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CLINICAL PRACTICE UPDATE: EXPERT REVIEW

AGA Clinical Practice Update on Strategies to Improve Quality of Screening and Surveillance Colonoscopy: Expert Review

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The purpose of this American Gastroenterological Association Institute Clinical Practice Update was to review the available evidence and provide best practice advice regarding strategies to improve the quality of screening and surveillance colonoscopy. This review is framed around 15 best practice advice statements regarding colonoscopy quality that were agreed upon by the authors, based on a review of the available evidence and published guidelines. This is not a formal systematic review and thus no formal rating of the quality of evidence or strength of recommendation has been carried out.

Keywords: Colonoscopy; Quality; Screening; Surveillance.

Colonoscopy is an effective and widely used screening modality for reducing colorectal cancer (CRC) incidence and mortality.[1] However, the efficacy of colonoscopy varies widely among endoscopists, and lower-quality colonoscopies are associated with higher interval CRC incidence and mortality.[2,3]

Key components of high-quality colonoscopy include ensuring effectiveness (detecting CRC and its precursors), safety (minimizing adverse events), and value (avoiding unnecessary costs). In this document, we provide guidance on metrics and practices that contribute to high-quality screening and surveillance colonoscopy (Figure 1). Measurement and improvement can be done on both an endoscopist level and unit level. For uncommon outcomes (eg, adverse events) or metrics that reflect system-based practice (eg, bowel preparation quality), measurement of aggregate unit-level performance is best. In contrast, for metrics that primarily reflect colonoscopist skill (eg, adenoma detection rate [ADR]), endoscopist-level measurement is preferred to enable individual feedback.

This expert review was commissioned and approved by the American Gastroenterological Association Institute Clinical Practice Updates Committee and the American Gastroenterological Association Governing Board to provide timely guidance on a topic of high clinical importance to the American Gastroenterological Association membership, and underwent internal peer review by the Clinical Practice Updates Committee and external peer review through standard procedures of *Gastroenterology*.

A summary of the Best Practice Advice statements is provided in Table 1.

Best Practice Advice 1: Endoscopy units should measure bowel preparation quality routinely, at a minimum annually, on a unit level. Adequate bowel preparation (defined as a Boston Bowel Preparation Scale score ≥6, with each segment score ≥2) should be achieved in ≥90% (≥95% aspirational target) of screening and surveillance colonoscopies.

A high-quality bowel preparation is integral to the detection of colorectal polyps; suboptimal cleansing may lead to failed detection of flat or otherwise subtle polyps.[4,5] The impact of an inadequate preparation may be particularly pronounced in the proximal colon, reducing detection of both adenomas and sessile serrated lesions (SSLs).[6,7] Preparation quality varies based on patient, endoscopist, and system factors.[8–10] Measurement allows endoscopy units to identify areas for improvement and implement evidence-based solutions to improve preparation quality.

Two of the most commonly used rating scales are the modified Aronchick score, a single score reflecting the overall quality of the bowel preparation (ie, excellent, good, fair, poor, or inadequate), and the Boston Bowel Preparation Scale (BBPS), which provides scores ranging from 0 (unprepared colon) to 3 (entire segment of colon well seen) for each colon segment (right, transverse, and left colon).[11] The BBPS is preferred because it is applied after cleaning and has been rigorously validated.[12] An "adequate" preparation is defined as an overall BBPS score of $\geq$6, with each segment score $\geq$2.[13]

Best Practice Advice 2: Endoscopy units should use a split-dose bowel preparation as the standard preparation strategy in patients undergoing colonoscopy.

Reducing the lag time from completion of the bowel purgative to the start of the colonoscopy procedure improves preparation quality.[14] This has led to the split-dose bowel preparation in which one-half to three-quarters of the purgative is taken the evening before colonoscopy and the remainder 4–6 hours before the start of colonoscopy.[15,16] Several randomized controlled trials and meta-analyses demonstrate the superiority of split-dose vs evening before dosing for bowel cleansing[17–21] and detection of

Abbreviations used in this paper: ADR, adenoma detection rate; BBPS, Boston Bowel Preparation Scale; CRC, colorectal cancer; SDR, serrated polyp detection rate; SSL, sessile serrated lesion; WT, withdrawal time.

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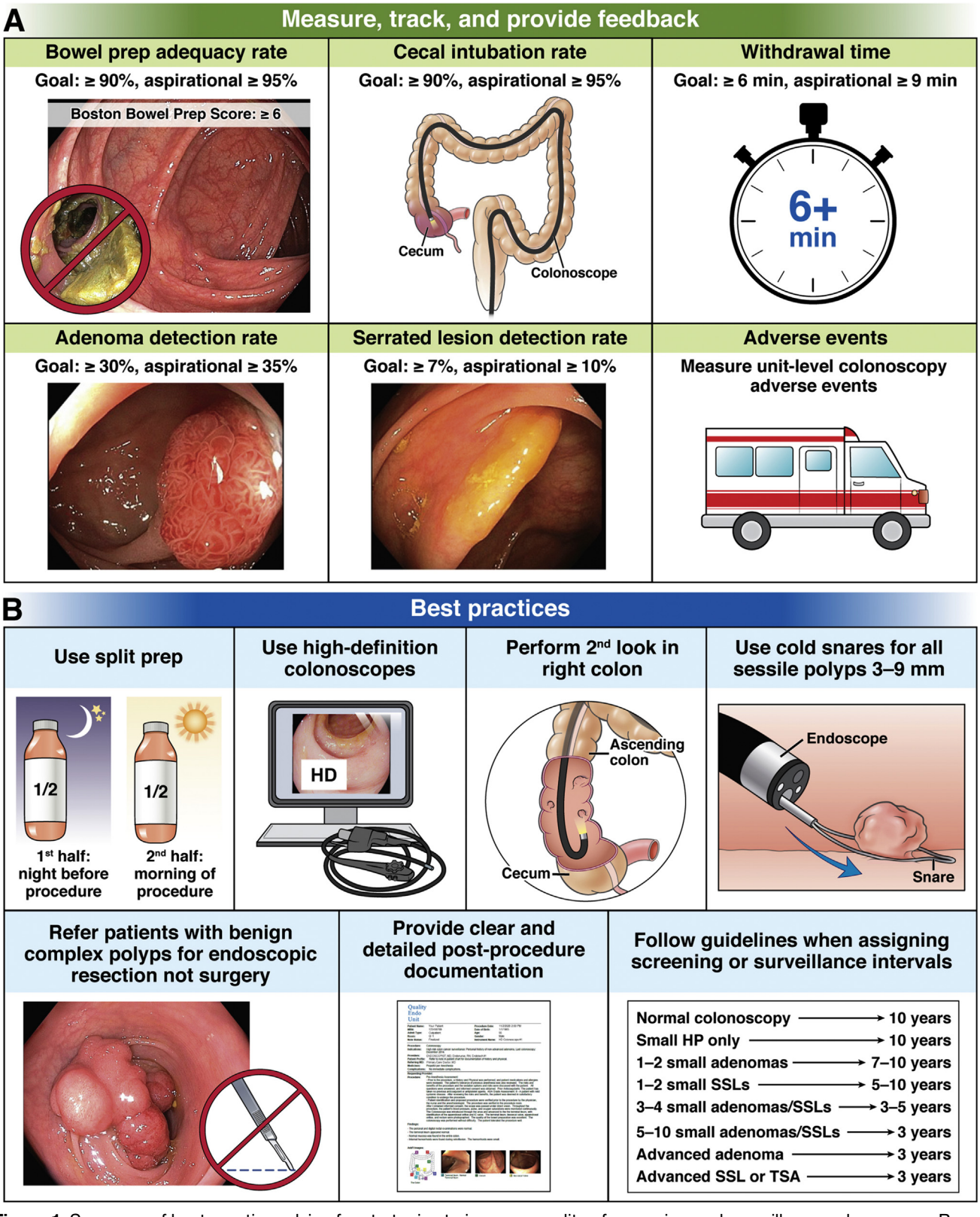

Figure 1. Summary of best practice advice for strategies to improve quality of screening and surveillance colonoscopy. Bowel preparation adequacy and adverse events should be measured at the unit level. ADR and SDR should be measured at both the unit and endoscopist level. Cecal intubation rate and withdrawal time should be measured at the endoscopist level.

Table 1. Best Practice Advice Regarding Strategies to Improve the Quality of Screening Colonoscopy

BPA	Statement
1	Endoscopy units should measure bowel preparation quality routinely, at a minimum annually, on a unit level. Adequate bowel preparation (defined as a BBPS score ≥6, with each segment score ≥2) should be achieved in ≥90% (≥95% aspirational target) of screening and surveillance colonoscopies.
2	Endoscopy units should use a split-dose bowel preparation as the standard preparation strategy in patients undergoing colonoscopy.
3	Bowel preparation instructions should be clearly written at a sixth-grade reading level in the patient's native language. Units with suboptimal bowel preparation quality should augment preprocedure instructions with additional patient education and support.
4	Endoscopy units should use high-definition colonoscopes for screening and surveillance colonoscopy.
5	Endoscopy units should measure cecal intubation rates on an endoscopist level. Cecal intubation rates should be ≥90% (aspirational ≥95%). The cecal landmarks (appendiceal orifice and ileocecal valve) should be photodocumented in colonoscopy reports.
6	Endoscopy units should measure withdrawal times on an endoscopist level. Mean withdrawal times among normal colonoscopies should be ≥6 minutes (aspirational target ≥9 minutes).
7	Endoscopists should perform a second look of the right colon, either in retroflexed or forward view, to improve the detection of polyps.
8	Endoscopy units should measure and provide feedback on adenoma detection rate at both the endoscopist and unit level on a routine basis, at a minimum annually or when endoscopists have accrued 250 screening colonoscopies.
9	The goal adenoma detection rate for an individual endoscopist should be ≥30% (aspirational target ≥35%). Endoscopists not meeting these thresholds may consider extending withdrawal times, self-learning regarding mucosal inspection and polyp identification, peer feedback, and other educational interventions.
10	Endoscopy units should measure and provide feedback on serrated lesion detection rates on an endoscopist- and unit- level. The goal serrated lesion detection rate for an individual endoscopist should be ≥7% (aspirational target ≥10%). If rates are low, improvement efforts should be oriented toward both colonoscopists and pathologists.
11	Cold snare polypectomy, aiming for a small rim of normal tissue around the polyp, should be used for nonpedunculated polyps 3–9 mm in size. Forceps should generally be avoided for polyps >2 mm in size.
12	Patients with complex polyps without overt malignant endoscopic features or pathology consistent with invasive adenocarcinoma should be evaluated by an expert in polypectomy to attempt endoscopic resection.
13	Endoscopists should document colonoscopy with a detailed report, including procedure indication, extent of examination, bowel preparation quality, findings and interventions, and follow-up plan with rationale.
14	Endoscopy units should inform patients undergoing colonoscopy of the potential for adverse events, warning symptoms, and emergency contact information. Units may consider systematic monitoring of delayed adverse events, including post-procedure bleeding, perforation, hospital readmission, 30-day mortality, and/or interval colorectal cancer cases, and report these adverse event rates at the unit level.
15	Endoscopists should follow current guidelines to assign appropriate screening and surveillance intervals. All patients with advanced adenomas should have repeat colonoscopy in 3 years. Average-risk patients with normal screening colonoscopies or those with only small distal hyperplastic polyps should not undergo repeat examinations before 10 years.

BPA, Best Practice Advice.

adenomas, advanced adenomas, and SSLs.[22,23] Patient tolerability and acceptability of split-dose regimens is comparable if not superior to evening-before dosing.[23] For afternoon examinations, same-day bowel preparation, wherein the purgative is only taken the morning of the procedure and finished 2–4 hours before the scheduled appointment, is equally efficacious to split-dose and may be preferred due to less disruption of regular activities and sleep.[24,25]

Best Practice Advice 3: Bowel preparation instructions should be clearly written at a sixth-grade reading level in the patient's native language. Units with suboptimal bowel preparation quality should augment preprocedure instructions with additional patient education and support.

More than one-third of the US population has limited health literacy, with a higher prevalence in underserved groups. Patients with limited health literacy have difficulty understanding colonoscopy instructions, especially when lengthy, complex, or filled with medical jargon.[26] Thus, colonoscopy instructions should be written at a sixth-grade (or lower) reading level to reduce rates of inadequate preparation.[27] Similarly, non-English speakers may have difficulty interpreting bowel preparation instructions, and use of language-concordant written instructions effectively improves colonoscopy preparations.[28] Preparation instructions

in various languages are publicly available[29] and can be tailored for use in different practice settings.

In addition to written instructions, both instructional videos and patient navigation (using trained staff to help patients overcome barriers to care) can improve colonoscopy completion rates and bowel preparation adequacy, particularly in low literacy populations.[30–32] Recently, technology interventions, including smartphone applications and text messaging, have been successfully implemented to improve bowel preparation quality, although these tools may not be as universally effective as traditional patient navigation.[33,34]

Best Practice Advice 4: Endoscopy units should use high-definition colonoscopes for screening and surveillance colonoscopy.

The use of high-definition colonoscopes clearly improves polyp detection. A recent meta-analysis of randomized controlled trials confirms a definite, but modest, impact on adenoma, serrated polyp, and advanced adenoma detection rates with the use of high-definition colonoscopes.[35] Although high-definition imaging is now a standard feature of newer-generation endoscopes, many legacy lower-definition instruments still remain in circulation. Available evidence suggests that upgrading older equipment to high-definition colonoscopes is likely an effective strategy for endoscopy units to improve the quality of screening and surveillance colonoscopy.

Best Practice Advice 5: Endoscopy units should measure cecal intubation rates on an endoscopist level. Cecal intubation rates should be ≥90% (aspirational ≥95%). The cecal landmarks (appendiceal orifice and ileocecal valve) should be photodocumented in colonoscopy reports.

Examining the entire colon length is of critical importance for screening and surveillance colonoscopy and requires intubation and thorough inspection of the cecum. Failure to intubate the cecum should occur rarely among skilled endoscopists, except in cases of inadequate bowel preparation or obstructing lesions. Lower cecal intubation rates are associated with diminished detection of neoplasia, higher incidence of interval CRC, and add cost and logistical complexity due to need for repeat colonoscopy or alternative testing.[36,37] The denominator of cecal intubation rate should include all screening and surveillance colonoscopies. Overall target should be ≥90%, and if examinations with inadequate bowel preparation are excluded, a target of ≥95% is suggested. Cecal landmarks, including the appendiceal orifice and ileocecal valve, should be phototodocumented.[38] Limited evidence suggests that proper use of loop reduction techniques, carbon dioxide insufflation, and variable stiffness endoscopes can improve cecal intubation rates in low performers.[39,40]

Best Practice Advice 6: Endoscopy units should measure withdrawal times on an endoscopist level. Mean withdrawal times among normal colonoscopies should be ≥6 minutes (aspirational target ≥9 minutes).

Inspection of the colon for polyps and cancer, essential to high-quality colonoscopy, occurs chiefly during the withdrawal phase. The mean withdrawal time (WT, ie, time between cecal intubation and procedure completion) of an endoscopist's normal cases (ie, no biopsies or polypectomy) is clearly linked to adenoma detection.[41] A threshold value of ≥6 minutes differentiates endoscopists with higher detection of both adenomas and advanced neoplasia, and has also been linked to a lower risk of post-colonoscopy CRC.[36,41,42] For these reasons, practice guidelines recommend a minimum 6-minute WT.[43,44] However, incremental gains in detection of both adenomas and SSLs are seen among endoscopists with WT of 9 minutes or greater.[45] Of note, WT is likely a surrogate for the quality of inspection, and is most valuable when monitored along with ADR. Simply increasing WT without a commensurate focus on inspection quality may not improve ADR.[46] Among endoscopists with substandard ADRs and lower WT, improving the quality and time spent inspecting the mucosa can improve ADR and overall colonoscopy quality.[47]

Best Practice Advice 7: Endoscopists should perform a second look of the right colon, in either retroflexed or forward view, to improve the detection of polyps.

The right colon is the most frequent location for missed CRCs and polyps. This is due in large part to the prevalence of flat and serrated polyps in the proximal colon that are difficult to visualize even when bowel preparation is adequate.[48,49] A second look of the right colon can increase ADR by 5%–20%.[50,51] After inserting the colonoscope into the base of the cecum and withdrawing to the level of the hepatic flexure, while carefully inspecting the mucosa and removing any polyps, the cecum is reintubated for a second examination of the proximal colon to look for additional polyps that may have been missed. Several randomized controlled trials and a systematic review have found retroflexion and forward views to be equally effective in increasing ADR on second look.[52,53] A second look of the right colon, either in forward or retroflexed view, should be considered a best practice and is particularly important if there were any polyps on first look or any doubt about the completeness of the initial inspection.

Best Practice Advice 8: Endoscopy units should measure and provide feedback on adenoma detection rate at both the endoscopist and unit level on a routine basis, at a minimum annually or when endoscopists have accrued 250 screening colonoscopies.

ADR varies up to 5-fold[54,55] among colonoscopists. Unless ADR is measured, colonoscopists will be unaware of their performance relative to peers. The standard denominator for ADR is all screening colonoscopies performed in patients aged 50–75 years; surveillance and diagnostic colonoscopies are excluded. The numerator is colonoscopies with confirmed adenomas; serrated polyps are excluded. To increase the precision of ADR measurement, units should consider calculating at intervals of at least 250 screening colonoscopies.[56] In most units, this will translate into measurement semi-annually (if high volume) or annually (if lower volume). The impact of initiating screening at age 45 years on ADR is unclear and requires further study.

There is robust evidence to suggest that regular "report cards" with performance relative to peers and benchmark, also known as "audit and feedback," are modestly effective,

particularly for low-performing colonoscopists.[55,57,58] Receipt of a report card that demonstrates lower performance may prompt self-reflection to guide efforts to improve ADR.[55,57,58]

Best Practice Advice 9: The goal adenoma detection rate for an individual endoscopist should be ≥30% (aspirational target ≥35%). Endoscopists not meeting these thresholds may consider extending withdrawal time, self-learning regarding mucosal inspection and polyp identification, peer feedback, and other educational interventions.

Although prior guidelines suggested that an ADR of at least 25% is adequate,[38,59] recent data suggest that the risk of interval CRC is further reduced when the ADR is roughly 35% or higher.[3,60] Furthermore, improvements in ADR are associated with a reduced interval CRC risk.[61] Colonoscopists with an ADR <30% (and certainly <25%) should undergo focused efforts to improve ADR, as detailed below. Although we hypothesize that an even higher ADR (≥35%) would be associated with an additional impact on interval CRC incidence based on their apparent linear relationship, as ADR improved from 19% to 33.5% in prior research,[3] additional high-quality studies are needed to confirm this. As adenoma prevalence is significantly higher in males than females, calculation of sex-based ADRs may be needed for clinicians with a significantly male- or female-predominant practice.

Overall, educational interventions (including addressing the importance of adequate WT, looking behind folds, cleaning the colon, and how to recognize subtle lesions) directed at the endoscopist seem most effective in improving ADR.[62,63] In a large study of colonoscopists of diverse quality, hands-on training with local leaders improved ADR significantly more compared with quality feedback alone.[64] A primary component of any educational interventions should be the identification of quality improvement "champions" within each unit to ensure sustainability.

Providers seeking to further improve ADR can choose from a variety of readily available evidence-based techniques. Use of electronic chromoendoscopy (eg, narrow band imaging) during the withdrawal phase of colonoscopy resulted in a higher ADR among experienced colonoscopists[65] and can be particularly helpful for detection of flat lesions.[66] Accessory devices that attach to the distal tip of the colonoscope can help improve mucosal exposure and facilitate polyp detection, and are associated with modest improvements in ADR.[67,68] Finally, *water exchange*, defined as instilling and suctioning water during the insertion of the colonoscope without the use of air or carbon dioxide, can also improve ADR, likely due to improved cleansing of the colon.[69]

Best Practice Advice 10: Endoscopy units should measure and provide feedback on serrated lesion detection rates on an endoscopist and unit level. The goal serrated lesion detection rates for an individual endoscopist should be ≥7% (aspirational target ≥10%). If rates are low, improvement efforts should be oriented toward both colonoscopists and pathologists.

Serrated lesion detection rates (SDRs) is calculated analogously to ADR, as the number of screening colonoscopies with 1 or more SSLs divided by the total number of screening colonoscopies for a given time period. Multiple studies have demonstrated significant variability of SDR between colonoscopists.[70,71] There is also a clear association between colonoscopy WT and SDR, suggesting that quality of inspection impacts SDR.[45] Benchmarking for SDR suggests that an SDR ≥7% should be achieved in a screening colonoscopy practice.[72] There is emerging evidence that audit and feedback of SDR results in higher SDR over time.[73] Importantly, SSLs can be underdiagnosed by pathologists. Therefore, SDR is dependent on pathologist interpretation, more so than ADR.[74] Any remediation must focus on both the colonoscopist and reading pathologists. Although both ADR and SDR may be measured, they are highly correlated; if only 1 can be collected, ADR should be prioritized. A potential limitation to calculating SDR is also the larger denominator required to obtain a confident estimation of quality (given the lower prevalence of SSLs). Calculating SDR with a denominator of at least 500 screening colonoscopies, or annually, is preferred.

Best Practice Advice 11: Cold snare polypectomy, aiming for a small rim of normal tissue around the polyp, should be used for nonpedunculated polyps 3–9 mm in size. Forceps should generally be avoided for polyps >2 mm in size.

Effective and safe polyp removal requires appropriate device selection, as well as proper technique and adequate skill of the endoscopist. Polypectomy quality is variable in practice with residual neoplasia found in approximately 14% of post-polypectomy sites.[75] Appropriate selection of polypectomy tools is based on the size and morphology of the polyp and is an important factor in ensuring adequate resection and avoiding post-polypectomy adverse events. The use of standard cold forceps for polypectomy is discouraged due to the high risk of residual neoplasia,[76] and hot biopsy forceps should not be used due to potential for deep thermal injury.[77] However, larger "jumbo" forceps can be useful for removal of diminutive polyps ≤2 mm in size or polyps ≤5 mm that are in challenging locations that preclude use of a snare. Forceps should not be used as a primary modality for removal of polyps >5 mm. The available data support cold snare polypectomy as the dominant strategy for sessile polyps 3–9 mm. Compared with hot snare polypectomy, cold snare polypectomy is equally efficacious,[78] substantially reduces the risk of delayed post-polypectomy bleeding,[78,79] avoids risk of thermal injury, and likely reduces the risk of polypectomy-associated bleeding and perforation.[80]

Research on methods to improve polypectomy technique are limited. Recording colonoscopists' polypectomy technique with focused feedback improved polypectomy technique (as rated by experts), but this impact was demonstrated on diminutive and small polyps and it is unclear whether this actually improves completeness of polypectomy.[81] Until higher-quality data are available, at a minimum, units should consider emphasizing the best practice of polypectomy,

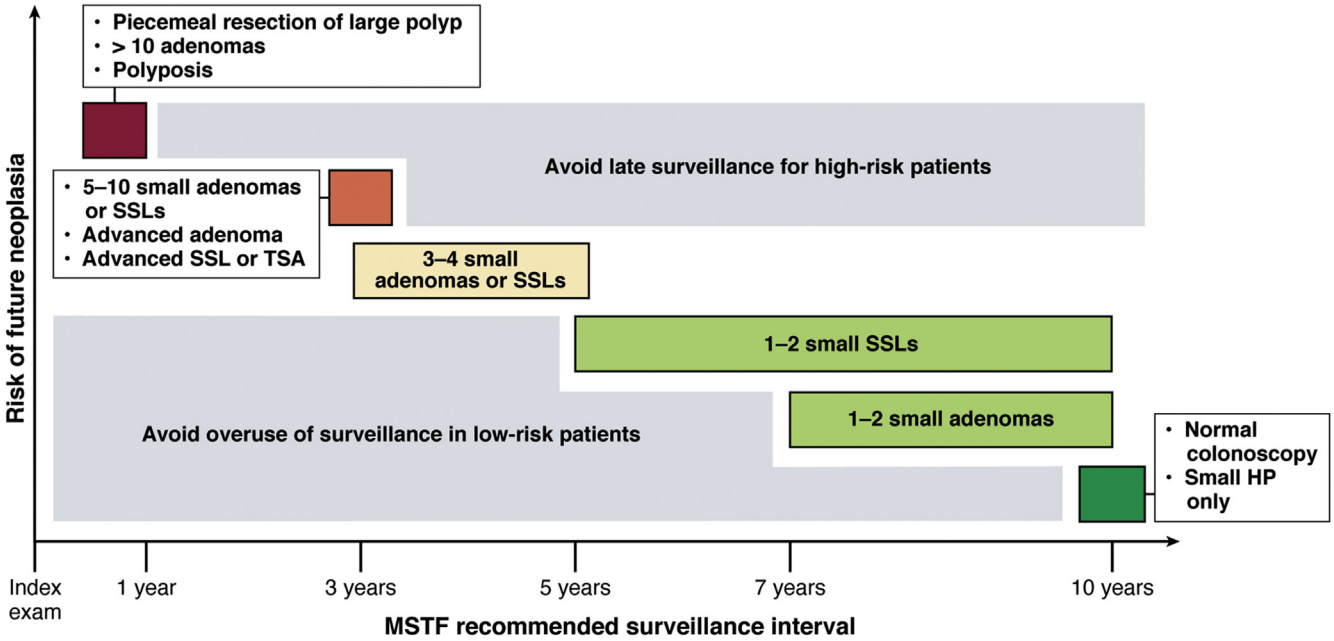

Figure 2. Key points for appropriate utilization of colonoscopy surveillance based on index examination findings. Avoiding late surveillance in high-risk patients (such as those with advanced lesions or many adenomas) can help prevent interval development of metachronous advanced lesions or CRC. Conversely, avoiding overuse of surveillance in low-risk patients (such as those with negative examinations, hyperplastic polyps (HPs) only, or 1–2 small adenomas or serrated polyps) can help avoid unnecessary cost and risk associated with low-yield colonoscopies. MSTF, Multi-Society Task Force; TSA, traditional serrated adenoma.

including use of cold techniques for polyps <1 cm, as well as avoiding forceps except for polyps ≤2 mm.

Best Practice Advice 12: Patients with complex polyps without overt malignant endoscopic features or pathology consistent with invasive adenocarcinoma should be evaluated by an expert in polypectomy to attempt endoscopic resection.

Many patients with nonmalignant colon polyps continue to undergo surgical rather than endoscopic resection,[82] despite clear evidence that endoscopic resection of these polyps is more cost-effective with a lower adverse event rate than surgical resection.[83] In part, this may be due to many colonoscopists who do not perform complex polypectomy incorrectly assessing a "large" polyp as malignant.[84] We advise that all colonoscopists receive education on endoscopic features of covert malignancy, including lesions with a depressed component and nongranular lesions.[85] Furthermore, when no overt features of deep invasion are present, patients should be offered an option to undergo endoscopic resection of a large or complex polyp. For nonmalignant lesions, partial polyp removal, injection of tattoo underneath the polyp, and multiple biopsies should be avoided due to potential for inducing fibrosis that makes future endoscopic resection technically challenging.[86]

Best Practice Advice 13: Endoscopists should document colonoscopy with a detailed report, including procedure indication, extent of examination, bowel preparation quality, findings and interventions, and follow-up plan with rationale.

Thorough and standardized documentation after colonoscopy facilitates communication with patients and referring providers and promotes the ability to measure quality within and across practices. A standardized colonoscopy reporting and data system, termed *CO-RADS*, was developed by the National Colorectal Cancer Roundtable in 2007.[87] Recommended elements include patient demographics and history, assessment of patient risk and comorbidity, indication for procedure, technical description of the procedure, findings, assessment, interventions and unplanned events, follow-up plan, and pathology results. The technical description of the procedure should include the extent of examination, bowel preparation adequacy, and WT, where appropriate. The follow-up plan should include resumption of medications, including anticoagulants and antiplatelet agents. Pathology results and follow-up interval recommendations should be communicated to patients and their primary care providers, and documented in the patient chart. If the recommended interval for next colonoscopy deviates from standard guidelines, a rationale should be provided to support the recommendation (eg, inadequate preparation or incomplete polyp resection).

Best Practice Advice 14: Endoscopy units should inform patients undergoing colonoscopy of the potential for adverse events, warning symptoms, and emergency contact information. Units may consider systematic monitoring of delayed adverse events, including post-procedure bleeding, perforation, hospital readmission, 30-day mortality, and/or interval colorectal cancer cases, and report these adverse event rates at the unit level.

The benefits of screening and surveillance colonoscopy must be balanced against the potential harms. Colonoscopy is associated with a risk of serious adverse events, even among healthy individuals. The most serious colonoscopy adverse events include perforation of the colon; adjacent

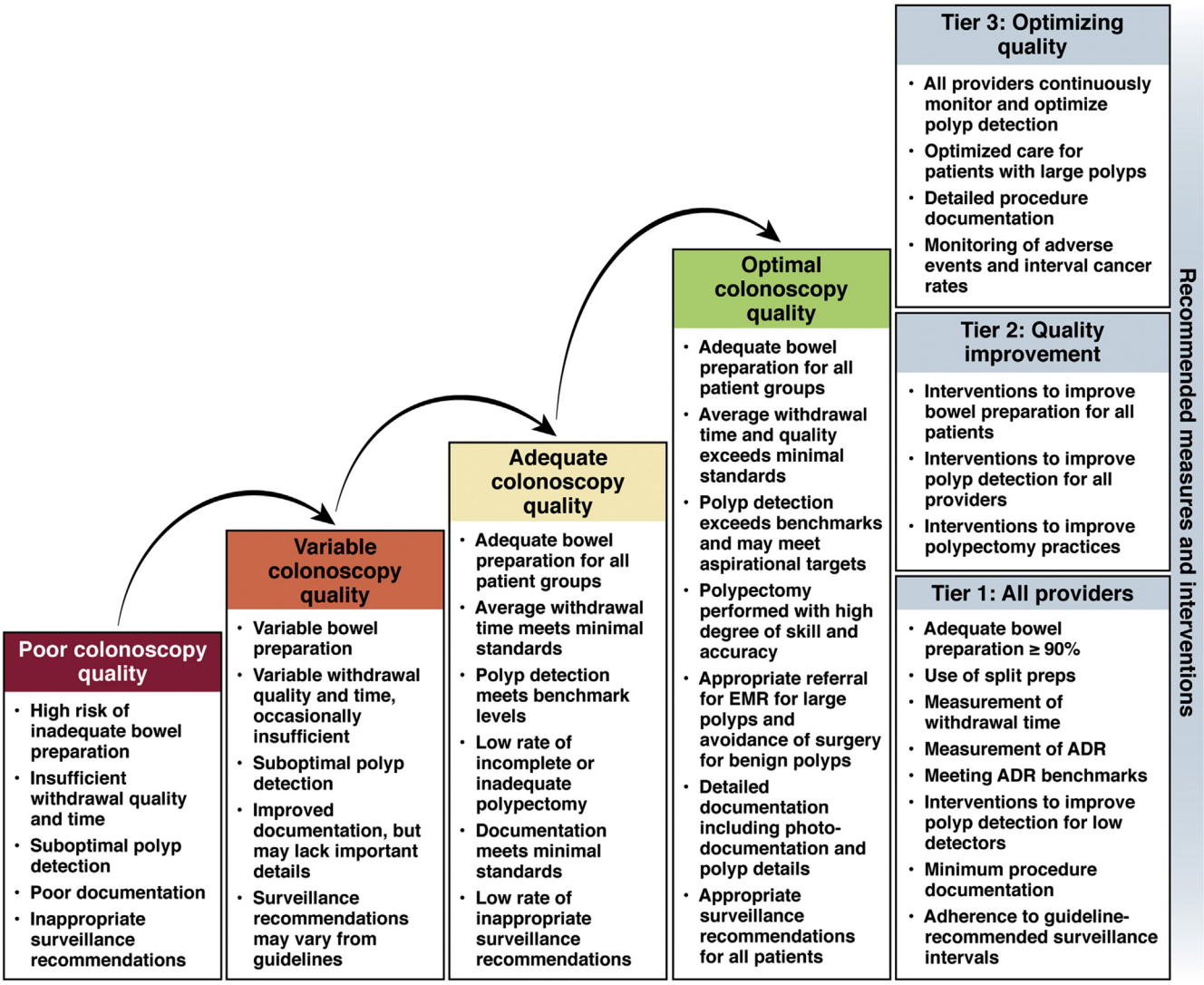

Figure 3. Tiers of colonoscopy quality and features of endoscopists and practices that provide optimal care for patients undergoing endoscopic CRC screening and surveillance.

organ injury, such as splenic rupture; and serious post-procedure bleeding. Delayed bleeding and perforation is uncommon after routine colonoscopy (approximately 0.24% and 0.06%, respectively).[88] However, the bleeding and perforation risk increases substantially when performing endoscopic resection of large polyps using cautery (4.3%–7.6%[89] and 0.2%–0.6%,[89,90] respectively), although these adverse event rates predominantly reflect polypectomy performed by higher-volume experts. Most adverse events occur within 14 days of colonoscopy, with the risk increasing with patient age and comorbidity and performance of polypectomy.[91,92] At a minimum, all patients undergoing colonoscopy should be educated by the colonoscopist performing the procedure about the range of possible post-procedure adverse events and associated symptoms. Units should provide contact information for the practice and instruct patients to contact them or seek emergency care if they develop severe abdominal pain, fever, significant bleeding, or other worrisome symptoms after the procedure. Endoscopy units, particularly larger practices, may also consider adopting a process for systematic monitoring of delayed adverse events, such as scheduled phone calls, and monitoring of administrative data regarding post-procedure bleeding and perforation events, hospital readmission or emergency department visits, patient deaths, and interval CRC events.[93] Serious adverse events, such as perforations, deaths, and interval CRC cases should be reviewed for quality improvement purposes.

Best Practice Advice 15: Endoscopists should follow current guidelines to assign appropriate screening and surveillance intervals. All patients with advanced adenomas should have repeat colonoscopy in 3 years. Average-risk patients with normal screening colonoscopies or those with only small distal hyperplastic polyps should not undergo repeat examinations before 10 years.

The effectiveness and value of a colonoscopy screening program depends on ensuring appropriate follow-up of patients based on findings. The US Multi-Society Task Force guidelines help with accurate risk stratification and

assignment of appropriate surveillance intervals (Figure 2).[94] Guidelines adherence can help avoid under- and over-utilization of surveillance colonoscopy, prevent interval CRC, and avoid unnecessary harms and costs. Importantly, patients harboring advanced precancerous lesions are at highest risk of metachronous advanced neoplasia and should have a follow-up colonoscopy $\leq$3 years after the index examination.[95,96] In contrast, average-risk patients who undergo a high-quality colonoscopy negative for precancerous polyps or with only small distal hyperplastic polyps have a very low risk of future neoplasia, and should not be rescreened for 10 years.[1] There is also increasing evidence that patients with 1–2 small adenomas (and especially 1–2 diminutive adenomas) are not at significantly elevated risk of CRC compared with the general population, and endoscopists should consider assigning a 10-year follow-up interval for this group as well.[96–98]

Conclusions

Screening and surveillance colonoscopy is an evolving procedure dependent on training, technique, and technology to ensure high-quality performance. As such, endoscopists and endoscopy units should commit to continuous monitoring and optimization of colonoscopy quality in order to provide the best care for their patients. If limited resources are available, measurement of cecal intubation rates, bowel preparation quality, and ADR should be prioritized (Figure 3). We anticipate future work to clarify optimal polyp resection techniques, refine surveillance intervals based on provider skill and patient risk, and highlight the benefits of artificial intelligence in improving colonoscopy quality.

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Conflicts of interest
This author discloses the following: Rajesh N. Keswani: Consultant, Boston Scientific. The remaining authors disclose no conflicts.