest affected relative, whichever comes first.

Certainty of Evidence: High

Strength of Recommendation: Conditional in favor

Good Practice Point 3

In higher-risk population subgroups, colonoscopy should be the preferred screening strategy, given its diagnostic and therapeutic capabilities.

Good Practice Point 4

To maximize the preventive capacity of CRC screening and reduce cancer incidence, implementing colonoscopy-based screening programs must include continuous monitoring of key quality indicators to ensure a high standard for every procedure. Colonoscopy quality is fundamental to the effectiveness of follow-up and to accurate patient risk stratification.

Good Practice Point 5

To improve the detection rate of abnormal findings during colonoscopy, artificial intelligence (AI) may be used; however, it must always be accompanied by the clinical judgment of an expert and should never be used in isolation to determine appropriate management decisions.

SUMMARY TABLE

Question / Topic	Summary Recommendation	Certainty of Evidence	Strength of Recommendation
Starting age	Initiate screening at 45 years in individuals at average risk	Moderate	Strong
Stopping age	Stop screening at 75 years or earlier if life expectancy is ≤10 years	High	Strong
Ages 76–85	Individualized decision based on risk, comorbidities, and prior screening	Low	Strong (tailored)
Age >85	Do not perform screening after age 85	Good clinical practice	Good clinical practice
Preferred test	Colonoscopy as the preferred test	High	Strong
Population-level alternative	Annual FIT as an alternative for population-based screening	Strong (FIT), moderate (gFOBT)	Conditional in favor
Normal colonoscopy	Repeat every 10 years if the colonoscopy is normal and adequate	High	Strong
Abnormal colonoscopy	Interval according to findings: low risk 7–10 years, high risk three years, >10 adenomas one year	Low to moderate	Conditional in favor
Serrated lesions with dysplasia	Repeat colonoscopy at one year	Low	Good clinical practice
CT colonography	Not recommended as a first-line test	Weak	Conditional against

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