

POST POLYPECTOMY SURVEILLANCE GUIDELINES

Recommendations on follow-up after colonoscopy and post
polypectomy in Alberta

Alberta Colorectal Cancer Screening Program

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Declared Competing Interest of Panel

For declared competing interest refer to [Appendix B: Guideline Panel Members](#).

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Acronyms and Abbreviations

AA – advanced adenoma

ACRCSP- Alberta Colorectal Cancer Screening Program

ACRN- advanced colorectal neoplasia

BSG- British Society of Gastroenterology

CCO- Cancer Care Ontario

CCSC- [Forzani & MacPhail] Colon Cancer Screening Centre

CPG- clinical practice guideline

CRC – colorectal cancer

ESGE- European Society of Gastrointestinal Endoscopy

FIT- fecal immunochemical test

HP – hyperplastic polyp

HGD- high grade dysplasia

HRA- high risk adenoma

HRL – high risk lesion

IBD- Inflammatory bowel disease

LGD- low-grade dysplasia

LRA- low risk adenoma

SPS- serrated polyposis syndrome

SSA- sessile serrated adenoma

SSP- sessile serrated polyp

SSL - sessile serrated lesion

TA – tubular adenoma

USMSTF-United States Multi-Society Task Force

WHO-World Health Organization

Executive Summary

Guidelines for post-polypectomy surveillance were first published by the Alberta Colorectal Cancer Screening Program (ACRCSP) in [2013](#) and were in accordance with 2012 recommendations from the US Multi-Society Task Force (USMSTF) on Colorectal Cancer Post-Polypectomy Surveillance. Most recently as new evidence has emerged, updated surveillance guidelines have been published by the US Multi-Society Task Force on Colorectal Cancer (2020), the European Society of Gastrointestinal Endoscopy (2020), British Society of Gastroenterology (2020), and Cancer Care Ontario (2019).

In spring of 2021, the ACRCSP convened an expert panel to update post-polypectomy guidelines to reflect this new evidence, ensuring that standardized recommendations pertaining to surveillance colonoscopy are available and accessible to all those involved in the provision of colorectal cancer screening. The revised Alberta guidelines will advise practicing endoscopists, referring physicians and their patients to make evidence-informed decisions.

An initial systematic review revealed significant advances in the scientific literature since the last ACRCSP guidelines in 2013. Review of existing clinical practice guidelines identified inconsistencies and gaps that precluded making several recommendations in the Alberta context. Accordingly, the guideline panel performed several reviews to garner the latest evidence regarding pertinent questions.

The following guiding principles were adhered to in formulating evidence reviews and recommendations:

- 1) Improve population health. The goal of screening is to reduce colorectal cancer mortality and incidence. Surrogate markers such as the occurrence of advanced adenomas were given less weight in the decision making.
- 2) Reduction of harms. Colonoscopy is an invasive procedure not without risk. The benefits of surveillance colonoscopy need to be maximized while the potential harms (i.e., adverse events) are minimized.
- 3) Costs and resource allocation. Consideration of healthcare system costs and adequate resources to ensure equitable distribution of benefits.

The recommendations for post-polypectomy surveillance are found in [Table 1: ACRCSP Recommendations for Post-Polypectomy Surveillance Summary Table](#).

Table 1: ACR CSP Recommendations for Post-Polypectomy Surveillance Summary Table

| Initial Colonoscopy Findings | Recommendations for next test and interval | Subsequent colonoscopy for polyps/lesions requiring surveillance |
|--|--|--|
| Normal or no polyps | FIT screening in 10 years ⁱ | |
| Hyperplastic polyp(s) <10mm | | |
| Hyperplastic polyp(s) ≥10mm | Colonoscopy in 3 years if proximal to sigmoid colon ⁱⁱ Colonoscopy in 5 years if in rectosigmoid | If no polyps requiring surveillance detected, then subsequent colonoscopy at 5 years. Consider return to average risk FIT screening if both scopes normal. |
| Adenoma | | |
| 1 - 2 tubular adenoma(s) <10 mm | FIT screening in 5 years | |
| 3 - 4 tubular adenomas <10mm | Colonoscopy in 5 years | Consider return to FIT screening in five years. |
| 5 - 10 tubular adenomas <10mm | Colonoscopy in 3 years | If no polyps requiring surveillance detected, then subsequent colonoscopy at 5 years. Consider return to average risk FIT screening if both scopes normal. |
| ≥10mm in size | | |
| Villous histology or high-grade dysplasia | | |
| >10 tubular adenomas | Colonoscopy in 1 year and genetic counselling ⁱⁱⁱ | At endoscopist discretion |
| Sessile Serrated Lesion (SSL) | | |
| 1 - 2 SSL(s) <10 mm | Colonoscopy in 5 years | Consider return to FIT screening in five years. |
| 3 - 10 SSLs <10mm | Colonoscopy in 3 years | If no polyps requiring surveillance detected, then subsequent colonoscopy at 5 years. Consider return to average risk FIT screening if both scopes normal. |
| ≥10 mm in size (any number) | | |
| [with] dysplasia (any size) | | |
| Traditional serrated adenoma (any size) | | |
| Serrated polyposis syndrome ^{iv} | Colonoscopy in 1 years | At endoscopist discretion |
| Piecemeal Resection | | |
| Large (≥10mm) non-pedunculated polyp or lesion | Colonoscopy ^v in 6 months | If initial polyp was ≥20mm, next surveillance colonoscopy in 1 year. If no recurrence detected at resection site, subsequent colonoscopy surveillance in 3 years If initial polyp was ≥10mm-19mm, next surveillance colonoscopy in 3 years ^{vi} . If no recurrence detected at resection site, subsequent colonoscopy surveillance in 5 years. |

ⁱ More than 20 hyperplastic polyps, especially if proximal to sigmoid colon, consider serrated polyposis syndrome^v

ⁱⁱ Hyperplastic polyp(s) ≥10mm proximal to sigmoid colon should be considered a sessile serrated lesion (SSL) with colonoscopy surveillance recommended in 3 years.

ⁱⁱⁱ Consider genetic testing referral. Patients with >10 adenomas found on a single colonoscopy have an increased risk for hereditary polyposis. Timely clearing colonoscopy is required to ensure that all adenomatous lesions have been removed.

^{iv} Serrated polyposis syndrome: 1) at least five serrated lesions proximal to the rectum, with two or more that are >10mm or 2) more than 20 serrated lesions or polyps of any size distributed throughout the large bowel, with at least five proximal to the rectum.

^v For recto-sigmoid lesions, the choice of limited flexible sigmoidoscopy vs full colonoscopy is left to endoscopist's discretion.

^{vi} Consideration for 12-month follow-up if high grade dysplasia, resection required multiple passes or challenging position noted.

Background

Launched in 2007, the Alberta Colorectal Cancer Screening Program (ACRCSP) is an organized provincial colorectal cancer screening program coordinated by Alberta Health Services (AHS) and operates in partnership with healthcare providers. Evidence from randomized controlled trials indicates that population-based screening programs can reduce the burden of cancer. Colorectal cancer (CRC) screening particularly among 50–74-year-olds is known to reduce CRC incidence, morbidity, and mortality in a cost-effective manner provided that screening is done in accordance with evidence-based guidelines.

Guidelines regarding post-polypectomy surveillance were first published in [2013](#) by the ACRCSP and were in keeping with the recommendations from the concurrent US Multi-Society Task Force on Colorectal Cancer. The current document is an update on the 2013 guidelines and reflects both emerging evidence and recommendations from other expert groups (see [Appendix A: Post-Polypectomy Colonoscopy Surveillance CPG Appraisal Table](#)).

In providing evidence-based recommendations for patients who have had colonic polyps removed, the following caveats must be considered:

- Surveillance colonoscopy after polyp removal should be targeted at patients who are most likely to benefit; with the primary aim to reduce colorectal cancer (CRC) incidence and mortality [\[1\]](#).
- A high-quality baseline colonoscopy has been performed. A high-quality colonoscopy is one where: the cecum was reached with photo documentation, bowel preparation allowed adequate visualization of all colonic mucosa, with a recommended minimum withdrawal time, with complete removal of all polyps seen and with documentation that meets endoscopy reporting standards [\[2\]](#).
 - Polyp size is objectively estimated in reference to either snare diameter or open biopsy forceps
 - All polypectomies are carried out with good technique and all polypectomy material is sent to pathology [\[3\]](#).
- The colonoscopy procedure report should clearly state who is responsible for arranging the follow-up colonoscopy.
- The decision regarding surveillance interval should be based on the most advanced finding(s) at initial colonoscopy. Colonoscopy findings should be confirmed by final pathology results.
- Post-polypectomy outcomes have not been thoroughly studied in populations of patients younger than age 50.
- Surveillance recommendations also need to consider baseline risk for CRC based on other factors such as family history (outside the scope of this guideline, see [colorectal-cancer-screening-guideline.pdf \(albertadoctors.org\)](#)).

Methodology

Recommendations for post-polypectomy follow-up were created for each distinct polyp type. Confusing terminology such as low or high-risk adenomas for the most part was eliminated. These recommendations were based on an evidence review and consideration of current recommendations from other expert groups, published within the last 5 years. Given that there have been several recent systematic reviews with subsequent guideline recommendations, that work was not duplicated here. Rather, this guideline considered the available evidence and expert recommendations as pertaining to the Alberta clinical milieu. Selective supplemental literature reviews were carried out when there was new literature available.

A range of stakeholders were identified for this 10-member panel, including endoscopists, with backgrounds in gastroenterology (4), surgery (2) and family medicine (1). The panel also included two nurses and one pathologist ([Appendix B: Guideline Panel Members](#)).

Ranking of existing Clinical Practice Guidelines:

- The AGREE II tool was selected as the CPG appraisal tool [4].
- 2 evaluators from AHS Screening Programs worked independently to appraise the CPGs.
- Discrepancies of significance (more than a 2-point difference) were discussed between the appraisers and each appraiser revisited the CPG independently to re-evaluate and resolve the discrepancy.

Results:

- Total scores were calculated and are presented in [Appendix A: Post-Polypectomy Colonoscopy Surveillance CPG Appraisal Table](#).
- The overall assessments of the CPGs found scores ranging from 58% (Ontario) to 92% (United Kingdom, Australia) [5, 6].

Based on the results, local regional influence and ease of reviewing, the panel selected three clinical practice guidelines (ESGE 2020, USMSTF 2020 and CCO 2019) [7, 8, 9]. Similarities or differences in key recommendations of preferred guidelines were highlighted. Members further examined the evidence and proposed recommendations for endoscopic surveillance depending on findings at index and subsequent colonoscopy.

Process

The guideline panel met in a series of virtual meetings held over 10 months. As part of the decision-making process, a recommendation should remain unchanged unless there is new/emerging evidence since the previous update ([Appendix C: Decision Making Process for Program Guideline Recommendations](#)).

A final vote was administered through Select Survey. Members were asked to agree or disagree on 14 proposed statements. Unanimity (100%) was achieved for 12 of the 14 recommendations. See full summary of 2021 recommendations from guideline committee ([Appendix D: Summary of 2021 recommendations from guideline committee](#)).

Recommendations for Post Polypectomy Surveillance

Initial colonoscopy finding of: **Normal or no polyps**

RECOMMENDATION:

2021 statement

For an average risk patient with no polyps or normal findings on colonoscopy, the panel recommends FIT in 10 years.

2013 statement

Patients with no adenomas or sessile serrated lesions should undergo screening based on their underlying risk level: Average risk patient should rescreen in 10 years, using the screening modality that is recommended for average risk.

In alignment with existing clinical practice guidelines ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)), average risk patientsⁱⁱ should rescreen with FIT in 10 years, following a normal (i.e., no polyps) finding on initial colonoscopy. Evidence confirms that average-risk individuals who have a normal (i.e., no polyps) initial colonoscopy have a decreased future risk of colorectal cancer to below that of unscreened populations [10].

Surveillance recommendations also need to consider baseline risk for CRC based on family history or other heritable factors or existing illness (such as IBD) and adjustments may need to be made within the 10-year interval. For CRC screening guidelines for family history please refer to [colorectal-cancer-screening-guideline.pdf \(albertadoctors.org\)](#).

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: **Hyperplastic polyp(s) <10mm**

RECOMMENDATION:

2021 statement

For an average risk patient with finding(s) of hyperplastic polyp(s) <10mm, the panel recommends FIT in 10 years*.

*More than 20 hyperplastic polyps, especially if found proximal to the sigmoid colon, should lead to consideration of serrated polyposis syndrome.

2013 statement

Patients with small (<10mm) hyperplastic polyps in rectum or sigmoid should maintain screening interval based on underlying risk level (consider colonoscopy results as synonymous to normal).

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)).

ⁱⁱ Average risk refers to individuals who are asymptomatic, no history of inflammatory bowel disease and no personal or family history of colorectal cancer or high-risk adenomas. The ACRCSP recommends average-risk screening with FIT every 1-2 years for those aged 50-74.

Hyperplastic polyps (HP) in the rectosigmoid are common findings at colonoscopy and can be readily identified by their typical appearance using image enhancement such as electronic chromoendoscopy. Small rectal HP's do not routinely require endoscopic removal.

The presence of up to 20 HPs has not been associated with increased subsequent risk of CRC [11]. However, the finding of more than 20 HPs, especially if found proximal to sigmoid colon should lead to consideration of serrated polyposis syndrome that carries an increased risk of subsequent CRC.

The 2021 Alberta recommendation states *FIT in 10 years* rather than *return to routine screening*. This wording is to prevent FITs being done too soon after a colonoscopy, as well as to prevent routine screening being mistaken for average risk colonoscopies. In Alberta, FIT is the entry-level CRC screening test for average risk populations.

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: **Hyperplastic polyp(s) $\geq 10\text{mm}$**

RECOMMENDATION:

2021 statement

For a colonoscopy finding of hyperplastic polyp(s) $\geq 10\text{mm}$:

- 1. Proximal to sigmoid colon, the panel recommends colonoscopy in 3 years*.**

*Hyperplastic polyp(s) proximal to sigmoid colon should be considered sessile serrated lesion (SSL) with colonoscopy surveillance in 3 years.

- 2. In rectosigmoid, the panel recommends colonoscopy in 5 years.**

2013 statement

Repeat colonoscopy in 5 years if, four or more hyperplastic polyps proximal to sigmoid colon or any hyperplastic polyp $> 5\text{mm}$ proximal to sigmoid colon.

Because of inter observer variation in the pathological differentiation of HP from SSA/P, proximal colonic serrated lesions $> 10\text{mm}$ in size that are designated HP may be considered to be SSA/P by clinicians. Conversely, it would be unusual for a small ($< 5\text{mm}$) polyp in the rectosigmoid to represent a SSA/P rather than a HP.

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)):

- ESGE recommends serrated polyps $\geq 10\text{mm}$ and serrated polyps with dysplasia yield similar metachronous advanced neoplasia or CRC and require surveillance at 3 years [7].
- USMSTF recommends colonoscopy in 3-5 years for HP $\geq 10\text{mm}$. A 3-year follow-up is favored if concerns about consistency in distinguishing SSP from HP locally [8].
- Locally, within Calgary (CCSC) proximal hyperplastic polyps $\geq 10\text{mm}$ are treated as SSL's.

Histologically, it may be difficult to distinguish between SSL's and HP's particularly if the specimen sectioning is not optimal to see entire crypts in the resected specimen. There is large inter-observer variability in pathologists when distinguishing between SSL's and HP's.

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: 1 or 2 tubular adenoma(s) <10mm

RECOMMENDATION:

2021 statement

For a colonoscopy finding of 1 or 2 tubular adenoma(s) <10mm, the panel recommends FIT in 5 years.

2013 statement

Patients with 1 or 2 small (<1cm) tubular adenomas with low-grade dysplasia, repeat colonoscopy in 5-10 years.

Return to screening intervals based on underlying risk level (discontinue surveillance) if follow-up colonoscopy is normal.

Recent studies suggest that patients who undergo colonoscopy with removal of adenomas less than 10 mm without evidence for high grade dysplasia have a **similar** risk of CRC cancer incidence and mortality compared to patients with a normal colonoscopy and a **lower** risk of CRC compared to an age-matched unscreened population [10 – 14].

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)):

- ESGE recommends patients with complete removal of 1-2 (<10mm) adenomas do not require endoscopic surveillance and should be returned to screening [7].
- USMSTF recommends colonoscopy in 7-10 years for 1-2 small adenomas (essentially average risk screening) [8].
- Within Canada, CCO recommends that low risk adenomas (defined as 1-2 tubular adenomas [<10mm] without high-grade dysplasia) be screened with FIT five years after their initial colonoscopy [9].

An evidence review regarding the influence of the number of adenomas on the downstream risk for the development of colorectal cancer was performed. Full-text screening of retrieved publications was completed by 2 independent reviewers from AHS Screening Programs, with exclusions being made based on the following criteria ([Appendix F: Figure A. PRISMA 2020 flow diagram for evidence review of # of adenomas and risk of CRC](#)).

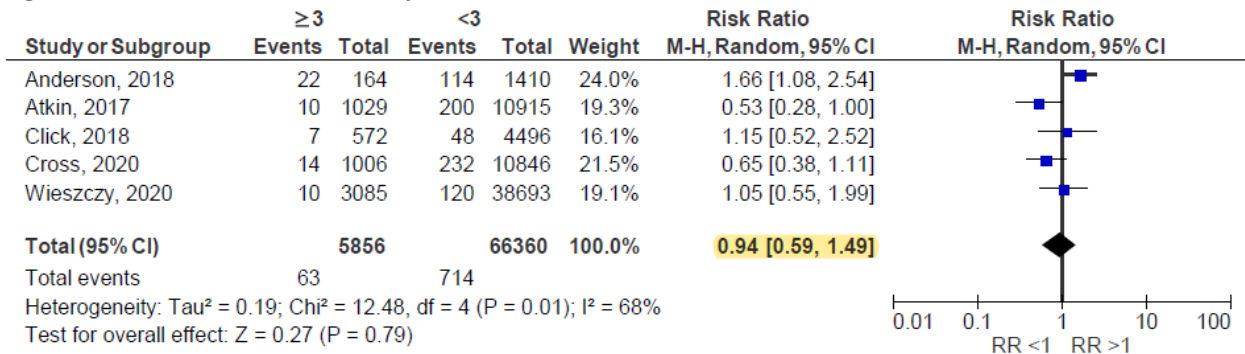
Exclusion criteria:

- if number of adenomas ≤ 5 and CRC risk is not present
- if not multi-centre study
- if N less than 1000

Meta-analysis 1: ≥ 3 vs < 3 adenomas

Figure 1 shows the group comparison between number of adenomas and the risk of CRC events (including advanced neoplasia). No significant difference in risk of CRC was identified between the patients with ≥ 3 or < 3 adenomas. However, there was considerable heterogeneity between studies which may be the result of variable lengths of follow-up and differing patient related outcomes. The panel noted that the power analysis was 0.779, indicating the possibility of a Type 2 error.

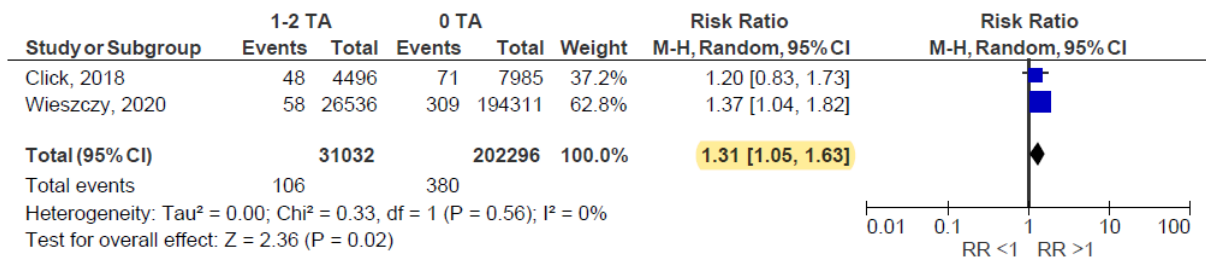
Figure 1: ≥ 3 vs. < 3 TA and subsequent risk of CRC



Meta-analysis 2: 1-2 TA's vs 0 TA's

Using the studies from the previous meta-analysis, a revised analysis was done comparing the risk ratio for 1-2 TA vs average risk (absence of adenoma). Out of the five studies included for review, only Click (2018) and Wieszczy (2020) provided sufficient data to do a comparison.

Figure 2: 1-2 TA vs 0 TA and subsequent risk of CRC



- Overall, the risk ratio of 1.31 (95% CI 1.05, 1.63) indicates a slightly increased risk of CRC incidence with the presence of 1-2 TA compared to those with no TA's (Figure 2). However, the included studies did not control for polyp size or dysplasia.
- The panel concluded that our literature review would suggest that patients with less than three adenomas have a subsequent risk of CRC that is essentially the same as those who are at average risk for CRC. This is supported by a recent meta-analysis published after our review that draws the same conclusions [15]. Thus, it's reasonable through shared decision making, to offer a return to FIT screening rather than colonoscopy
- Given that this patient group has at most an average risk for CRC, some guideline panels have recommended a return to FIT screening in 10 years. However, the panel felt that this was too drastic a change for primary care physicians to enact in the short to intermediate term and thus a 5-year follow-up with FIT was recommended.

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: 3 or 4 tubular adenomas <10mm

RECOMMENDATION:

2021 statement

For a colonoscopy finding of 3 or 4 tubular adenomas <10mm, the panel recommends colonoscopy in 5 years.

2013 statement

Patients with 3 to 10 adenomas, repeat colonoscopy in 3 years.

If the follow-up colonoscopy is normal or shows only 1 or 2 small TA with no HGD, then the interval for the subsequent examination should be 5 to 10 years.

Previous recommendations for aggressive surveillance in patients with three or more small adenomas were based on studies prior to 2000. Since that time, high-definition endoscopes, better bowel prep and attention to adenoma detection rates have resulted in proportionally more small adenomas being found during endoscopy [16]. This has resulted in a screening paradox where aggressive surveillance is recommended for lesions that may not confer increased risk for CRC. At least three more recent large observational cohort studies have demonstrated that the number of non-advanced adenomas less than 10 mm in diameter does not have an impact on the risk for colorectal cancer incidence or mortality. This effect appears to extend up to and probably beyond 5 colonic adenomas [16 – 18].

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)):

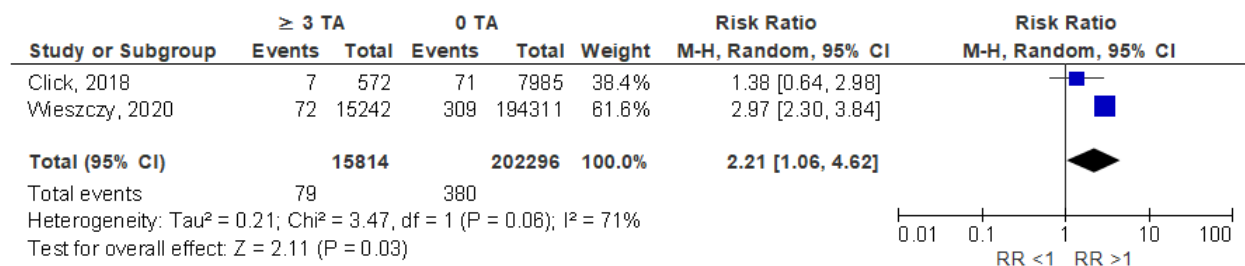
- ESGE recommends patients with complete removal of 1-4 (<10mm) adenomas do not require endoscopic surveillance and should be returned to screening [7].
- USMSTF recommends colonoscopy in 3-5 years for 3-4 small adenomas [8].
- Within Canada, CCO recommends that 3-4 tubular adenomas (<10mm) repeat colonoscopy in 3 years [9].

An evidence review regarding the influence of the number of adenomas on the downstream risk for the development of colorectal cancer was performed.

Meta-analysis

Using the studies from the previous meta-analysis, a revised analysis comparing the risk ratio for 3-4 TA vs average risk was requested. Out of the five studies included for review, only Click (2018) and Wieszczy (2020) had a comparison addressing the presence of adenomas. However, neither study made a comparison to groups with average risk or those with no adenoma. The analysis was tailored to the data provided and thus ≥3 vs no adenoma groups were compared ([Appendix G: Number of Adenoma and CRC incidence - Evidence Review Table](#)).

Figure 3: ≥ 3 TA vs 0 TA and subsequent risk of CRC



- This panel noted that the RR of 2.21 was only modestly statistically significant (95%CI 1.06, 4.62)
- The panel noted that the analysis may not have been adequately powered to avoid a Type II error.
- Given that there does appear to be an increase in subsequent risk of CRC with ≥ 3 TA's, the panel felt that the ESGE recommendation to return to average risk screening (e.g., FIT) could not be supported by the evidence.
- As well, the 2013 AHS recommendation for a 3-year follow-up colonoscopy seemed too aggressive given the low relative risk in this patient population.
- Thus, the panel recommended a repeat colonoscopy in 5 years to remain within recognized interval groupings.

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: 5 to 10 tubular adenomas <10mm, or any adenoma ≥ 10 mm, or with villous/tubulovillous features or high grade dysplasia

RECOMMENDATION:

2021 statement

For a colonoscopy finding of 5 to 10 tubular adenomas <10mm, or any adenoma ≥ 10 mm, or with villous/tubulovillous features or high-grade dysplasia, the panel recommends colonoscopy in 3 years.

2013 statement

Patients with 3 to 10 adenomas, or any adenoma >1cm, or with villous features or high-grade dysplasia, repeat colonoscopy in 3 years.

If the follow-up colonoscopy is normal or shows only 1 or 2 small TA with no HGD, then the interval for the subsequent examination should be 5 to 10 years.

The risk of advanced adenomas rises in individuals with 5 or more adenomas. Multiple studies have confirmed that identification of 1 or more adenomas >10 mm in size is an independent risk factor for the development of CRC [19 – 21].

The ESGE has recommended that villous histology in polyps less than 10 mm does **not** require surveillance. Polyps less than 10 mm in size with villous histology are a rare event. Yet, more recent evidence does suggest that villous histology confers slightly increased risk of CRC cancer incidence and mortality. However, this effect does appear to have less importance when polyp size is factored in [18].

Wieszcy (2020) identified that individuals who had at least 1 adenoma with high grade dysplasia of any size were at higher risk of developing CRC. However, number of adenomas or villous histology were not found to be independent risk factors for colorectal cancer incidence or mortality. [17].

Because of the uncertainty of the consequences of villous histology on the development of CRC, the current recommendation is for a surveillance colonoscopy in 3 years.

- Given the above available evidence, the panel felt it was too premature to make a significant change. Thus, the recommendation for polyps with villous or tubulovillous histology is unchanged from 2013.

Voting results:

Decision achieved by consensus (9/10). One member disagreed with the 3-year recommendation, citing that the finding of high-grade dysplasia may warrant an earlier follow-up depending on polyp morphology and size.

Initial colonoscopy finding of: **More than 10 tubular adenoma(s)**

RECOMMENDATION:

2021 statement

For a colonoscopy finding of more than 10 tubular adenomas on a single colonoscopy, the panel recommends colonoscopy in 1 year and genetic counselling*.

*Consider genetic testing referral. Patients with >10 adenomas found on colonoscopy have an increased risk for hereditary polyposis. Timely clearing colonoscopy is required to ensure that all adenomatous lesions have been removed.

2013 statement

Patients with >10 small (<1cm) adenomas on a single examination, repeat colonoscopy in less than 3 years. Consider the possibility of an underlying familial syndrome.

Patients with >10 adenomas found on a single colonoscopy have an increased risk of hereditary polyposis syndromes (e.g., familial adenomatous polyposis). Timely clearing colonoscopy is required to ensure that all adenomatous lesions have been removed. Multiple groups have recommended referral for genetic testing in all patients with >10 adenomas [22, 23].

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)).

- ESGE recommends patients with 10 or more adenomas should be referred for genetic counselling [7].
- USMSTF recommends patient with >10 adenomas completely removed at high-quality exam, repeat colonoscopy in 1 year [8].
- Within Canada, CCO recommends that people with >10 adenomas undergo genetic assessment and receive a clearing colonoscopy within one year [9].

The panel suggested a wording change - *consider* genetic counselling rather than recommend. Alberta has extremely limited access to genetic counselling, and this can then be left to endoscopist discretion.

Voting results:

Decision achieved by consensus (10/10).

Sessile Serrated Lesions

Serrated lesions of the colon are precursors to as many as one-fifth of CRC's [24]. Currently, there is significant variation in the nomenclature used to describe these lesions including terms such as hyperplastic polyp, sessile serrated adenoma/polyp with or without dysplasia, and traditional serrated adenoma. **The most recent WHO Classification of Digestive System Tumors recommends that sessile serrated adenomas/polyps should now be called sessile serrated lesions (SSL) or sessile serrated lesions with dysplasia (SSLD) [25].**

Sessile serrated lesion (SSL) is the nomenclature accepted by the Alberta Provincial GI Pathology Group (2020) and is consistent with WHO 2019 terminology. In Alberta, Pathologists who adopt the term SSL will continue to distinguish hyperplastic polyps from SSLs. Pathologists should work with their gastroenterologists to ensure no confusion arises because of terminology [26, 27].

Initial colonoscopy finding of: 1 or 2 sessile serrated lesions <10mm

RECOMMENDATION:

2021 statement

For a colonoscopy finding of 1 or 2 sessile serrated lesions <10mm, the panel recommends colonoscopy in 5 years.

2013 statement

Repeat colonoscopy in 5 years if 1-2 small (<10mm) sessile serrated adenomas/polyps or traditional serrated adenomas with no dysplasia.

Evidence for the development of metachronous CRC following removal of small (< 10 mm) serrated lesions is still evolving. Two recent large retrospective cohort studies demonstrated non-significant hazard ratios compared to no polyps for small SSL's removed from either the proximal or distal colon [28].

In contrast, a large retrospective cohort study of 233,393 individuals identified that proximal small SSLs were associated with an increased risk of CRC with the risk beginning to rise after 3 years of follow-up (HR 2.6 [1.7–3.9]). There was no increased risk of CRC seen for small distal SSL's [29].

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)):

- ESGE recommends patients undergoing complete removal of any serrated polyp <10mm without dysplasia do not require endoscopic surveillance and should be returned to screening [7]. It should be noted that this guideline includes HPs within the category of SSL's.
- USMSTF recommends colonoscopy in 5-10 years for 1-2 sessile serrated polyp(s) (<10mm) [8].
- Within Canada, CCO recommends one or more sessile serrated adenoma(s) <10mm without dysplasia should lead to a repeat colonoscopy in 5 years [9].

To better inform our decision, a literature review was performed. The research questions were:

1. Are patients with 1-2 SSLs at baseline colonoscopy at higher risk for CRC than:
 - those with no polyps (normal colonoscopy)
 - those with 1-2 TA's
 - the general population (never screened)

Full -text screening was completed by 1 reviewer from AHS Screening Programs with exclusions being made based on the following criteria ([Appendix H: Figure B. PRISMA 2020 flow diagram for evidence review of # of sessile serrated polyps and risk of CRC](#)).

Exclusion criteria:

- If number of SSL ≤ 5 and CRC risk is not present
- If not multicenter study

- If N less than 1000

As a result of the full-text screening only a recently published meta-analysis was identified [30]. In the subgroup analysis between SSL's alone and LRA's alone, there was no difference between groups in metachronous ACRN or CRC (OR 1.0; 95% CI, 0.18–5.52). In the analysis between SSL's alone and HRA's alone, patients with SSL's alone had a tendency to a lower risk of metachronous ACRN than those with HRAs alone however, this was not statistically significant (OR, 0.31; 95% CI, 0.07–1.44). It should be noted that in this meta-analysis, there was significant heterogeneity between studies with differing definitions used for HRA and ACRN.

This paucity of evidence is consistent with what has been reported by other jurisdictions around the world. Further research is needed regarding the impact of size, location, and number of SSLs on the development of metachronous colorectal cancer.

Voting results:

In the absence of new evidence, decision to continue with 2013 ACRSP recommendation. Decision achieved by consensus (10/10).

Initial colonoscopy finding of: 3 to 10 sessile serrated lesions <10mm

RECOMMENDATION:

2021 statement

For a colonoscopy finding of 3 to 10 sessile serrated lesions <10mm, the panel recommends colonoscopy in 3 years.

2013 statement

Repeat colonoscopy in 3 years if 3 or more small (<10mm) sessile serrated adenomas/polyps or traditional serrated adenomas.

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)):

- ESGE recommends patients with complete removal of any serrated polyp <10mm without dysplasia do not require endoscopic surveillance and should be returned to screening. The number of serrated lesions if <10mm does not impact on this decision [7].
- USMSTF recommends colonoscopy in 3-5 years for 3-4 sessile serrated polyps (<10mm) and colonoscopy in 3 years for 5-10 sessile serrated polyps (<10mm) [8].
- Within Canada, CCO recommends one or more sessile serrated adenoma(s) <10mm without dysplasia repeat colonoscopy in 5 years [9].

A literature review was performed. The research questions were:

1. Are patients with 3-4 SSLs at baseline at higher risk than:
 - those with no polyps
 - those with 1-2 SSLs
2. Are patients with 5-10 SSLs who do not meet the criteria for Serrated Polyposis Syndrome at higher risk than those with 1-2 SSLs.

As a result of the full-text screening there were no studies that met the needs of our inclusion/exclusion criteria. This paucity of evidence is consistent with what has been reported by other jurisdictions around the world. Further research is needed regarding the impact of size, location, and number of SSLs on the development of metachronous colorectal cancer. The cut off for this recommendation at 10 polyps is somewhat arbitrary. More than 10 sessile serrated lesions should raise the possibility of a serrated polyposis syndrome (see below).

Voting results:

In the absence of new evidence, decision to continue with 2013 recommendation. Decision achieved by consensus (10/10).

Initial colonoscopy finding of: **One or more sessile serrated lesion(s) >10mm, or traditional serrated adenomas (any size) or SSL with dysplasia (any size)**

RECOMMENDATION:

2021 statement

For a colonoscopy finding of one or more sessile serrated lesion(s) >10mm, or traditional serrated adenoma(s) (any size), or sessile serrated lesion with dysplasia (any size), the panel recommends colonoscopy in 3 years.

2013 statement

Repeat colonoscopy in 3 years if any sessile serrated adenomas/polyps or traditional serrated adenomas \geq 10mm OR with dysplasia.

There is consistent evidence that TSA, large SSL's and any SSL with dysplasia pose significant increased risk for subsequent CRC [13, 29]. This is reflected in congruent recommendations from all expert groups. The recommendation for colonoscopy in 3 years is based on similar risk for development of CRC as for large adenomas. This recommendation is unchanged from 2013.

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: **Serrated polyposis syndrome**

RECOMMENDATION:

2021 statement

For a colonoscopy finding of serrated polyposis syndrome (SPS), the panel recommends colonoscopy in 1 year.

Serrated polyposis syndrome: 1) at least five serrated lesions proximal to the rectum, with two or more that are > 10mm or; 2) more than 20 serrated lesions or polyps of any size distributed throughout the large bowel, with at least five proximal to the rectum.

2013 statement

Repeat colonoscopy in 1 year.

Serrated polyposis syndrome: 1) at least 5 serrated polyps proximal to sigmoid colon, with 2 or more ≥ 10 mm; 2) any serrated polyps proximal to sigmoid colon with family history of serrated polyposis syndrome; 3) >20 serrated polyps of any size throughout the colon.

Serrated polyposis syndrome (SPS) is characterized by multiple serrated polyps found on colonoscopy and is associated with an increased risk of CRC.

The 2019 World Health Organization (WHO) guideline contains the following updated criteria for serrated polyposis syndrome (SPS) diagnosis:

- I) ≥ 5 serrated lesions/polyps proximal to the rectum, all being ≥ 5 mm in size, with ≥ 2 being ≥ 10 mm in size, or;
- II) More than 20 serrated lesions/polyps of any size distributed throughout the large bowel, with ≥ 5 being proximal to the rectum.

Any serrated polyp subtype (HP, SSL, and TSA) is to be included in the final polyp count and the polyp count is cumulative over multiple colonoscopies [31].

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: **Synchronous sessile serrated lesion and tubular adenoma**

RECOMMENDATION:

2021 statement

For a colonoscopy finding of synchronous sessile serrated lesions and tubular adenomas, no recommendation made.

2013 statement

No recommendation.

Review of existing CPG's:

- BSG (2020) – “There is evidence to suggest that the future CRC risk may be additive between serrated and adenomatous polyps and their numbers should be summated when determining surveillance intervals [5].”
- ESGE – “There is evidence that advanced adenoma with synchronous serrated polyp of any kind results in higher metachronous advanced neoplasia risk compared to advanced adenoma without synchronous serrated polyp. However, such patients would already be classified as in need of surveillance, regardless of the presence of serrated polyps. Any added value of combining adenomas with serrated polyp count to fulfill multiplicity criteria is therefore not supported [7].”
- USMSTF – “Future research may clarify whether patients with a combination of <10 mm SSPs and conventional adenomas have a distinct risk that should merit different management [8].”
- CCO – No recommendation.

We identified 2 recent publications pertinent to this issue. One small study of 1389 patients [32] compared those who had 1-2 TA's (<10 mm) at baseline colonoscopy with patients who had 1-2 TA's and 1-2 SSL's (all < 10 mm). The risk of total metachronous advanced neoplasia in the TA/SSL group was not statistically different from the TA alone group ($p < 0.056$). A recent meta-analysis [29] compared patients with SSL + LRA vs LRA alone. The odds ratio of subsequent ACRN was 1.5 (0.25-9.81).

Voting results:

The panel determined that there was insufficient current evidence to make a recommendation for a colonoscopy finding of synchronous sessile serrated lesion and tubular adenoma. Decision achieved by consensus (9/10).

Initial colonoscopy finding of: **Piecemeal resection of a large (≥ 10 mm) non-pedunculated polyp or lesion**

RECOMMENDATION:

2021 statement

Following complete endoscopic piecemeal* removal of a large (≥ 10 mm) non-pedunculated polyp or lesion, recommend first repeat endoscopic assessment in 6 months.**

*Piecemeal resection is the resection of a ≥ 10 mm non-pedunculated polyp or lesion, where more than one pass of the snare is required either due to size or polyp orientation.

**For recto-sigmoid lesions, the choice of limited flexible sigmoidoscopy vs full colonoscopy is left to endoscopist's discretion.

Subsequent colonoscopy surveillance intervals*:**

- **If the initial polyp was ≥ 20 mm, the next surveillance colonoscopy should be in 1 year. If no recurrence is detected at the resection site, the panel recommends subsequent colonoscopy surveillance in 3 years.**
- **If the initial polyp was ≥ 10 mm-19mm, the next surveillance colonoscopy should be in 3 years****. If no recurrence is detected at the resection site, the panel recommends subsequent colonoscopy surveillance in 5 years.**

***Endoscopist discretion to perform surveillance at an earlier interval if concern for advance histological findings or other conflicting issues.

****Consideration for 12-month follow-up if high grade dysplasia, resection required multiple passes or challenging position noted.

2013 statement

Patients with sessile lesions that are removed piecemeal, repeat colonoscopy in 2-6 months to verify complete removal. Once complete removal has been established, repeat colonoscopy in 3 years.

Review surveillance interval after 2 consecutive three-yearly examinations.

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)):

- ESGE “recommends a 3-6 month early repeat colonoscopy following piecemeal endoscopic resection of polyps ≥ 20 mm. A first surveillance colonoscopy 12 months after repeat colonoscopy is recommended to detect late recurrence [7].”
- USMSTF recommends repeat colonoscopy (first surveillance) in 6 months for patients with piecemeal resection of adenoma or SSP > 20 mm. Second surveillance 1 year from first surveillance, and third surveillance 3 years from the second surveillance [8].

- Within Canada, CCO recommends a colonoscopy to check the polypectomy site within 6 months for large sessile polyp removed piecemeal. Subsequent surveillance recommendations are at the endoscopist's discretion [9].

A study of 1427 patients [33] compared piecemeal vs en-bloc polypectomy in 5-20 mm polyps. There was an increased risk of incomplete polyp resection in the piecemeal group (20% vs 8.4%). Risk for incomplete resection was also associated with increased polyp size and histology (SSL's > TA's).

A systematic review of 38 studies [34] identified that the risk of recurrence at subsequent scopes was: 20% (95% CI:16, 25) with piecemeal polypectomy vs 3% (95% CI:2,5) in the en-bloc resection group. 75% of polyp recurrences were identified at 3 months and 96% at 6 months. Polyp size did not affect recurrence: 10-20mm, 20-30mm and >30 mm polyps all had recurrence rates of 18-19%.

The panel identified that there is a lack of uniformity in the definition of piecemeal resection. For all lesions, it is key that a complete polypectomy with removal of all abnormal tissue is carried out. It is also recognized that polyp size is only one factor in determining risk of incomplete resection. Polyp location, orientation and morphology also play a role. The panel was also cognizant that there is a wide range in polypectomy ability among colonoscopists and any recommendation should reflect the skill level of the average endoscopist. Recommendations for subsequent polypectomy intervals after piecemeal resection are based on expert opinion only due to the current lack of evidence.

Voting results:

Decision achieved by consensus (10/10).

Initial colonoscopy finding of: **Subsequent colonoscopy surveillance after high-risk lesions**

RECOMMENDATION:

2021 statement
High risk lesionsⁱⁱⁱ require surveillance colonoscopy at 3 and then subsequent colonoscopy in 5 years. If no polyps requiring surveillance are detected at both scopes, the panel recommends considering a return to average risk FIT screening.

2013 statement
 Subsequent intervals based on findings at first surveillance (3-year follow-up) colonoscopy.
 No adenoma or low risk adenoma^{iv}: 5-10 years. High risk adenoma^v: 3 years

Review of currently existing CPGs ([Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp\(s\), Tubular Adenoma\(s\), and Sessile Serrated Lesion\(s\)](#)).

- ESGE recommends a surveillance colonoscopy after 3 years for complete removal of at least 1 adenoma ≥10mm or with high grade dysplasia, or ≥5 adenomas, or any serrated polyp ≥10mm

ⁱⁱⁱ Alberta defines high risk lesions: 5-10 tubular adenomas <10mm, tubular adenoma ≥10mm, tubular adenoma with villous or HGD, or 3-10 sessile serrated lesions <10mm, any sessile serrated lesion ≥10mm, any sessile serrated lesion with dysplasia or traditional serrated adenoma.

^{iv} ACRCSP 2013 refers to 1-2 small (<10mm) adenomas with low grade dysplasia

^v ACRCSP 2013 refers to tubular adenomas ≥10mm, 3 or more adenomas, adenoma with villous histology, or high-grade dysplasia

or with dysplasia. If that colonoscopy is normal, a colonoscopy in 5 years is recommended. If the 5-year colonoscopy is normal, the patient is to return to average-risk screening [7].

- USMSTF recommends interval for next surveillance is based on findings at first surveillance. If normal colonoscopy or 1-2 small TA(s) then colonoscopy in 5 years. If 3-4 TA's <10mm colonoscopy in 3-5 years. If adenoma ≥10mm or with tubulovillous/villous histology; or adenoma with high grade dysplasia; or 5-10 adenomas (<10mm) then interval for next surveillance in 3 years. "New evidence is required to guide serial surveillance of individuals with SSPs and large HPs [8]."
- Within Canada, CCO recommends subsequent colonoscopy based on the finding at 3 years. If no polyps, or hyperplastic polyp(s) in rectum or sigmoid, or low risk adenoma^{vi} then colonoscopy in 5 years. If high risk adenoma(s)^{vii} then colonoscopy in 3 years. Sessile serrated adenomas and TSA require surveillance, but no specific surveillance interval recommendations made due to insufficient evidence. There was no subsequent surveillance addressed [9].

The guideline panel noted that these recommendations are supported by expert opinion only and thus recommendations should also reflect operational practicalities and clarity. As well, stopping rules may need to be enacted for patients who continue to receive surveillance colonoscopies for remote advanced lesions despite multiple normal subsequent colonoscopies.

Voting results:

Decision achieved by consensus (10/10).

^{vi} CCC low risk adenomas: one to two tubular adenomas less than 10mm in diameter without high grade dysplasia.

^{vii} CCC high risk adenomas (also called advanced adenomas): one or more tubular adenomas 10mm or greater, three or more adenomas of any size, or adenomas with villous histology, or adenomas with high-grade dysplasia.

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Appendix A: Post-Polypectomy Colonoscopy Surveillance CPG Appraisal Table

| | | Average score between 2 appraisers - Scores are between 1 to 7, using AGREE II | | | | |
|------------------------------------|--|--|--|---|--|--|
| | | United Kingdom, (Rutter, et al. 2019) | Europe, (Hassan, et al. 2020) | Ontario, (Dubé, et al. 2019) | Australia, (Barclay, et al. 2019) | United States, (Gupta, et al. 2020) |
| Scope & Purpose | 1. Objectives | 7 | 6.5 | 7 | 7 | 7 |
| | 2. Health question | 7 | 6 | 2.5 | 7 | 7 |
| | 3. Target population | 7 | 5.5 | 5.5 | 7 | 7 |
| Domain Score | | 100% | 83% | 67% | 100% | 100% |
| Stakeholder Involvement | 4. Relevant professional groups represented | 5.5 | 2.5 | 6.5 | 7 | 5 |
| | 5. Target population preferences | 6 | 6 | 1 | 7 | 2.5 |
| | 6. Target users defined | 4.5 | 6.5 | 5.5 | 7 | 1 |
| Domain Score | | 72% | 67% | 56 % | 100% | 31% |
| Rigour of Development | 7. Systematic search conducted | 7 | 3 | 5.5 | 7 | 7 |
| | 8. Selection criteria described | 7 | 2 | 5.5 | 7 | 7 |
| | 9. Evidence strengths and limitations described | 7 | 7 | 5.5 | 7 | 7 |
| | 10. Methods used to formulate recommendations described | 7 | 6.5 | 3.5 | 7 | 5 |
| | 11. Benefits, side effects, risks considered | 7 | 6.5 | 7 | 7 | 6 |
| | 12. Link between recommendations and evidence | 7 | 7 | 6.5 | 5.5 | 7 |
| | 13. External review by experts | 2.5 | 5.5 | 6 | 6 | 1 |
| | 14. Updating procedure described | 6 | 6 | 3 | 7 | 1 |
| Domain Score | | 89% | 74% | 72% | 95% | 69% |
| Clarity of Presentation | 15. Specific, unambiguous recommendations | 7 | 7 | 7 | 7 | 7 |
| | 16. Different management options presented | 7 | 7 | 6 | 7 | 6.5 |
| | 17. Key recommendations easily identifiable | 7 | 7 | 7 | 7 | 7 |
| Domain Score | | 100% | 100% | 94% | 100% | 97% |
| Applicability | 18. Facilitators and barriers discussed | 7 | 6 | 1 | 6 | 4.5 |
| | 19. Support materials provided | 7 | 6 | 6 | 7 | 5.5 |
| | 20. Resource implications considered | 7 | 6.5 | 1 | 7 | 1 |
| | 21. Monitoring or audit criteria presented | 6 | 6 | 3 | 1 | 1 |
| Domain Score | | 96% | 85% | 29% | 71% | 33% |
| Editorial Independence | 22. Editorially independent from funding body | 5 | 1 | 1 | 6.5 | 6.5 |
| | 23. Competing interests reported | 6.6 | 6 | 2 | 7 | 6 |
| Domain Score | | 79% | 42% | 8% | 96% | 88% |
| Overall Assessment | | 92% | 75% | 58% | 92% | 67% |

Appendix B: Guideline Panel Members

| Panel Members | Role/affiliation | Non-pertinent COI disclosed |
|-----------------------|--|--|
| Dr. Daniel Sadowski | Chair, ACRCSP Post-Polypectomy Surveillance Guideline Working Group Quality Lead, ACRCSP/ Gastroenterologist, AHS Edmonton Zone | Physician Lead for Quality, Alberta Health Services Salary Support, University of Calgary Wrote the previous ACRCSP 2013 guidelines, published on Screeningforlife.ca |
| Dr. Michael R Kolber | Co-Chair, ACRCSP Post-Polypectomy Surveillance Guideline Working Group GP Endoscopist / ASEP Faculty, AHS North Zone | Founder and President of EMPRSS (Electronic Medical Procedure Reporting Systems) Honoraria for presenting, Alberta College of FPs, Society of Rural Physicians of Alberta, Canadian College of FPs – not for profits Co-investigator Bed Med study, CIHR (CIHR grant funded) Presented general GI updates which could have included topics to be discussed at upcoming guidelines |
| Nicole Nemecek | Project lead, Data Integration & Clinical Management RN, ACRCSP | None disclosed |
| Dr. Tony Gomes | General Surgeon / Endoscopist, AHS South Zone | None disclosed |
| Dr. Robert Hilsden | Director of Research, Forzani & MacPhail Colon Cancer Screening Centre / Gastroenterologist, AHS Calgary Zone | Advisory Board, Exact Sciences Inc. Contract, Freenome Holdings Inc. Director of Research, Forzani & MacPhail Colon Cancer Screening Centre, AHS Calgary zone Professor, University of Calgary Various publications related to guideline |
| Dr. Dave Ryan | Gastroenterologist, AHS Central Zone | None disclosed |
| Dr. Richard Sultanian | Medical Director, SCOPE / Gastroenterologist, AHS Edmonton Zone | B-CLEAN bowel prep study Pendopharm Canada SEE™ Polypectomy Course Instructor, CDDW |
| Linda Hickle | Care Manager, SCOPE, AHS Edmonton Zone | None disclosed |
| Dr. Ross McLean | Pathologist, RAH, AHS Edmonton Zone | Monthly contract, Alberta Health Services Review of colon polyps, 2016 Drive Days |
| Dr. Derek Mok | Colorectal Surgeon, Facility Medical Director, Ambulatory Care QEII Regional Hospital, AHS North Zone | Education speaking engagement, Janssen pharmaceutical Zone facility medical director, Alberta Health Services |

Appendix C: Decision Making Process for Program Guideline Recommendations

The following highlights the process for how decisions regarding the Program Guideline will be made:

Decision Criteria

Decisions on recommendations should be made by considering the totality of the evidence. The strength of the evidence should also be taken into consideration, i.e., the reliability of the study results (weak vs strong) and the size of the impact (small vs large change compared to the current standard).

As this panel is tasked with updating the current guideline, unless there is new/emerging evidence since the last guideline update, the recommendations should remain unchanged.

Recommendations

Recommendations for each topic can be made by consensus or a voting/ranking system, when necessary. A decision on a given topic can be made either by consensus or through an option ranking (voting) system:

Level 1 - Consensus

If there are no objections on a specific recommendation, then consensus is reached during the meeting. If consensus to any recommendation (current or new) cannot be reached the following options will be employed to reach consensus.

Level 2 –Ranking or Voting

If consensus cannot be reached on a specific recommendation during working group meetings, members will be asked to vote on the recommendation statement. In order to obtain input from the entire group – voting in absentia will be permitted. 50% of members+1 will be required for a guideline statement to stand.

Proposed statements that do not reach a majority vote are an opportunity for further consideration of the scientific evidence as well as continuing dialogue. Comments arising from these discussions will form part of the discussion section of the guideline to provide insight into the decision-making process of the group. The statement in question will be redrafted and revoted upon until a majority can be reached. If there is no majority despite multiple rounds of voting, the original 2013 guideline statement will stand.

Appendix D: Summary of 2021 recommendations from guideline committee

| Initial colonoscopy findings | | Recommendation | Level of agreement ■ Agree ■ Disagree |
|------------------------------|---------------------------------|--|---|
| 1. | Normal or no polyps | For an average risk patient with no polyps or normal findings on colonoscopy, recommend FIT in 10 years. | 100% (consensus reached) |
| 2. | Hyperplastic polyp(s) <10mm | For an average risk patient with finding(s) of hyperplastic polyp(s) <10mm, recommend FIT in 10 years*. <small>*More than 20 hyperplastic polyps, especially if found proximal to the sigmoid colon, should lead to consideration of serrated polyposis syndrome.</small> | 100% (consensus reached) |
| 3. | Hyperplastic polyp(s) ≥10mm | For a colonoscopy finding of hyperplastic polyp(s) ≥10mm: 1. Proximal to sigmoid colon, recommend colonoscopy in 3 years*. 2. In rectosigmoid, recommend colonoscopy in 5 years. <small>*Hyperplastic polyp(s) proximal to sigmoid colon should be considered sessile serrated lesion (SSL) with colonoscopy surveillance in 3 years.</small> | 100% (consensus reached) |
| 4. | 1 or 2 tubular adenoma(s) <10mm | For a colonoscopy finding of 1 or 2 tubular adenoma(s) <10mm, recommend FIT in 5 years. | 100% (consensus reached) |
| 5. | 3 or 4 tubular adenomas <10mm | For a colonoscopy finding of 3 or 4 tubular adenomas <10mm, recommend colonoscopy in 5 years. | 100% (consensus reached) |

| | | | |
|-----|--|--|------------------------------|
| 6. | 5 to 10 tubular adenomas <10mm, or any adenoma ≥10mm, or with villous/tubulovillous features or high-grade dysplasia | For a colonoscopy finding of 5 to 10 tubular adenomas <10mm, or any adenoma ≥10mm, or with villous/tubulovillous features or high-grade dysplasia, recommend colonoscopy in 3 years. | 90% (consensus reached) |
| 7. | >10 tubular adenoma(s) | For a colonoscopy finding of more than 10 tubular adenomas, recommend colonoscopy in 1 year and genetic counselling*. <small>*Consider genetic testing referral. Patients with >10 adenomas found on colonoscopy have an increased risk for hereditary polyposis. Timely clearing colonoscopy is required to ensure that all adenomatous lesions have been removed.</small> | 100% (consensus reached) |
| 8. | 1 or 2 sessile serrated lesions <10mm | For a colonoscopy finding of 1 or 2 sessile serrated lesions <10mm, recommend colonoscopy in 5 years. | 100% (consensus reached) |
| 9. | 3 to 10 sessile serrated lesions <10mm | For a colonoscopy finding of 3 to 10 sessile serrated lesions <10mm, recommend colonoscopy in 3 years. | 100% (consensus reached) |
| 10. | One or more sessile serrated lesion(s) >10mm, or traditional serrated adenomas (any size) or SSL with dysplasia (any size) | For a colonoscopy finding of one or more sessile serrated lesion(s) >10mm, or traditional serrated adenoma(s) (any size), or sessile serrated lesion with dysplasia (any size), recommend colonoscopy in 3 years. | 100% (consensus reached) |
| 11. | Serrated polyposis syndrome | For a colonoscopy finding of serrated polyposis syndrome (SPS), recommend colonoscopy in 1 year. <i>Serrated polyposis syndrome: 1) at least five serrated lesions proximal to the rectum, with two or more that are >10mm or; 2) more than 20 serrated lesions or polyps of any size distributed throughout the large bowel, with at least five proximal to the rectum.</i> | 100% (consensus reached) |

| | | | |
|-----|---|---|--|
| 12. | Synchronous sessile serrated lesion and tubular adenoma | For a colonoscopy finding of synchronous sessile serrated lesion and tubular adenoma, no recommendation made. | <p>90% (consensus reached)</p> <p>A horizontal bar chart with a scale from 0% to 100% in 20% increments. The bar is filled with blue and extends to the 90% mark. The number '9' is written inside the blue portion, and the number '1' is written inside a small red portion at the end of the bar.</p> |
| 13. | Piecemeal resection of a large (≥ 10 mm) non-pedunculated polyp or lesion | <p>Following complete endoscopic piecemeal* removal of a large (≥ 10mm) non-pedunculated polyp or lesion, recommend first repeat endoscopic assessment in 6 months**.</p> <p><i>*Piecemeal resection is the resection of a ≥ 10mm non-pedunculated polyp or lesion, where more than one pass of the snare is required either due to size or polyp orientation.</i></p> <p><i>**For recto-sigmoid lesions, choice of limited flexible sigmoidoscopy vs full colonoscopy is at endoscopist's discretion.</i></p> <p>Subsequent colonoscopy surveillance intervals***:</p> <ul style="list-style-type: none"> ▪ If polyp ≥ 20mm, next surveillance colonoscopy in 1 year. If no reoccurrence detected at site, recommend subsequent surveillance in 3 years. ▪ If polyp ≥ 10mm-19mm, next surveillance colonoscopy in 3 years****. If no reoccurrence detected at site, recommend subsequent surveillance in 5 years. <p><i>***Endoscopist discretion to perform surveillance at an earlier interval if concern for advance histological findings or other conflicting issues.</i></p> <p><i>****Consideration for 12-month follow-up if high grade dysplasia, resection required multiple passes or challenging position noted.</i></p> | <p>100% (consensus reached)</p> <p>A horizontal bar chart with a scale from 0% to 100% in 20% increments. The bar is filled with blue and extends to the 100% mark. The number '10' is written inside the blue portion.</p> |
| 14. | Subsequent colonoscopy surveillance after high-risk lesions | <p>High risk lesions* require surveillance colonoscopy at 3 and then 5 years. If no polyps requiring surveillance are detected at both scopes, consider return to average risk FIT screening.</p> <p><i>*High risk lesions: tubular adenomas 5-10 (<10mm), ≥ 10mm, villous or HGD, or sessile serrated lesions 3-10 (<10mm), ≥ 10mm, TSA and HGD.</i></p> | <p>100% (consensus reached)</p> <p>A horizontal bar chart with a scale from 0% to 100% in 20% increments. The bar is filled with blue and extends to the 100% mark. The number '10' is written inside the blue portion.</p> |

Appendix E: Initial Colonoscopy Findings of Normal or Hyperplastic Polyp(s), Tubular Adenoma(s), and Sessile Serrated Lesion(s)

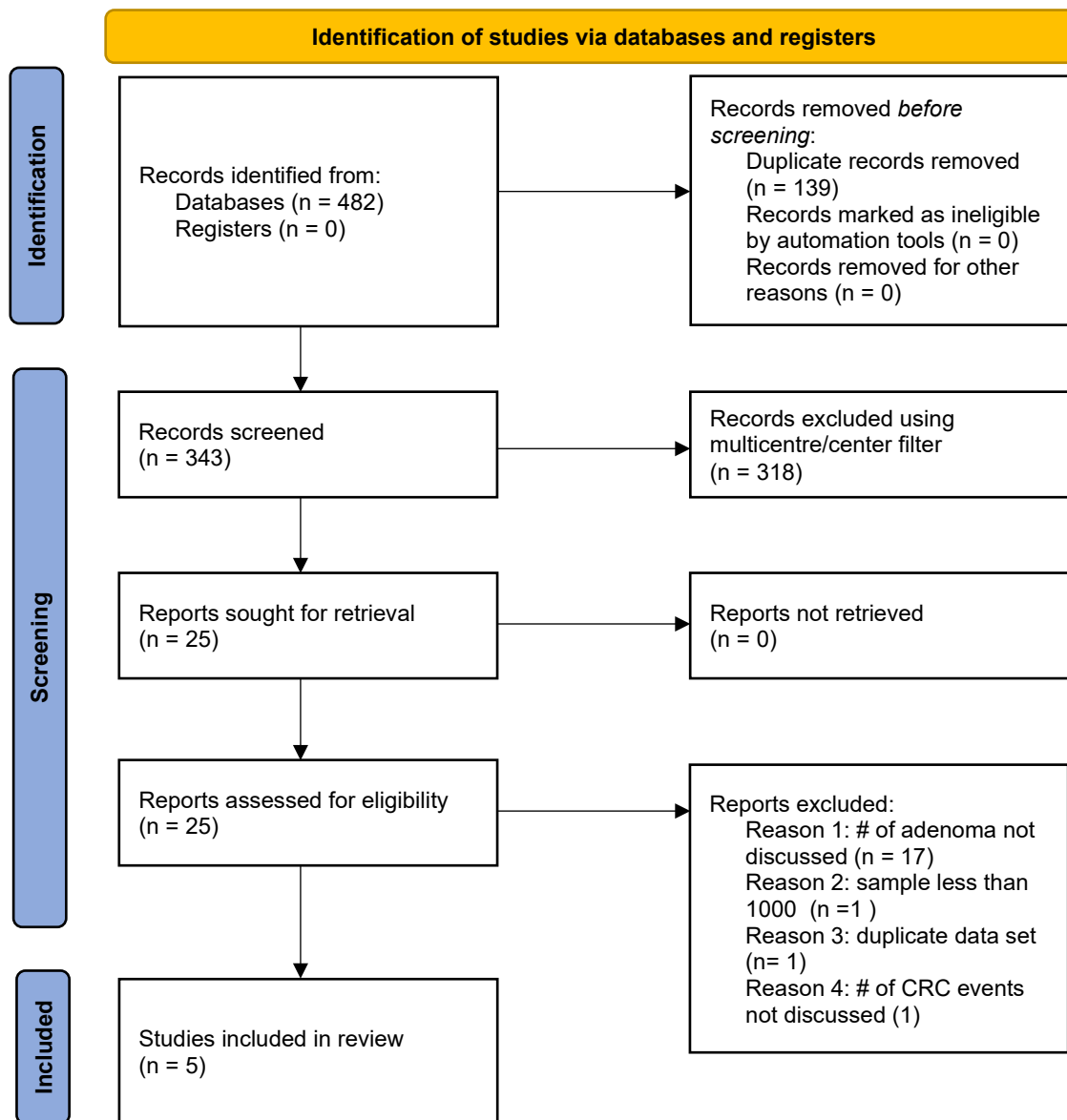
| Colonoscopy Findings: | Europe ESGE (Hassan, et al. 2020) | United States USMSTF (Gupta, et al. 2020) | Ontario CCO (Dubé, et al. 2019) | Alberta ACRCSP 2021 (new) | Alberta ACRCSP 2013 |
|------------------------------|---|--|---|---|---|
| No polyps | Return to screening | Colonoscopy in 10 years | FIT in 10 years | No colonoscopic surveillance, FIT in 10 years | FIT in 10 years |
| Hyperplastic polyp(s) <10mm | No recommendation ⁱ | Colonoscopy in 10 years (or other screening modality) if ≤20 in rectum or sigmoid colon or; Colonoscopy in 10 years if ≤20 proximal to sigmoid colon | FIT in 10 years (HP in rectum or sigmoid) | FIT in 10 years ⁱⁱ | Maintain screening interval based on underlying risk level (consider as normal) |
| Hyperplastic polyp(s) ≥10mm | 3 years ⁱⁱⁱ | Colonoscopy in 3-5 years for HP ≥10mm ^{iv} | No recommendation | Colonoscopy in 3 years if HP ≥10mm proximal to sigmoid colon ^v Colonoscopy in 5 years if HP ≥10mm in rectosigmoid | Colonoscopy in 5 years, if ≥4 HP proximal to sigmoid or any HP >5mm proximal to sigmoid |
| 1-2 Tubular Adenoma(s) <10mm | Return to screening program (or colonoscopy in 10 years if no screening program exists) | Colonoscopy 7- 10 years | FIT in 5 years | FIT in 5 years | Colonoscopy 5 – 10 years |
| 3-4 Tubular Adenomas <10mm | | 3-5 years | | Colonoscopy in 5 years | |
| 5-10 Tubular Adenomas <10mm | 3 years | 3 years | 3 years | 3 years | 3 years |
| ≥10mm in size | | | | | |
| High Grade Dysplasia | 3 years | 3 years | 3 years | 3 years | 3 years |

| Colonoscopy Findings: | Europe ESGE (Hassan, et al. 2020) | United States USMSTF (Gupta, et al. 2020) | Ontario CCO (Dubé, et al. 2019) | Alberta ACRCSP 2021 (new) | Alberta ACRCSP 2013 |
|---|---|--|---|--|--|
| Villous/Tubulovillous | Return to screening program ^{vi} | 3 years | 3 years | 3 years | 3 years |
| >10 Tubular Adenomas | Genetic counselling | 1 year and genetic counselling | Within 1 year and genetic assessment ^{vii} | Within 1 year and genetic counselling ^{viii} | < 3 years |
| Large adenoma piecemealed | Colonoscopy 3-6 months following piecemeal of polyps ≥20mm | Colonoscopy in 6 months following piecemeal of adenoma ≥20mm | N/A | Colonoscopy in 6 months following piecemeal of adenoma ≥10mm | N/A |
| 1-2 SSP <10 mm in size | Any serrated polyp without dysplasia <10 mm: Return to screening program (or colonoscopy in 10 years if no screening program exists). | Colonoscopy in 5-10 years | Colonoscopy in 5 years | Colonoscopy in 5 years | Colonoscopy in 5 years |
| 3-4 SSP <10 mm in size | | Colonoscopy in 3-5 years | | Colonoscopy in 3 years | Colonoscopy in 3 years |
| 5-10 SSP <10 mm in size | | Colonoscopy in 3 years | | Colonoscopy in 3 years | |
| ≥ 10mm in size (any number) | Colonoscopy in 3 years if dysplasia; 5 years if 1-2 <10mm or no dysplasia | | | | |
| [with] dysplasia (any size) | | | | | |
| Traditional serrated adenoma (any size) | | | | | |
| [large] SSP removed piecemeal | Colonoscopy in 3-6 months following piecemeal of polyps >20mm | Colonoscopy in 6 months | Colonoscopy in ≤6 months | Colonoscopy in ≤6 months | Repeat colonoscopy in 2-6 months, then 3 years |
| Serrated polyposis syndrome | No recommendation ^{ix} | No recommendation ^x | Colonoscopy in 1 year ^{xi} | Colonoscopy in 1 year ^{xii} | Colonoscopy in 1 year |

ESGE: European Society of Gastrointestinal Endoscopy; USMSTF: United States Multi-Society Task Force; CCO: Cancer Care Ontario; ACRCSP: Alberta Colorectal Cancer Screening Program

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- ⁱ ESGE recommends that any serrated polyp <10 mm without dysplasia does not require endoscopic surveillance and should return to screening. If organized screening not available, repetition of colonoscopy 10 years after index procedure recommended.
- ⁱⁱ More than 20 HP's, especially if found proximal to the sigmoid colon, should lead to consideration of serrated polyposis syndrome.
- ⁱⁱⁱ Serrated polyp ≥ 10 mm and with dysplasia yield similar metachronous advanced neoplasia or CRC and require surveillance at 3 years.
- ^{iv} A 3-year follow-up is favored if concern about consistency in distinction between sessile serrated polyp and hyperplastic locally, bowel prep or complete excision, whereas a 5-year interval is favored if low concerns for consistency in distinction, adequate bowel prep and confident complete excision.
- ^v HP ≥ 10 mm proximal to sigmoid colon should be considered sessile serrated lesion (SSL) and colonoscopy surveillance in 3 years.
- ^{vi} Return to screening program or colonoscopy in 10 years if no screening program exists.
- ^{vii} People with > 10 adenomas should undergo genetic assessment for familial adenomatous polyposis syndromes. The subsequent surveillance interval will depend on the results of the genetic assessment and whether the colonoscopy is cleared of polyps.
- ^{viii} Consideration for genetic testing referral. Patients with >10 adenomas found on colonoscopy have an increased risk for hereditary polyposis. Timely clearing colonoscopy is required to ensure that all adenomatous lesions have been removed.
- ^{ix} High risk conditions, such as those with serrated polyposis syndrome or hereditary syndromes should receive an individualized surveillance schedule.
- ^x Patients with cumulative >20 hyperplastic polyps distributed throughout the colon, with at least five being proximal to the rectum, as well as those with five serrated polyps proximal to the rectum > 5mm, with at least two ≥ 10 mm meet criteria for serrated polyposis syndrome and may require specialized management.
- ^{xi} Serrated polyposis syndrome: At least five serrated polyps proximal to the sigmoid colon, two of which are greater than 10mm; or any number of serrated occurring proximal to the sigmoid colon in someone who has a first degree relative with serrated polyposis; or more than 20 serrated polyps of any size throughout the colon.
- ^{xii} Serrated polyposis syndrome: At least five serrated lesions proximal to the rectum, with two or more that are >10mm, or more than 20 serrated lesion or polyps of any size distributed throughout the large bowel, with at least five proximal to the rectum.

Appendix F: Figure A. PRISMA 2020 flow diagram for evidence review of # of adenomas and risk of CRC



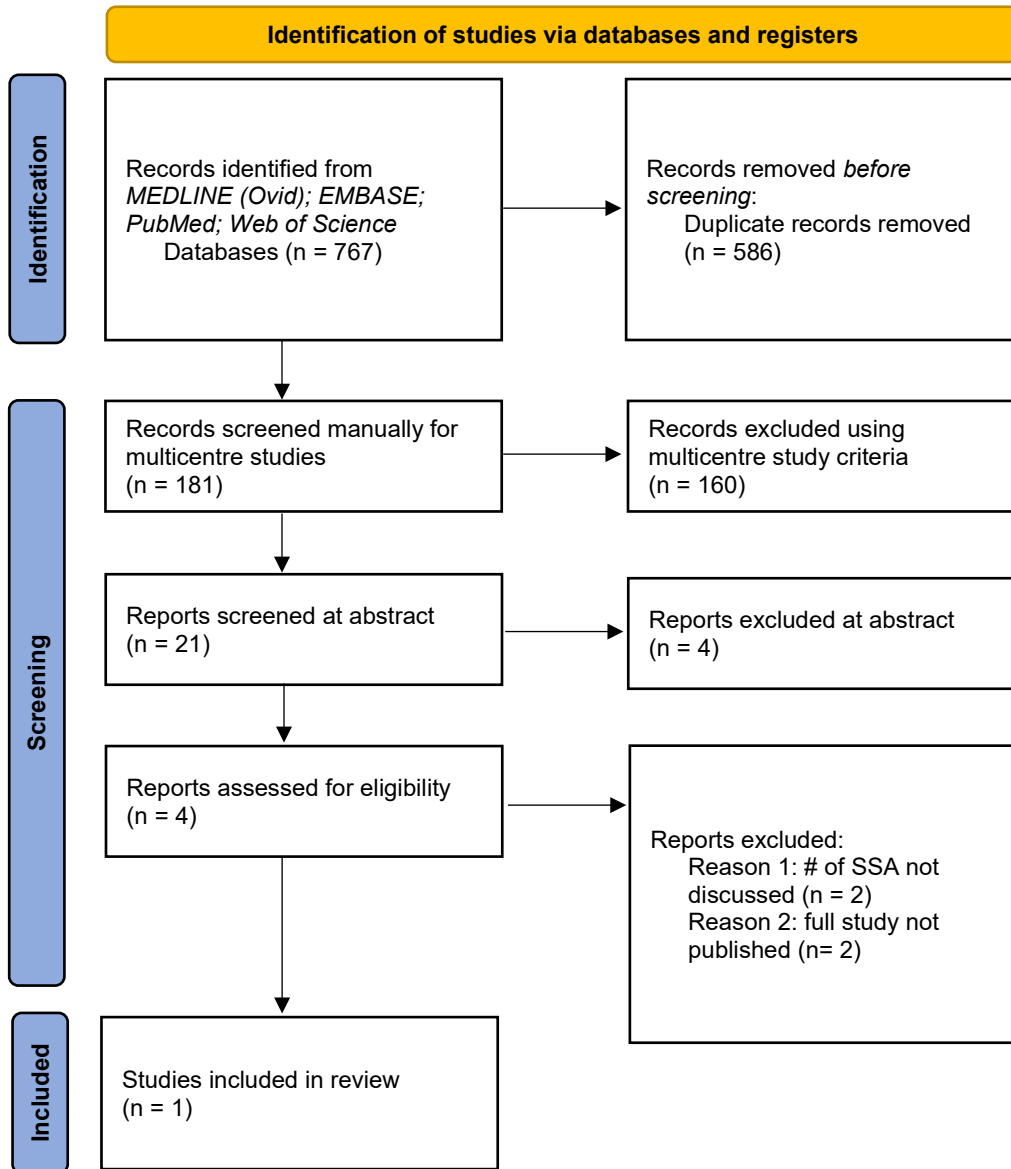
From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: <http://www.prisma-statement.org/>

Appendix G: Number of Adenoma and CRC Incidence – Evidence Review Table

| Study | 1-2 TA | | No adenoma | | Risk | ≥3 TA | | No adenoma | | Risk |
|---------------------------------------|----------------------|--------|------------|---------|-----------------------------------|---------------------------|--------|------------|---------|-----------------------------------|
| | Events | Total | Events | Total | | Events | Total | Events | Total | |
| 1. Anderson, JC et al. 2018 | 114 | 1410 | | | | 22 | 164 | | | |
| 2. Atkin, W, Wooldrage, K et al. 2017 | 200 | 10,915 | | | | 10 | 1029 | | | |
| 3. Click, B et al. 2018 | 48 (1-2TA) | 4496 | 71 | 7985 | ARR 1.2 (0.5 to 2.9) P=0.19 | 7 (≥3 TA) | 572 | 71 | 7985 | ARR 1.3 (0.9 to 1.9) P=0.73 |
| 4. Cross, AJ et al. 2020 | 195 (Low risk) | 14,401 | | | | 14 (intermediate risk) | 1006 | | | |
| 5. Wieszczy, P et al. 2020 | 58 (Low risk, 1-2TA) | 26,536 | 309 | 194,311 | SIR 0.35 (0.26 to 0.45) | 72 (High risk, ≥3 TA) | 15,242 | 309 | 194,311 | SIR 0.65 (0.51 to 0.82) |

ARR= adjusted risk ratio, SIR= standardized incidence ratio

Appendix H: Figure B. PRISMA 2020 flow diagram for evidence review of # of sessile serrated polyps and risk of CRC



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: <http://www.prisma-statement.org/>