Systematic review of shared decision-making in guidelines about colorectal cancer screening

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Abstract
Introduction: We aimed to systematically evaluate quality of shared decision-making (SDM) in colorectal cancer (CRC) screening clinical practice guidelines (CPGs) and consensus statements (CSs).

Methods: Search for CRC screening guidances was from 2010 to November 2021 in EMBASE, Web of Science, MEDLINE, Scopus and CDSR, and the World Wide Web. Three independent reviewers and an arbitrator rated the quality of each guidance using a SDM quality assessment tool (maximum score: 31). Reviewer agreement was 0.88.

Results: SDM appeared in 41/83 (49.4%) CPGs and 9/19 (47.4%) CSs. None met all the quality criteria, and 51.0% (52/102) failed to meet any quality items. Overall compliance was low (mean 1.63, IQR 0–2). Quality was better in guidances published after 2015 (mean 1, IQR 0–3 vs. mean 0.5, IQR 0–1.5; p = 0.048) and when the term SDM was specifically reported (mean 4.5, IQR 2.5–4.5 vs. mean 0.5, IQR 0–1.5; p < 0.001). CPGs underpinned by systematic reviews showed better SDM quality than consensus (mean 1, IQR 0–3 vs. mean 0, IQR 0–2, p = 0.040).

Conclusion: SDM quality was suboptimal and mentioned in less than half of the guidances, and recommendations were scarce. Guideline developers should incorporate evidence-based SDM recommendations in guidances to underpin the translation of evidence into practice.

KEYWORDS
‘clinical practice guidelines’, ‘colorectal cancer screening’, ‘consensus’, ‘quality of guidelines’, ‘shared decision-making’

INTRODUCTION

Colorectal cancer (CRC) incidence and mortality have decreased due to screening programmes, removing precancerous polyps with colonoscopy, and advances in management (Cotton et al., 1996; Zauber et al., 2012). In screening programmes, the patient’s overall health, prior screening history, and preferences and values must be considered in selecting an individualised approach adapted to the

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patient’s risk of acquiring CRC (Hoffmann et al., 2020; US Preventive Services Task Force et al., 2021). Shared decision-making (SDM) is essential for decision-making, weighing up risks vs. benefits for each individual patient (Schrager & Burnside, 2017). In recent years, healthcare policymaking has emphasised SDM as a cornerstone of evidence-based and patient-centred care (Barry & Edgman-Levitan, 2012; Elwyn et al., 2010). Institutional promotion is fundamental for improving SDM application (Senate and House of Representatives, 2010), and clinical practice guidelines (CPGs) and consensus statements (CSs) should promote it and advise about its execution (Maes-Carballo, Munoz-Nunez, et al., 2020). Although CPGs and CSs increasingly support it (Gärtner et al., 2019), they remain unclear on accomplishing SDM in routine practice (Elwyn et al., 2012). Therefore, the analysis of the quality of SDM in guidances is critically essential. To the best of our knowledge, no systematic review has investigated SDM in CRC screening guidances.

Considering this background, this systematic review aimed to analyze SDM in CRC screening CPGs and CSs, evaluating the quality of recommendations about SDM.

1 | METHODS

Following prospective registration (Prospero no: CRD42021286156), this systematic review was conducted following advocated methods for search, assessment and reporting of guidelines using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (see Appendix S1) (Liberati et al., 2009; Moher et al., 2009).

1.1 | Search strategy, data sources, inclusion and exclusion criteria

A search for relevant publications covering major electronic databases (EMBASE, Web of Science, MEDLINE, Scopus and CDSR) was developed without language restrictions to capture peer-reviewed and grey literature from 2010 until November 2021. We also searched 59 websites of important professional societies and eight guidance-specific databases. We explored the World Wide Web to include professional societies from countries with global CRC scientific production bigger than 0.5% (Maes-Carballo et al., 2021, 2022; Maes-Carballo, Mignini, et al., 2020). A total of 85,932 ‘Colorectal Cancer and Health’ records were scrutinised from Scopus on 10 March 2022 to calculate the scientific production of each country. This decision is adhered to rules followed by other previous peer-reviewed published systematic reviews (Maes-Carballo et al., 2021, 2022; Maes-Carballo, Mignini, et al., 2020; Maes-Carballo, Munoz-Nunez, et al., 2020). We revised references from the guidances retrieved to search for conceivable additional CPGs or CSs. The final search integrated MeSH terms ‘practice guidelines’, ‘guidelines’, ‘consensus’, ‘colorectal neoplasms’, ‘colorectal cancer’, ‘screening’ and including word alternatives. Details of the search strategy were documented in Appendix S2. Endnote X9 software was employed to handle the searches downloaded.

Selection criteria captured eligible guidances about CRC screening produced by national or international professional organisations and societies or governmental agencies. Those guidances in which screening was the central issue and those in which there was a section dedicated to screening or prevention were included in our systematic review. We excluded protocols or screening programme documents, CPGs and CSs about diagnosis and treatment, out-of-date guidelines replaced by updates from the same organisation, and CPG and CSs for education and information purposes, randomised controlled trials, observational studies, narrative reviews, scientific reports, discussion papers, conference abstracts, and posters.

Studies were chosen through a multi-step approach, including deleting duplicates, reading titles and abstracts, and assessing full texts. Initially, titles and abstracts were considered for eligibility by two reviewers (CR-E and AI-A). Then, full texts were appraised for eligibility also by these two reviewers. Potential disagreements or inconsistencies were decided by arbitration of another reviewer (MM-C). Articles in duplication were recognised and excluded. When several versions of the same guidance were discovered, the most updated version was incorporated. Data were extracted independently and duplicated by three reviewers (YG-F, CR-E and AI-A). Disagreements were solved by consensus or arbitration (MM-C).

1.2 | Quality appraisal of guidances and data extraction

The included guidance’s characteristics and quality were extracted into a piloted electronic data extraction sheet. The methodological quality assessment was estimated using an already published appraisal tool consisting of a 31-item checklist grouped into 11 domains (Maes-Carballo, Munoz-Nunez, et al., 2020). Three reviewers (YG-F, CRE-L and AI-A) evaluated the quality of SDM in CRC screening guidances (Appendix S3). The 11 domains were basic information (items 1–4), background (items 5–7), selection criteria (items 8–9), strengths and limitations (items 10–14), recommendations about SDM (items 15–17), facilitators and barriers (items 18–19), implementation (items 20–21), resource implications (items 22–24), monitoring and auditing criteria (items 25–27), recommendations for further research and limitations about these recommendations described (items 28–29), and editorial independence and declaration of interest (items 30–31). In those general guidelines on the management of CRC, SDM was only considered if it was covered in the screening section. The questions were designed for a binary ‘yes/no’ answer: ‘Yes’ or 1 if the item was met and ‘no’ or ‘0’ if the criterion was not accomplished. The high quality was related to a higher quantity of items completed in the CPG or CS evaluated. No formal score or cut-off point was specified to determine the quality (Maes-Carballo, Munoz-Nunez, et al., 2020). All three reviewers (YG-F, CRE-L and AI-A) had a prior meeting receiving a training seminar and workshop
from the arbitrator and creator of the tool (MM-C) that included education on SDM and the process and application of the SDM tool.

1.3 Evidence synthesis, investigation of heterogeneity and data analysis

A descriptive analysis of the characteristics and quality of the selected guidances was conducted. Statistical data analysis was completed using Stata 16. The Kruskal–Wallis test was utilised to compare scores and stratify for factors or characteristics that may influence the quality of SDM in CPGs and CSs. Values were assessed statistically significant when \( p < 0.05 \). Inter-rater reliability between reviewers in data extraction was calculated using the intra-class correlation coefficient (ICC). A result of more than 0.75 was considered good (Koo & Li, 2016).

2 RESULTS

2.1 Study selection

The study selection process is illustrated in the flow diagram in Figure 1. The initial search identified 8229 citations. We removed 439 duplicates and 7676 records for not meeting the selection criteria (inappropriate population, publication, development group or outdated guidance). A total of 114 records were filtered through reviews of titles and abstracts. Later, we obtained the full text of 114 citations for eligibility assessment, and finally, 102 guidances (83 CPGs) (Alberta, 2020; Alsaneya et al., 2015; Aranda et al., 2015; Aranda-Hernandez et al., 2016; Atkin et al., 2012; Austoker et al., 2012; Benton et al., 2016; Bo In Lee et al., 2012; Brenner et al., 2017; Brouwers et al., 2011; Canadian task Force on preventive health C, 2016; Clarke & Feuerstein, 2019; Cubiella et al., 2018; Day et al., 2011; Del Giudice et al., 2014; Duffy et al., 2014; European Colorectal Cancer Screening Guidelines Working Group et al., 2013; European Commission, 2010; Fabio Leonel Gil Parada et al., 2015; Gupta et al., 2019; Halloran et al., 2012; Hassan et al., 2013; Helsingen et al., 2019; Hospital provincial Neuquén, 2016; Instituto Mexicano del Seguro Social. Guía de Práctica Clínica, 2010; Instituto Nacional del Cáncer, 2015; Jenkins et al., 2018; Jenkinson & Steele, 2010; Jover et al., 2012; Kwaan & Jones-Webb, 2018; Lam et al., 2018; Lansdorp-Vogelaar et al., 2012; Leddin et al., 2013; Lee et al., 2012; Leong et al., 2017; Lieberman, 2012; Lopes et al., 2018; Malilla et al., 2012; Ministry of Health, 2010, 2016; Minozzi et al., 2012; Monahan et al., 2019; Moreno et al., 2018; Moss et al., 2012; Network NCC, 2021; New Brunswick Colon Cancer Screening, 2013; NHS, 2021; Ong et al., 2014; Provenzale et al., 2016; Qaseem et al., 2019; Quirke et al., 2011, 2012; Recommended Cancer Screenings, 2013; Regula & Kaminski, 2010; Rex et al., 2017; Rubeca et al., 2017; Salzman et al., 2016; SemFYC AEdG, 2018; Seppälä et al., 2021; Shaukat et al., 2021; Society FIGURE 1 The flow diagram detailing the study selection
2.2 Characteristics of guidances and quality appraisal

The guidance’s characteristics (type of document, entity, country, year, journal of publication, version and evidence analysis) were reported in Table 1. The guidances’ mean number of items related to SDM was 1.63 (IQR 0–2). The quality assessment results using the SDM instrument are shown in Figure 2 and Appendix S4. No significant differences were obtained between CPGs and CSs concerning the quality of the guidances (p = 0.959). A total of 50 guidances (49.0%), 41/83 (49.4%) CPGs, and 9/19 (47.4%) CSs, reported something about SDM. None of the guidelines accomplished all the quality criteria, and 51.0% of the guidelines accomplished 0 items, and only 5.9% of them accomplished more than 25% items (8/31). When the SDM term was specifically cited in the guidance (n = 13), the quality of the CPG or CSs concerning SDM was better than when it did not appear (n = 89) (mean 4.5, IQR 2.5–4.5 vs. mean 0.5, IQR 0–1.5; p < 0.001).

The best-scored domains were basic information (domain 1) with a range of guidances accomplishing items from 3 to 50, background (domain 2) with a range from 1 to 15, and recommendations (domain 5) with a range from 5 to 13. Resource implications (domain 8), monitoring and auditing criteria (domain 9), and independence and conflict of interest (domain 11) did not appraise any of the items in any guidance. Only 13/102 (12.7%), 10/102 (9.8%) and 3/102 (2.9%) guidances informed SDM in their executive summary, table of content, glossary, abbreviations, acronyms or topic indexes. SDM concept was only explained in one (1.0%) guidance. Both the primary population and patient subgroups with special consideration were characterised in 15/102 (14.7%). The search strategy and the study design and methodology limitations were reported in 2/102 (2.0%), respectively. The importance of the outcomes and the consistency of the results were detailed in only one guidance (1.0%) each. No PICO question was identified in any guidance. The benefits vs. harms of SDM in CRC screening were considered only in 3/102 (29%). The evidence of using SDM was exhibited in 2/102 (2.0%). Recommendations about SDM use were clear, precise and reliable in only 7/102 (6.9%) guidances, and these recommendations were well-reported according to the specific guidelines. Facilitators and barriers for SDM application were well-described in 4/102 (3.9%), advice on applying SDM in clinical routine in 7/102 (6.9%), and additional materials were provided in other 7/102 (6.9%). Suggestions for further research were located in 2/102 (2.0%), and limitations about SDM recommendations were also described in 2/102 (2.0%). No information about SDM implementation cost, any criteria to assess and measure SDM adherence, conflict of interest regarding SDM or a declaration of the value of SDM in clinical practice. The European Commission (Austoker et al., 2012; European Commission, 2010) guidelines and the American Cancer Society (ACS) (Wolf et al., 2018) CPG achieved the highest number of quality SDM items completed (Appendix S4).

2.3 Analysis of guidances’ characteristics

The countries’ distribution concerning SDM was erratic. Most of the guidances were from Europe (41/102; %) or North America (40/102; %). Table 2 shows factors than may influence the SDM quality of the guidances. Two CPGs or CSs were from Africa or Oceania (2/102; %). Asia and South America had 12/102 (%) and 5/12 (%), respectively. The quality of SDM did not vary between continents (p = 0.233).

A greater tendency to introduce and recommend SDM was observed in the most recent guidelines (Figure 3). The publication year after 2015 had an important influence on the quality than older publications (mean 1, IQR 0–3 vs. mean 0.5, IQR 0–1.5; p = 0.048). The publication in a journal (p = 0.131), and the version number (p = 0.416). The specific quality tool referral increased the quality and reporting of SDM on guidances (p < 0.001). CPGs following systematic reviews had better quality than consensus or literature reviews or when it was not reported (mean 1, IQR 0–3 vs. mean 0, IQR 0–2 vs. mean 0, IQR 0–1; p = 0.040).

3 DISCUSSION

3.1 Main findings

Our results showed that CPGs and CSs for SDM in CRC screening were of low quality, with variation between guidances and across domains. Recent guidelines had better quality, but there is extensive room for improvement. CPGs based on systematic reviews scored better than CSs or guidelines that did not report any of it for evidence analysis. Guidelines that contained a description of the use of a specific quality tool such as AGREE II or RIGHT demonstrated higher quality.
| Name of the CPG or protocol                                                                 | Abbreviated name | Type of document | Entity          | Country      |
|-------------------------------------------------------------------------------------------|------------------|------------------|-----------------|--------------|
| Screening for colorectal cancer. US preventive services task Force recommendation statement | 2021 USPSTF CRC screening | CPG              | USPSTF          | USA          |
| Bowel cancer screening: Pathology guidance on reporting lesions                           | 2021 UK government CRC screening | CPG              | UK government   | UK           |
| NCCN clinical practice guidelines in oncology (NCCN Guidelines). Colorectal Cancer Screening | 2021 NCCN CRC screening       | CPG              | NCCN            | USA          |
| Colorectal cancer screening guideline                                                     | 2021 KFHPW CRC screening  | CPG              | KFHPW           | USA          |
| European guidelines from the EHTG and ESCP for Lynch syndrome: An updated third edition of the Mallorca guidelines based on gene and gender | 2021 EHTG/ESCP Lynch syndrome | CPG              | EHTG/ESCP      | Europe       |
| Cancer screening in the coronavirus pandemic era: Adjusting to a new situation           | 2021 COVID pandemic cancer screening | CS               | ASCO            | USA          |
| ACG clinical guidelines: Colorectal cancer screening 2021                                  | 2021 ACG CRC Screening  | CPG              | ACG             | USA          |
| Colorectal cancer screening. Clinical practice guideline. Nov 2013 (Revised 2020)          | 2020 CCAI CRC screening   | CPG              | CCAI            | Canada       |
| American Society for Gastrointestinal Endoscopy guideline on the role of endoscopy in familial adenomatous polyposis syndromes | 2020 ASGE polyposis syndromes | CPG              | ASGE            | USA          |
| Colorectal cancer screening                                                                | 2019 USMSTF CRC screening | CPG              | USMSTF          | USA          |
| Colorectal cancer screening for patients with a family history of colorectal cancer or adenomas | 2019 Ottawa CRC screening   | CPG              | University of Ottawa | Canada |
| Colorectal cancer screening with faecal immunochemical testing, sigmoidoscopy or colonoscopy: a clinical practice guideline | 2019 MAGIC CRC screening   | CPG              | MAGIC           | UK           |
| Management of familial adenomatous polyposis in children and adolescents: Position paper from the ESPGHAN polyposis working group | 2019 ESPGHAN polyposis syndromes | CS               | ESPGHAN         | Europe       |
| Colorectal cancer surveillance in inflammatory bowel disease: Practice guidelines and recent developments | 2019 CRC in IBD       | CPG              | HMS             | USA          |
| 中国早期结直肠癌筛查流程专家共识意见 (2019, 上海)                                       | 2019 Chinese CRC screening | CS               | SMMU            | China        |
| Guidelines for the management of hereditary colorectal cancer from the British Society of Gastroenterology (BSG)/Association of Coloproctology of Great Britain and Ireland (ACPGBI)/United Kingdom Cancer Genetics Group (UKCGG) | 2019 BSG/ACPGBI/UKCGG CRC screening | CPG              | BSG/ACPGBI/UKCGG | UK           |
| Clinical practice guideline. Diagnosis and prevention of colorectal cancer. 2018 update   | 2019 ACP CRC screening CPG | CPG              | ACP             | USA          |
| Name of the CPG or protocol                                                                 | Abbreviated name                                                                 | Type of document                                      | Entity                      | Country       |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------|---------------|
| Screening for Colorectal Cancer in asymptomatic average-risk adults: A guidance statement from the American College of Physicians | 2019 ACP average-risk CRC screening                                             | CPG                                                   | ACP                         | USA           |
| Guía de práctica clínica de tamizaje del cáncer cól-rectal 2018                            | 2018 Uruguay CRC screening                                                       | CPG                                                   | Ministerio de Salud. Uruguay | Uruguay       |
| Recommendations on prevention and screening for colorectal cancer in Hong Kong              | 2018 Hong Kong CRC screening                                                     | CPG                                                   | CEWGCPS                     | China         |
| Early detection for colorectal cancer: ASCO resource-stratified guideline                   | 2018 early detection for CRC                                                      | CPG                                                   | ASCO                        | USA           |
| Cystic fibrosis colorectal cancer screening consensus recommendations                        | 2018 cystic fibrosis CRC screening                                              | CS                                                    | AGA                         | USA           |
| Colorectal Cancer Screening in black men: Recommendations for best practices               | 2018 CRC screening in black men                                                  | CPG                                                   | NIH                         | USA           |
| Colorectal Cancer Screening and prevention                                                  | 2018 CRC Screening and prevention                                                | CPG                                                   | AAFP                        | USA           |
| Clinical practice guideline on screening for colorectal cancer in individuals with a family history of non-hereditary colorectal cancer or adenoma: The Canadian Association of Gastroenterology Banff Consensus | 2018 Banff consensus                                                             | CS                                                    | CAG                         | Canada        |
| Revised Australian national guidelines for colorectal cancer screening: Family history       | 2018 Australian CRC screening                                                    | CPG                                                   | CCA                         | Australia     |
| Diagnóstico y prevención del Cáncer Colorectal                                             | 2018 AEC CRC screening                                                           | CPG                                                   | AEG                         | Spain         |
| Detección temprana, diagnostico y clasificación por etapas                                  | 2018 ACS CRC screening                                                           | CPG                                                   | ACS                         | USA           |
| Colorectal cancer screening for average-risk adults: 2018 guideline update from the American Cancer Society | 2018 ACS average-risk CRC screening                                             | CPG                                                   | ACS                         | USA           |
| ACR appropriateness criteria. Colorectal cancer screening                                   | 2018 ACR CRC Screening                                                           | CPG                                                   | ACR                         | USA           |
| Recommendations on faecal immunochemical testing to screen for colorectal neoplasia: A consensus statement by the US multi-society task force on colorectal cancer | 2017 USPSTF FOBT                                                                | CS                                                    | USPSTF                      | USA           |
| Colorectal cancer screening: Recommendations for physicians and patients from the U.S. multi-society task force on colorectal cancer | 2017 USPSTF CRC screening                                                        | CPG                                                   | USPSTF                      | USA           |
| The Joint Philippine Society of Gastroenterology (PSG) and Philippine Society of Digestive Endoscopy (PSDE) Consensus Guidelines on the Management of Colorectal Carcinoma | 2017 Philippine CRC screening                                                   | CS                                                    | PSG, PSDE                   | Philippines   |
| Guidance for faecal occult blood testing: quantitative immunochemical method (FIT-HB) in colorectal cancer screening programmes | 2017 Italian FOBT CRC screening                                                  | CPG                                                   | Grupo Italiano Screening Colorettale | Italy         |
| AGO Austria recommendation on screening and diagnosis of Lynch syndrome (LS)               | 2017 AGO Lynch CRC screening                                                     | CS                                                    | AGO                         | Austria       |
| **Name of the CPG or protocol** | **Abbreviated name** | **Type of document** | **Entity** | **Country** |
|--------------------------------|----------------------|----------------------|------------|-------------|
| **36** Association of coloproctology of Great Britain and Ireland (ACPGBI): Guidelines for the management of cancer of the colon, rectum and anus (2017) – Diagnosis, investigations and screening | 2017 ACPGBI CRC and anal cancer | CPG | ACPGBI | UK, Ireland |
| **37** Colorectal cancer screening in average risk patients | 2017 CRC average risk patients | CPG | University of North Carolina | USA |
| **38** Turkey Cancer Control Programme | 2016 Turkey CRC screening | CPG | Ministry of Health. Turkey | Turkey |
| **39** Prévention du cancer colorectal par coloscopie, en dehors du dépistage en population. Consensus et position de la SFED | 2016 SFED CRC screening | CS | SFED | France |
| **40** NICE referral guidelines for suspected cancer: Colorectal cancer and faecal occult blood testing | 2016 NICE CRC screening | CPG | NICE | UK |
| **41** Guías de prevención y manejo endoscópico del cáncer colorectal | 2016 Mexico CRC screening | CS | AMEG | Mexico |
| **42** Genetic/familial high-risk assessment: Colorectal. Version 1.2016 | 2016 JNCCN CRC high risk | CPG | NCCN | USA |
| **43** Detección temprana de Cáncer Colorectal en población adulta | 2016 HPN CRC screening | CPG | HPN | Argentina |
| **44** 2016 gastrointestinal endoscopy: Global view. Seeing better – Evidence based recommendations on optimising colonoscopy adenoma detection rate | 2016 GI endoscopy | CPG | University of Toronto | Canada |
| **45** Cancer screening in older patients | 2016 CRC screening old patients | CPG | Thomas Jefferson University | USA |
| **46** Guía de práctica clínica para la tamización de cáncer colorectal | 2016 Colombia CRC screening | CPG | ACGEDCH | Colombia |
| **47** Recommendations on screening for colorectal cancer in primary care | 2016 Canadian task force screening | CPG | CTFPHC | Canada |
| **48** SEOM/SERAM consensus statement on radiological diagnosis, response assessment and follow-up in colorectal cancer | 2015 SEOM SERAM CRC screening | CS | SEOM, SERAM | Spain |
| **49** SEOM clinical guidelines for diagnosis and treatment of metastatic colorectal cancer 2015 | 2015 SEOM CRC screening | CPG | SEOM | Spain |
| **50** National Guidelines for Colorectal Cancer Screening in Saudi Arabia with strength of recommendations and quality of evidence | 2015 Saudi Arabia CSC screening | CPG | SSCR5/ SGA/SOS/MH | Saudi Arabia |
| **51** 대장암 검진 권고안 | 2015 Korea CRC screening | CPG | NCCK | Korea |
| **52** Evidence-based clinical practice guidelines for management of colorectal polyps | 2015 JSGE CR polyps | CPG | JSGE | Japan |
| **53** Targeted screening for colorectal cancer in high-risk individuals | 2015 CRC screening high-risk | CPG | CUHK | China |
| **54** Colorectal cancer surveillance after index colonoscopy: Guidance from the Canadian Association of Gastroenterology | 2015 CAG CRC surveillance | CPG | CAG | Canada |
| Name of the CPG or protocol | Abbreviated name | Type of document | Entity | Country |
|----------------------------|-----------------|-----------------|--------|---------|
| Hereditary colorectal cancer syndromes: American Society of Clinical Oncology clinical practice guideline endorsement of the familial risk–colorectal cancer: European Society for Medical Oncology Clinical Practice Guidelines | 2015 ASCO hereditary CRC | CPG | ASCO | USA |
| GUÍA PARA EQUIPOS DE ATENCIÓN PRIMARIA DE LA SALUD: Información para la prevención y detección temprana del cáncer colorrectal | 2015 Argentinian CRC screening | CPG | Ministerio de Salud. Argentina | Argentina |
| Guidelines on genetic evaluation and management of Lynch syndrome: A consensus statement by the US multi-society task force on colorectal cancer | 2014 USPSTF Lynch syndrome | CPG | USPSTF | USA |
| Optimising adequacy of bowel cleansing for colonoscopy: Recommendations from the US multi-society task force on colorectal cancer | 2014 USPSTF bowel cleansing | CS | USPSTF | USA |
| Colonoscopy quality assurance in Ontario: Systematic review and clinical practice guideline | 2014 Ontario CRC screening | CPG | CCO | Canada |
| Clinical indications for computed tomographic colonography: European Society of Gastrointestinal Endoscopy (ESGE) and European Society of Gastrointestinal and Abdominal Radiology (ESGAR) guideline | 2014 ESGE ESGAR CTC | CPG | ESGE, ESGAR | Europe |
| Guideline for referral of patients with suspected colorectal cancer by family physicians and other primary care providers | 2014 CRC screening primary care | CPG | SAFHT | Canada |
| An updated Asia Pacific consensus recommendations on colorectal cancer screening | 2014 Asia Pacific CRC screening CS | CS | APWGCRCs | Asia |
| Regional and national guideline recommendations for digital ano-rectal examination as a means for anal cancer screening in HIV positive men who have sex with men: A systematic review | 2014 ano-rectal screening | CPG | University of Melbourne | Australia |
| Recommended Cancer screenings | 2013 Swedish CRC screening | CPG | Swedish Cancer institute | Sweden |
| New Brunswick colon cancer screening. Clinical practice guidelines | 2013 NBCN CRC screening | CPG | NBCN | Canada |
| Guidelines for surveillance of individuals with constitutional mismatch repair-deficiency proposed by the European Consortium ‘Care for CMMR-D’ (C4CMMR-D) | 2013 Lynch CRC screening | CPG | LUMC | Netherlands |
| Post-polypectomy colonoscopy surveillance: European Society of Gastrointestinal Endoscopy (ESGE) guideline | 2013 ESGE endoscopy | CPG | ESGE | Europe |
| Tumour markers in colorectal cancer, gastric cancer and gastrointestinal stromal cancers: European group on tumour markers 2014 guidelines update | 2013 EGTM CRC tumour makers | CPG | University College Dublin | Ireland |
| Name of the CPG or protocol | Abbreviated name | Type of document | Entity | Country |
|-----------------------------|------------------|------------------|--------|---------|
| 69 Guidelines for colonoscopy surveillance after screening and polypectomy: A consensus update by the US multi-society task force on colorectal cancer | 2012 USPSTF screening surveillance | CS | USPSTF | USA |
| 70 Clinical practice guidelines: Quality of colonoscopy in colorectal cancer screening | 2012 SEED AEG colonoscopy | CPG | SEED, AEG | Spain |
| 71 Colorectal cancer screening: Practice guidelines | 2012 Oregon CRC screening | CPG | OHSU | USA |
| 72 대장암 선별과 대장조영 진단검사 가이드라인 | 2012 Korean CRC screening | CPG | Universidad de Yonsei | Korea |
| 73 Korean guidelines for colorectal cancer screening and polyp detection | 2012 Korea CRC screening | CPG | Yonsei University | Korea |
| 74 ESMO consensus guidelines for management of patients with colon and rectal cancer. A personalised approach to clinical decision-making | 2012 ESMO CRC screening | CS | ESMO | Europe |
| 75 Quality in screening colonoscopy: Position statement of the European Society of Gastrointestinal Endoscopy (ESGE) | 2012 ESGE quality in CRC screening | CS | ESGE | Europe |
| 76 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition professional requirements and training | 2012 EC CRC screening. Training | CPG | European Commission | Europe |
| 77 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition colonoscopic surveillance following adenoma removal | 2012 EC CRC screening. Surveillance | CPG | European Commission | Europe |
| 78 European guidelines for quality assurance in colorectal cancer screening and diagnosis: Overview and introduction to the full supplement publication | 2012 EC CRC screening. Supplement | CPG | European Commission | Europe |
| 79 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition executive summary | 2012 EC CRC screening. Summary | CPG | European Commission | Europe |
| 80 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition quality assurance in pathology in colorectal cancer screening and diagnosis | 2012 EC CRC screening. Pathology | CPG | European Commission | Europe |
| 81 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition organisation | 2012 EC CRC screening. Organisation | CPG | European Commission | Europe |
| 82 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition management of lesions detected in colorectal cancer screening | 2012 EC CRC screening. Lesions | CPG | European Commission | Europe |
| 83 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition introduction | 2012 EC CRC screening. Introduction | CPG | European Commission | Europe |
| 84 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition faecal occult blood testing | 2012 EC CRC screening. FOBT | CPG | European Commission | Europe |
| Name of the CPG or protocol | Abbreviated name | Type of document | Entity | Country |
|-----------------------------|------------------|------------------|--------|---------|
| 85 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition evaluation and interpretation of screening outcomes | 2012 EC CRC screening. Evaluation | CPG | European Commission | Europe |
| 86 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition quality assurance in endoscopy in colorectal cancer screening and diagnosis | 2012 EC CRC screening. Endoscopy | CPG | European Commission | Europe |
| 87 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition annotations of colorectal lesions | 2012 EC CRC screening. CRC lesions | CPG | European Commission | Europe |
| 88 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition communication | 2012 EC CRC screening. Communication | CPG | European Commission | Europe |
| 89 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition principles of evidence assessment and methods for reaching recommendations | 2012 CPO CRC screening principles | CPG | CPO Piemonte | Europe |
| 90 Effective interventions to facilitate the uptake of breast, cervical and colorectal cancer screening: An implementation guideline | 2011 CCO effective interventions | CPG | CCO | Canada |
| 91 Canadian guidelines for colorectal cancer screening | 2011 Canadian CRC screening | CPG | University of British Columbia | Canada |
| 92 Colorectal cancer screening and surveillance in the elderly patient | 2011 ACG CRC screening in old | CPG | ACG | USA |
| 93 Cancer screening | 2010 Singapore CRC screening | CPG | Ministry of Health, Singapore | Singapore |
| 94 Quality assurance in pathology in colorectal cancer screening and diagnosis—European recommendations | 2010 quality assurance CRC | CPG | University of Leeds | UK |
| 95 Targeting risk groups for screening | 2010 Poland risk groups screening | CPG | Institute of Oncology, roentgen | Poland |
| 96 NIH state-of-the-science conference statement on enhancing use and quality of colorectal cancer screening | 2010 NIH CRC screening | CPG | NIH | UK |
| 97 Guía de Práctica Clínica. Detección Oportuna y Diagnóstico de Cáncer de Colon y Recto no Hereditario en Adultos en Primero, Segundo y Tercer Nivel de Atención | 2010 Mexico CRC screening | CPG | AMC | Mexico |
| 98 European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition | 2010 EC CRC screening | CPG | European Commission | Europe |
| 99 Colorectal cancer screening—Methodology | 2010 Dundee CRC screening | CPG | University of Dundee | UK |
| 100 S3 Guidelines for colorectal carcinoma results of an evidence-based consensus conference on February 6/7, 2004 and June 8/9, 2007 (for the topics IV, VI and VII) | 2010 CRC screening | CS | Ruhr-Universität Bochum | Germany |
| Name of the CPG or protocol | Abbreviated name | Type of document | Entity | Country |
|-----------------------------|------------------|------------------|--------|---------|
| 101 | Canadian Association of Gastroenterology position statement on screening individuals at average risk for developing colorectal cancer: 2010 | 2010 CAG risk CRC screening CS | CS | CAG | Canada |
| 102 | Programa Nacional de Consensos Inter-Sociedades. Programa Argentino de Consensos de Enfermedades Oncológicas. GUÍA DE RECOMENDACIONES PARA LA PREVENCIÓN Y DETECCIÓN PRECOZ DEL CÁNCER COLORRECTAL. Septiembre 2010 | 2010 Argentinian CRC screening CS | CS | ANM | Argentina |

| Year | Publication in a journal | Version | Evidence analysis | Quality tool referral | Type of cancer | Last updated date (months) |
|------|--------------------------|---------|-------------------|----------------------|---------------|----------------------------|
| 1 | 2021 | JAMA | 5 | Systematic review | No | CRC | 4 |
| 2 | 2021 | Not published | 3 | Review | No | CRC | 8 |
| 3 | 2021 | Not published | 2 | Systematic review, consensus | No | CRC | 8 |
| 4 | 2021 | Not published | 2 | Not reported | No | CRC | 3 |
| 5 | 2021 | BJS | 3 | Systematic review, Delphi consensus | Yes | CRC | 7 |
| 6 | 2021 | JCO global oncology | 1 | Scoping review | No | CRC/breast/cervical | 7 |
| 7 | 2021 | Am J Gastroenterol | 3 | Systematic review, GRADE | No | CRC | 9 |
| 8 | 2020 | Not published | 6 | Not reported | No | CRC | 23 |
| 9 | 2020 | Gastrointest Endosc | 1 | Systematic review, consensus | No | CRC | 18 |
| 10 | 2019 | JAMA | 1 | Systematic review, GRADE | No | CRC | 31 |
| 11 | 2019 | CFP | 1 | Systematic review, meta-analysis, GRADE | No | CRC | 25 |
| 12 | 2019 | BMJ | 1 | Systematic review, GRADE | No | CRC | 34 |
| 13 | 2019 | JPGN | 1 | Systematic literature, GRADE | No | CRC | 33 |
| 14 | 2019 | WJG | 2 | Not reported | No | CRC | 28 |
| 15 | 2019 | CGP | 1 | Not reported | No | CRC | 25 |
| 16 | 2019 | BMJ | 1 | Systematic review, GRADE, Delphi consensus | No | CRC | 26 |
| 17 | 2019 | Ann Intern Med | 2 | Not reported | No | CRC | 29 |
| 18 | 2019 | Ann Intern Med | 1 | Review | Yes | CRC | 25 |
| 19 | 2018 | Not published | 2 | Systematic review | Yes | CRC | 48 |
| 20 | 2018 | Hong Kong med J | 3 | Not reported | No | CRC | 36 |
| 21 | 2018 | JGO | 1 | Review, consensus | Yes | CRC | 36 |
| 22 | 2018 | Gastroenterology | 1 | Systematic review, consensus | No | CRC | 46 |
| 23 | 2018 | Am J Prev Med | 1 | Review | No | CRC | 38 |
| 24 | 2018 | Not published | 1 | Not reported | No | CRC | 42 |
| 25 | 2018 | Gastroenterology | 1 | Systematic review, GRADE, consensus | No | CRC | 37 |
| 26 | 2018 | MJA | 2 | Systematic review, consensus | No | CRC | 36 |
| Year | Publication in a journal | Version | Evidence analysis | Quality tool | Type of cancer | Last updated date (months) |
|------|--------------------------|---------|-------------------|--------------|----------------|----------------------------|
| 27   | Not published            | 2       | Review, GRADE     | No           | CRC            | 38                         |
| 28   | Not published            | 3       | Not reported      | No           | CRC            | 46                         |
| 29   | CA Cancer J Clin         | 2       | Systematic review, GRADE | No | CRC | 31 |
| 30   | ACR                      | 2       | Systematic review, GRADE | No | CRC | 38 |
| 31   | Gastroenterology         | 1       | Review, consensus | No | CRC | 58 |
| 32   | Am J Gastroenterol       | 2       | Systematic review, GRADE | No | CRC | 52 |
| 33   | PJIM                     | 1       | Review, consensus | No | CRC | 55 |
| 34   | Not published            | 1       | Systematic review | No | CRC | 48 |
| 35   | Arch Gynecol Obstet      | 1       | Consensus         | No | CRC | 54 |
| 36   | Colorectal disease       | 1       | Not reported      | No | CRC, anal cancer | 58 |
| 37   | Med Clin North Am.       | 1       | Review            | No | CRC | 53 |
| 38   | Not published            | 1       | Not reported      | No | CRC/breast/cervical | 70 |
| 39   | Acta Endosc              | 2       | Consensus         | No | CRC | 70 |
| 40   | Annals of Clinical Biochemistry | 1 | Review | No | CRC | 70 |
| 41   | Not published            | 1       | Review, consensus, GRADE | No | CRC | 70 |
| 42   | JNCCN                    | 1       | Systematic review | No | CRC | 65 |
| 43   | Not published            | 1       | Systematic review | AGREE II | CRC | 70 |
| 44   | WJG                      | 1       | Review            | No | CRC | 69 |
| 45   | American Family Physician| 1       | Review            | No | CRC | 67 |
| 46   | Rev Col Gastroenterol    | 1       | Systematic review, GRADE | AGREE II | CRC | 62 |
| 47   | CMAJ                     | 1       | Systematic review, GRADE | No | CRC | 66 |
| 48   | Clin Transl Oncol        | 1       | Consensus         | No | CRC | 78 |
| 49   | Clin Transl Oncol        | 1       | Review, GRADE     | No | CRC | 72 |
| 50   | Ann Saudi Med            | 1       | Systematic review | No | CRC | 77 |
| 51   | J Korean Med Assoc       | 1       | Review            | No | CRC | 77 |
| 52   | J Gastroenterol          | 1       | Review, consensus | No | CRC | 81 |
| 53   | Best Practice and Research Clinical Gastroenterology | 1 | Review | No | CRC | 82 |
| 54   | Can J Gastroenterol      | 1       | Review, consensus | No | CRC | 82 |
| 55   | JCO                      | 1       | Review            | AGREE II     | CRC | 82 |
| 56   | Not published            | 1       | Not reported      | No | CRC | 78 |
| 57   | American journal of GASTROENTEROLOGY | 1 | Systematic review | No | CRC | 87 |
| 58   | Gastroenterology         | 1       | Systematic review, GRADE | No | CRC | 94 |
| 59   | Can J Gastroenterol Hepatol | 1 | Systematic review | AGREE II | CRC | 89 |
| 60   | Endoscopy                | 1       | Review, GRADE     | No | CRC | 86 |
| 61   | Can Fam Physician        | 1       | Systematic review | No | CRC | 84 |
| 62   | Gut                      | 2       | Consensus         | No | CRC | 91 |
| 63   | BMC Cancer               | 1       | Systematic review | No | Anal and rectal cancer | 95 |
| 64   | Not published            | 1       | Not reported      | No | CRC | 106 |
| 65   | Not published            | 1       | Review            | No | CRC | 98 |
| 66   | J Med Genet              | 1       | Not reported      | No | CRC | 96 |
| 67   | Endoscopy                | 1       | Systematic review | No | CRC | 96 |
To the best of our knowledge, this systematic review is the first to investigate the quality of SDM in CRC screening guidances. One of the main strengths of our review was its comprehensive search based on a broad conceptual framework with no language barriers. SDM is a trendy term of relatively recent appearance. Most methodological recommendation manuals remark a 2- to 3-year window for guidance renovation (Vernooij et al., 2014). However, for studying it, we included more than 10 years of published guidance documents to scrutinise the situation of SDM through time. Our study contained guidance documents of professional organisations from scientifically active nations with more than 0.5% of the global CRC research production.

### 3.2 Strengths and weaknesses

- To the best of our knowledge, this systematic review is the first to investigate the quality of SDM in CRC screening guidances. One of the main strengths of our review was its comprehensive search based on a broad conceptual framework with no language barriers. SDM is a trendy term of relatively recent appearance. Most methodological recommendation manuals remark a 2- to 3-year window for guidance renovation (Vernooij et al., 2014). However, for studying it, we included more than 10 years of published guidance documents to scrutinise the situation of SDM through time. Our study contained guidance documents of professional organisations from scientifically active nations with more than 0.5% of the global CRC research production.

### TABLE 1 (Continued)

| Year | Publication in a journal | Version | Evidence analysis | Quality tool referral | Type of cancer | Last updated date (months) |
|------|--------------------------|---------|-------------------|-----------------------|----------------|--------------------------|
| 68   | IJC                      | 1       | Not reported      | No                    | CRC            | 96                       |
| 69   | Gastroenterology         | 2       | Review, consensus | No                    | CRC            | 118                      |
| 70   | Endoscopy                | 1       | Review            | No                    | CRC            | 118                      |
| 71   | Dig Dis                  | 1       | Review            | No                    | CRC            | 119                      |
| 72   | Korean J Gastroenterol   | 1       | Systematic review, meta-analysis | No | CRC | 118 |
| 73   | Clin Endosc              | 1       | Review            | No                    | CRC            | 118                      |
| 74   | Annals of Oncology       | 1       | Consensus, GRADE  | No                    | CRC            | 112                      |
| 75   | Endoscopy                | 1       | Review            | No                    | CRC            | 118                      |
| 76   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 77   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 109                      |
| 78   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 79   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 80   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 81   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 82   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 83   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 84   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 85   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 86   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 87   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 88   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 89   | Endoscopy                | 1       | Systematic review | No                    | CRC            | 118                      |
| 90   | BMC                      | 1       | Systematic review | AGREE II              | CRC            | 133                      |
| 91   | Can J Gastroenterol      | 1       | Not reported      | No                    | CRC            | 120                      |
| 92   | Am J Gastroenterol       | 1       | Review            | No                    | CRC            | 125                      |
| 93   | Not published            | 1       | Systematic review | No                    | CRC            | 140                      |
| 94   | Virchows Arch            | 1       | Review, consensus | No                    | CRC            | 142                      |
| 95   | Best Practice and Research Gastroenterology | 1 | Not reported | No | CRC | 142 |
| 96   | Not published            | 1       | Systematic review | No                    | CRC            | 142                      |
| 97   | Not published            | 1       | Systematic review | No                    | CRC            | 138                      |
| 98   | Not published            | 1       | Systematic review | No                    | CRC            | 142                      |
| 99   | The Surgeon              | 1       | Review            | No                    | CRC            | 142                      |
| 100  | Z Gastroenterol          | 3       | Consensus, GRADE  | No                    | CRC            | 142                      |
| 101  | Can J Gastroentero       | 2       | Not reported      | No                    | CRC            | 130                      |
| 102  | Not published            | 1       | Consensus         | AGREE II              | CRC            | 133                      |
A rigorous methodology in conducting systematic reviews is mandatory to guarantee reliable results. In this concern, the trustworthiness of the study selection and the data extraction process is critical. As in similar investigations that use this SDM instrument, there is a possibility of empirical limitations related to the subjectivity of quality data extraction. To minimise this inconvenience, four reviewers performed a preliminary meeting to explain and understand the tool where doubts were solved; and three reviewers worked independently and in duplicate, with double checks included throughout the work. Arbitration was accomplished by a fourth experienced reviewer and creator of the SDM instrument used. The reviewer agreement was good ($\text{ICC} = 0.88$), implying reliable results (Appendix S5).
Our systematic review aimed to study the quality of SDM. We are conscious that ‘not all the items can have the same relevance and weight’ (Maes-Carballo, Munoz-Nunez, et al., 2020). This procedure involving a quality assessment instrument specifies if SDM was cited and which aspects were often considered. Further studies should focus on rating quality.

### 3.3 Implications

CRC early diagnosis could decrease morbimortality by discovering less invasive lesions and permitting more efficient treatments. Furthermore, the debate about the effectiveness and overtreatment due to false-positive results has appeared on the scene. CRC screening is costly and annoying and could increase the risk of false positives or negatives, which may incur unnecessary stress or procedures and a false sense of security. The mortality reduction is not statistically significant at all ages, and the benefit vs. harm balance is unknown. So, screening should be tailored to the characteristics (age, genetic factors, race, etc.), desires and values of women. Screening programmes are an excellent area for SDM practice as there are different options with similar benefits and harms, and option choice might depend on the patient's values and preferences (Wieringa et al., 2017). The practice of SDM by clinicians could support evidence-based decisions (Heen et al., 2021) and increase patient satisfaction and treatment engagement (Baca-Dietz et al., 2020).

Our systematic review showed that SDM had gained notoriety over the years, with an increasing tendency of SDM presence and recommendations related to them. However, it has also demonstrated that SDM advice merits improvement in all the areas but specifically urgently in the reporting of the SDM resource implications and conflict of interest and the explanation of monitoring and auditing SDM use. It is essential its presence in CPGs and CSs, which hold the potential to influence the care delivered by health-care providers and the outcomes for patients. Guidances should provide clear and reasonable recommendations for SDM applicability (Rabi et al., 2020; Woolf et al., 1999). More efforts should be made in SDM (Keating & Pace, 2018), and future guidelines should play a more important role in SDM implementation (Gärtnert et al., 2019).

SDM is a new trend, and recent guidances are starting to increase recommendations about basic concepts, evidence and applicability.

| Variable                              | Mean (items) | IQR range | p value |
|---------------------------------------|--------------|-----------|---------|
| Type of document                      |              |           |         |
| CPGs                                  | 1            | 0–2       | 0.959   |
| CSs                                   | 1            | 0–2       |         |
| Country                               |              |           |         |
| Europe                                | 0.5          | 0–1.5     |         |
| North America                         | 1            | 0–3       |         |
| Other countries                       | 1            | 0–1.5     | 0.233   |
| Publication year                      |              |           |         |
| Before or in 2015                     | 0.5          | 0–1.5     |         |
| After 2015                            | 1            | 0–3       | 0.048   |
| Publication in a journal              |              |           |         |
| Yes                                   | 0.5          | 0–2       |         |
| No                                    | 1            | 0.3–3.5   | 0.131   |
| Version number                        |              |           |         |
| 1                                     | 0.8          | 0–2       |         |
| 2 or more                             | 1            | 0–3       | 0.416   |
| Evidence analysis                     |              |           |         |
| Systematic review                     | 1            | 0–3       |         |
| Consensus or reviews                  | 0            | 0–2       | 0.040   |
| Not reported                          | 0            | 0–1       |         |
| Quality tool referral                 |              |           |         |
| Yes                                   | 0.8          | 0–1.5     |         |
| No                                    | 1            | 0–2       | 0.902   |
| SDM specifically named                |              |           |         |
| Yes                                   | 4.5          | 2.5–4.5   | < 0.001 |
| No                                    | 0.5          | 0–1.5     |         |
However, it merits consideration to keep working in that direction. The evidence analysis showed that guidances underpinned by systematic reviews had better quality than consensus or not reported. The referral to SDM term in guidances has shown an improvement in SDM quality, which seems logical as normally improved precision and clearance of recommendations.

3.4 | Conclusions

This systematic review demonstrated that SDM quality in guidance documents was suboptimal as it did not appear in half of the guidances analyzed. SDM recommendations were scarce and unclear. Recent guidances following systematic reviews and referring to quality tools (e.g. AGREE II or RIGHT) had better SDM quality. Therefore, guideline developers, professional institutions, medical journals and policymakers should consider including evidence-based SDM recommendations in trustworthy and well-developed guidances to ensure proper translation of evidence into practice.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

DATA AVAILABILITY STATEMENT

All the supporting information can be accessed upon request via email to the corresponding authors of this review.

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REFERENCES

Alberta CC. Colorectal cancer screening. Clinical Practice Guideline Nov 2013 (Revised 2020). 2020.
Alsanea, N., Almadi, M. A., Abduljabbar, A. S., Alhomoud, S., Alshaban, T. A., Alsuhaibani, A., Alzahrani, A., Batwa, F., Hassan, A. H., Hibbert, D., Nooh, R., Althoman, M., Rochwerg, B., Alhazzani, W., & Morgan, R. L. (2015). National guidelines for colorectal cancer screening in Saudi Arabia with strength of recommendations and quality of evidence. Annals of Saudi Medicine, 35(3), 189–195. https://doi.org/10.5144/0256-4947.2015.189
ANM. Programa Nacional de Consensos Inter-Sociedades. Programa Argentino de Consensos de Enfermedades Oncológicas. GUÍA DE RECOMENDACIONES PARA LA PREVENCIÓN Y DETECCIÓN PRECOZ DEL CÁNCER COLORRECTAL. Septiembre 2010. https://www.researchgate.net/publication/324877262_Programa_Nacional_de_Consenso_Inter-Sociedades_Programa_Argentino_de_Consenso_de_Cancer_Colorrectal

FIGURE 3 Appearance of SDM concerning the published year of the guidance document
Hoffmann, S., Crispin, A., Lindoerfer, D., Sroczyński, G., Siebert, U., Mansmann, U., & Consortium, F. A. R. O. R. (2020). Evaluating the effects of a risk-adapted screening program for familial colorectal cancer in individuals between 25 and 50 years of age: Study protocol for the prospective population-based intervention study FARKOR. BMC Gastroenterology, 20(1), 131. https://doi.org/10.1186/s12876-020-01247-6

Hospital provincial Neuquén. Guía de Práctica Clínica. Detección temprana de Cáncer Colorectal en población adulta. https://www.hospitalneuquen.org.ar/wp-content/uploads/2016/11/Guia-Practica-Clinica-Cancer-colorectal-2016.pdf. 2016. 2016.

Hyer, W., Cohen, S., Attard, T., Vila-Miravet, V., Pienar, C., Auth, M., Septer, S., Hawkins, J., Durno, C., & Latchford, A. (2019). Management of familial adenomatous polyposis in children and adolescents: Position paper from the ESPGHAN polyposis working group. Journal of Pediatric Gastroenterology and Nutrition, 68(3), 428–441. https://doi.org/10.1097/MPG.0000000000002247

Instituto Mexicano del Seguro Social. Guía de Práctica Clínica. Detección Oportuna y Diagnóstico de Cáncer de Colon y Recto no Hereditario en Adultos en Predomino, Segundo y Tercer Nivel de Atención. imss.gob.mx/sits/all/sites/guiaclinicas/145GER.pdf. 2010.

Instituto Nacional del Cáncer. Argentina. GUÍA PARA EQUIPOS DE ATENCIÓN PRIMARIA DE LA SALUD. Información para la prevención y detección temprana del cáncer colorectal. https://sae.org.ar/wp-content/uploads/2019/05/PDF-guiainc-CCR.pdf. 2015.

Jenkins, M. A., Ait Ouaikam, D., Bousioutas, A., Hopper, J. L., Ee, H. C., Emery, J. D., Macrae, F. A., Chetcuti, A., Wueellner, L., & St John, D. J. B. (2018). Revised Australian national guidelines for colorectal cancer screening: Family history. The Medical Journal of Australia, 209(10), 455–460. https://doi.org/10.5694/mja18.00142

Jenkinson, F., & Steele, R. J. (2010). Colorectal cancer screening—Methodology. The Surgeon, 8(3), 164–171. https://doi.org/10.1611/j.surge.2010.09.010

Johnson, D. A., Barkun, A. N., Cohen, L. B., Dominitz, J. A., Kaltenbach, T., Martel, M., Robertson, D. J., Boland, C. R., Giardello, F. M., Lieberman, D. A., Levin, T. R., Rex, D. K., & US Multi-Society Task Force on Colorectal Cancer. (2014). Optimizing adequacy of bowel cleansing for colonoscopy: Recommendations from the US multi-society task force on colorectal cancer. Gastroenterology, 147(4), 903–924. https://doi.org/10.1053/j.gastro.2014.07.002

Jover, R., Herráiz, M., Alarcón, O., Brullet, E., Bujanda, L., Bustamante, M., Campo, R., Carrero, R., Castells, A., Cubiella, J., García-Iglesias, P., Hervás, A., Menchén, P., Ono, A., Panadés, A., Parra-Blanco, A., Pellisé, M., Ponce, M., Quintero, E., ... Vázquez Sequeiros, E. (2012). Clinical practice guidelines: Quality of colonoscopy in colorectal cancer screening. Endoscopy, 44(4), 444–451. https://doi.org/10.1055/s-0032-1306690

Keating, N. L., & Pace, L. E. (2018). Breast Cancer Screening in 2018. Time for shared decision making. JAMA Insights., 319(17), 1814–1815.

Koo, T. K., & Li, M. Y. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. Journal of Clinical Epidemiology, 79, 113–121. https://doi.org/10.1016/j.jclinepi.2016.01.002

Lansdorp-Vogelaar, I., Von Karsa, L., & International Agency for Research on Cancer. (2015). Cystic fibrosis colorectal cancer screening: A systematic review and meta-analysis. BMJ, 351, h6555. https://doi.org/10.1136/bmj.h6555

Lansdorp-Vogelaar, I., Khoruts, A., Zauber, A. G., Hempstead, S. E., Gupta, N., Kupfer, S. S., & Davis, A. M. (2019). Colorectal cancer screening. Clinical Practice Guideline from the Canadian Association of Gastroenterology. Jama, 321(20), 2022–2023. https://doi.org/10.1001/jama.2019.4842

Lansdorp-Vogelaar, I., Lieberman, D., Liou, T., Lomas, P., Maisonneuve, P., Lowenfels, A. B., Braid, A. L., Cullina, J., Dawud, W. O., Devesa, S. S., Doré, A. G., Feuer, E. J., Gallinger, S., Gamez, A., Gamez, E., González-Gil, J., Grijalva, C. A., Grothey, A., ... Zijlstra, M. (2018). Colorectal cancer screening and diagnosis. First edition—Faecal occult blood testing. Endoscopy, 44, SE65–SE87. https://doi.org/10.1055/s-0032-1309791

Lansdorp-Vogelaar, I., von Karsa, L., & International Agency for Research on Cancer. (2012). European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition—Faecal occult blood testing. Endoscopy, 44, 842–851. https://doi.org/10.1055/s-0033-1344548

Lee, H. C., Emery, J. D., Macrae, F. A., Chetcuti, A., Wueellner, L., & St John, D. J. B. (2018). Revised Australian national guidelines for colorectal cancer screening: Family history. The Medical Journal of Australia, 209(10), 455–460. https://doi.org/10.5694/mja18.00142

Liedtke, A. D., Enns, R., Hilsden, R., Fallone, C. A., Rabeneck, L., Sadowski, D. C., Singh, H., & Canadian Association of Gastroenterology. (2013). Colorectal cancer surveillance after index colonoscopy: Guidance from the Canadian Association of Gastroenterology.
Maes-Carballo, M., Lieberman, D. A., Dye, T., Park, D. I., Singh, N. J., Telford, J. J., Timmough, J., Wilkinson, A. N., & Leontiadis, G. I. (2018). Clinical practice guideline on screening for colorectal cancer in individuals with a family history of nonhereditary colorectal cancer or adenoma: The Canadian Association of Gastroenterology Banff consensus. Gastroenterology, 155(5), 1325–1371.e3. https://doi.org/10.1053/j.gastro.2018.08.017

Leddin, D. J., Enns, R., Hillsden, R., Plourde, V., Rabeneck, L., Sadowski, D. C., & Singh, H. (2010). Canadian Association of Gastroenterology position statement on screening of individuals at average risk for developing colorectal cancer. Canadian Journal of Gastroenterology, 24(12), 705–714. https://doi.org/10.1159/2010.683171

Lee, B. I., Hong, S. P., Kim, S. E., Kim, S. H., Kim, H. S., Hong, S. N., Yang, D. H., Shin, S. J., Lee, S. H., Park, D. I., Kim, Y. H., Kim, H. J., Yang, S. K., Kim, H. J., Jeon, H. J., & Multi-Society Task Force for Development of Guidelines for Colorectal Polyp Screening, Surveillance and Management. (2012). Korean guidelines for colorectal cancer screening and polyp detection. Clinical Endoscopy, 45(1), 25–43. https://doi.org/10.5946/ce.2012.45.1.25

Leong, K., Hartley, J., & Karandikar, S. (2017). Association of coloproctology of Great Britain & Ireland (ACPGBI): Guidelines for the management of cancer of the colon, rectum and anus (2017)–Follow up, Lifestyle and Survivorship. Colorectal Disease, 19(Suppl 1), 67–70. https://doi.org/10.1111/codi.13706

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., Clarke, M., Devereaux, P. J., Kielinjen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. Annals of Internal Medicine, 151(4), W65-W94. https://doi.org/10.7326/0003-4819-151-4-200908180-00136

Lieberman, D. (2012). Colorectal cancer screening: Practice guidelines. Digestive Diseases, 30(Suppl 2), 34–38. https://doi.org/10.1159/000341891

Lieberman, D. A., Rex, D. K., Winawer, S. J., Giardiello, M. F., Johnson, D. A., & Levin, T. R. (2012). Guidelines for colonoscopy surveillance after screening and polypectomy: A consensus update by the US multi-society task force on colorectal cancer. Gastroenterology, 143(3), 844–857. https://doi.org/10.1053/j.gastro.2012.06.001

Lopes, G., Stern, M. C., Temin, S., Sharara, A. I., Cervantes, A., Costas-Chavarri, A., Engineer, R., Hamashima, C., Ho, G. F., Hultzl, F. D., & Moghani, M. M. (2018). Early detection for colorectal cancer: ASCO resource-stratified guideline. Journal of Global Oncology, 5, 1–22

Maes-Carballo, M., Mignini, L., Martin-Diaz, M., Bueno-Cavanillas, A., & Khan, K. S. (2020). Quality and reporting of clinical guidelines for breast cancer treatment: A systematic review. Breast, 53, 201–211. https://doi.org/10.1016/j.breast.2020.07.011

Maes-Carballo, M., Mignini, L., Martin-Diaz, M., Bueno-Cavanillas, A., & Khan, K. S. (2022). Clinical practice guidelines and consensus for the screening of breast cancer: A systematic appraisal of their quality and reporting. European Journal of Cancer Care, 31, e13540. https://doi.org/10.101111/ecc.13540

Maes-Carballo, M., Moreno-Asencio, T., Martin-Diaz, M., Mignini, L., Bueno-Cavanillas, A., & Khan, K. S. (2021). Shared decision making in breast cancer screening guidelines: A systematic review of their quality and reporting. European Journal of Public Health, 31, 873–883. https://doi.org/10.1093/europub/ckab084

Maes-Carballo, M., Munoz-Nunez, I., Martin-Diaz, M., Mignini, L., Bueno-Cavanillas, A., & Khan, K. S. (2020). Shared decision making in breast cancer treatment guidelines: Development of a quality assessment tool and a systematic review. Health Expectations, 23, 1045–1064. https://doi.org/10.1111/hex.13112

Malila, N., Senore, C., Armaroli, P., & International Agency for Research on C. (2012). European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition—Organisation. Endoscopy, 44, SE31–SE48. https://doi.org/10.1055/s-0032-1309783

Ministry of Health. Singapore. Cancer screening. https://www.moh.gov.sg/docs/librariesprovider4/guidelines/cpg_cancer-screening.pdf. 2010.

Ministry of Health. Turkey. Turkey Cancer Control Programme. https://www.iccp-portal.org/system/files/plans/Turkiye_Kanser_Kontrol_Program_English.pdf. 2016.

Minozzi, S., Armaroli, P., & Segnan, N. (2012). European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition—Principles of evidence assessment and methods for reaching recommendations. Endoscopy, 44, SE9–S14. https://doi.org/10.1055/s-0032-1309781

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group P. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. Open Med., 3(3), e123–e130. https://doi.org/10.1371/journal.pmed.1000097

Monahan, K. J., Bradshaw, N., Dolwani, S., Desouza, B., Dunlop, M. G., East, J. E., Ilyas, M., Kaur, A., Laloo, F., Latchford, A., Rutter, M. D., Tomlinson, I., Thomas, J. H. W., Hill, J., & Heredity CRC guidelines eDelphi consensus group. (2019). Guidelines for the management of hereditary colorectal cancer from the British Society of Gastroenterology (BSG)/Association of Coloproctology of Great Britain and Ireland (ACPGBI)/United Kingdom cancer genetics group (UKCGG). Gut, 69(3), 411–444. https://doi.org/10.1136/gutjnl-2019-319919

Moreno, C., Kim, D. H., Bartel, T. B., Cash, B. D., Chang, K. J., Feig, B. W., Fowler, K. J., Garcia, E. M., Kambadakone, A. R., Lambert, D. L., Levy, A. D., Marin, D., Peterson, C. M., Scheirey, C. D., Smith, M. P., Weinstein, S., & Carucci, L. R. (2018). ACR appropriateness criteria (IR) colorectal cancer screening. Journal of the American College of Radiology, 15(55), 556–568. https://doi.org/10.1016/j.jacr.2018.03.014

Moss, S., Ancelle-Park, R., Brenner, H., & International Agency for Research on C. (2012). European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition—Evaluation and interpretation of screening outcomes. Endoscopy, 44, SE49–SE64. https://doi.org/10.1055/s-0032-1309788

Network NCCN. NCCN Guidelines: Colorectal Cancer Screening Version 2.2.2021. https://www.nccn.org/. 2021.

New Brunswick Colon Cancer Screening. Clinical Practice Guidelines. https://www2.gnb.ca/content/gnb/en/departments/health/NewBrunswickCancerNetwork/content/ClinicalPracticeGuidelinesForColonCancerScreeningInNewBrunswick. html. 2013.

NHS. NHS. Bowel cancer screening: Pathology guidance on reporting lesions. https://www.gov.uk/government/publications/bowel-cancer-screening-reporting-lesions. 2021.

Ong, J. J., Chen, M., Grulich, A. E., & Fairley, C. K. (2014). Regional and national guideline recommendations for digital ano-rectal examination as a means for anal cancer screening in HIV positive men who have sex with men: A systematic review. BMC Cancer, 14, 557. https://doi.org/10.1186/1471-2407-14-557

Provenzale, D., Gupta, S., Ahnen, D. J., Bray, T., Cannon, J. A., Cooper, G., David, D. S., Early, D. S., Erwin, D., Ford, J. M., Giardiello, F. M., Grady, W., Halverson, A. L., Hamilton, S. R., Hampel, H., Iismai, M. K., Klapman, J. B., Larson, D. W., Lazenby, A. J., ... Darlow, S. (2016). Genetic/familial high-risk assessment: Colorectal version 1.2016. NCCN clinical practice guidelines in oncology. Journal of the National
cancer screening. NIH Consensus and State-of-the-Science Statements, 27(1), 1–31.

Stoffel, E. M., Mangu, P. B., Limburg, P. J., American Society of Clinical Oncology, & European Society for Medical Oncology. (2015). Hereditary colorectal cancer syndromes: American Society of Clinical Oncology clinical practice guideline: endorsement of the familial risk-colorectal cancer clinical practice guidelines. Journal of Oncology Practice/American Society of Clinical Oncology, 11(3), e437–e441. https://doi.org/10.1200/JOP.2015.003665

Sung, J. J., Ng, S. C., Chan, F. K., Chiu, H. M., Kim, H. S., Matsuda, T., Ng, S. S., Lau, J. Y., Zheng, S., Adler, S., Reddy, N., Yeoh, K. G., Tsoi, K. K., Ching, J. Y., Kuipers, E. J., Rabeneck, L., Young, G. P., Steele, R. J., Lieberman, D., ... Asia Pacific Working Group. (2015). An updated Asia Pacific consensus recommendations on colorectal cancer screening. Gut, 64(1), 121–132. https://doi.org/10.1136/gutjnl-2013-306503

Tanaka, S., Saitoh, Y., Matsuda, T., Igarashi, M., Matsumoto, T., Iwao, Y., Suzuki, Y., Nishida, H., Watanabe, T., Sugai, T., Sugihara, K., Tsuruta, O., Hirata, I., Hiyawasaki, N., Salto, H., Watanabe, M., Sugano, K., Shimosegawa, T., & Japanese Society of Gastroenterology. (2015). Evidence-based clinical practice guidelines for management of colorectal polyps. Journal of Gastroenterology, 50(3), 252–260. https://doi.org/10.1111/j.1345-5984.2011.01272.x

Telford, J. J. (2011). Canadian guidelines for colorectal cancer screening. Canadian Journal of Gastroenterology, 25(9), 479–481. https://doi.org/10.1159/2011.285926

Timouth, J., Kennedy, E. B., Baron, D., Burke, M., Feinberg, S., Gould, M., Baker, N., & Lewis, N. (2014). Colonoscopy quality assurance in Ontario: Systematic review and clinical practice guideline. Canadian Journal of Gastroenterology & Hepatology, 28(5), 251–274. https://doi.org/10.1155/2014/262816

Uruguay MoSD. Ministerio de Salud de Uruguay. Guía de práctica clínica de tamizaje del cáncer colo-rectal 2018. https://www.paho.org/urug/docsdocuments/Guia%20de%20practica%20clinica%20de%20tamizaje%20del%20cancer%20colo-rectal%202018.pdf. 2018.

US Preventive Services Task Force, Davidson, K. W., Barry, M. J., Mangione, C. M., Cabana, M., Caughey, A. B., Davis, E. M., Donahue, K. E., Doubeni, C. A., Krist, A. H., Kubik, M., Li, L., Ogedegbe, G., Owens, D. K., Pibert, L., Silverstein, M., Stevermer, J., Tseng, C. W., & Wong, J. B. (2021). Screening for colorectal cancer: US preventive services task force recommendation statement. Journal of the American Medical Association, 325(19), 1965–1977. https://doi.org/10.1001/jama.2021.6238

Valori, R., Rey, J. F., Atkin, W. S., Brettbauer, M., Senore, C., Holf, G., Kuipers, E., Altenhofen, L., Lambert, R., & Minoli, G. (2012). European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition—Quality assurance in endoscopy in colorectal cancer screening and diagnosis. Endoscopy, 44 Suppl 3, SE88–S105. https://doi.org/10.1055/s-0032-1309795

Vasen, H. F., Ghorbanoghi, Z., Bourdeaut, F., Cabaret, O., Caron, O., Duval, A., Entz-Werle, N., Goldberg, Y., Ilencikova, D., Kraz, C. P., Lavoine, N., Loeffen, J., Menko, F. H., Mulieris, M., Sebille, G., Colas, C., Burkhardt, B., Brugieres, L., Wimmer, K., & on behalf of the EU-Costumion Care for CMMR-D (C4CMMR-D). (2014). Guidelines for surveillance of individuals with constitutional mismatch repair-deficiency proposed by the European Consortium “Care for CMMR-D” (C4CMMR-D). Journal of Medical Genetics, 51(5), 283–293. https://doi.org/10.1136/jmedgenet-2013-102238

Verneooij, R. W., Sanabria, A. J., Sola, I., Alonso-Coello, P., & Martinez, G. L. (2014). Guidance for updating clinical practice guidelines: A systematic review of methodological handbooks. Implementation Science, 9, 3. https://doi.org/10.1186/1748-5908-9-3

Vieth, M., Quirke, P., Lambert, R., von Karsa, L., Risio, M., & International Agency for Research on C. (2012). European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition—Annotations of colorectal lesions. Endoscopy, 44 Suppl 3, SE131–SE139. https://doi.org/10.1055/s-0032-1309798

von Karsa, L., Patrick, J., & Segnan, N. (2012). European guidelines for quality assurance in colorectal cancer screening and diagnosis. First edition—Executive summary. Endoscopy, 44, SE1–SE8. https://doi.org/10.1055/s-0032-1309822

Washington KFHPo. Kaiser Foundation Health Plan of Washington. Colorectal Cancer Screening Guideline. https://wa.kaiserpermanente.org/static/pdf/public/guidelines/colon.pdf. 2021.

Wieringa, T. H., Kunneman, M., Rodriguez-Gutierrez, R., Montori, V. M., de Witt, M., Smets, E. M. A., Schoonmae, L. J., Spencer-Bonilla, G., & Snoek, F. J. (2017). A systematic review of decision aids that facilitate elements of shared decision-making in chronic illnesses: A review protocol. Systematic Reviews, 6(1), 155. https://doi.org/10.1186/s13643-017-0557-9

Wilkins, T., McMechan, D., & Talukder, A. (2018). Colorectal cancer screening and prevention. American Family Physician, 97(10), 658–665.

Wilkinson, A. N., Lieberman, D., Leontiadis, G. I., Tse, F., Barkun, A. N., Abou-Setta, A., Marshall, J. K., Samadder, J., Singh, H., Telford, J. J., Timmouth, J., & Leddin, D. (2019). Colorectal cancer screening for patients with a family history of colorectal cancer or adenomas. Canadian Family Physician, 65(11), 784–789.

Wolf, A. M. D., Fontham, E. T. H., Church, T. R., Flowers, C. R., Guerra, C. E., LaMonte, S. J., Etzioni, R., McKenna, M. T., Oeffinger, K. C., Shih, Y. C. T., Walter, L. C., Andrews, K. S., Brawley, O. W., Brooks, D., Fedewa, S. A., Manassaram-Baptiste, D., Siegel, R. L., Wender, R. C., & Smith, R. A. (2018). Colorectal cancer screening for average-risk adults: 2018 guideline update from the American Cancer Society. CA: A Cancer Journal for Clinicians, 68(4), 250–281. https://doi.org/10.3322/caac.21457

Wong, M. C., Wong, S. H., Ng, S. C., Wu, J. C., Chan, F. K., & Sung, J. J. (2015). Targeted screening for colorectal cancer in high-risk individuals. Best Practice & Research. Clinical Gastroenterology, 29(6), 941–951. https://doi.org/10.1016/j.bjg.2015.09.006

Woolf, S. H., Grol, R., Hutchinson, A., Eccles, M., & Grimshaw, J. (1999). Clinical guidelines: Potential benefits, limitations, and harms of clinical guidelines. BMJ, 318(7182), 527–530. https://doi.org/10.1136/bmj.318.7182.527

Yang, J., Gurudu, S. R., Koptiuch, C., Agrawal, D., Buxbaum, J. L., Abbas Fehmi, S. M., Fishman, D. S., Khashab, M. A., Jamil, L. H., Yue, T. L., Law, K. K., Lee, J. K., Naveed, M., Qumseya, B. J., Sawhney, M. S., Thosani, N., Wani, S. B., & Samadder, N. J. (2020). American Society for Gastrointestinal Endoscopy guideline on the role of endoscopy in familial adenomatous polyposis syndromes. Gastrointestinal Endoscopy, 91(5), 963–962.e2. https://doi.org/10.1016/j.gie.2020.01.028

Zauber, A. G., Winawer, S. J., O’Brien, M. J., Lansdorp-Vogelaar, I., van Ballegooijen, M., Hankey, B. F., Shi, W., Bond, J. H., Schapira, M., Panish, J. F., Stewart, E. T., & Waye, J. D. (2012). Colonoscopy polypectomy and long-term prevention of colorectal-cancer deaths. The New England Journal of Medicine, 366(8), 687–696. https://doi.org/10.1056/NEJMoa1100370

Zeimet, A. G., Mori, H., Petru, E., Rehnskiöld, A., Schauer, C., Scholl-Firon, T., Singer, C., Wimmer, K., Zschocke, J., & Marth, C. (2017). AGO Austria recommendation on screening and diagnosis of Lynch syndrome (LS). Archives of Gynecology and Obstetrics, 296(1), 123–127. https://doi.org/10.1007/s00404-017-4392-y
SUPPORTING INFORMATION

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