Parameters That Define a Successful Colonoscopy

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Introduction

When used properly, colonoscopy is the most powerful strategy for the primary and secondary prevention of colorectal cancer (CRC).1 However, the efficacy and safety of this procedure is dependent on a variety of factors, including operator skill and experience, quality of examination, achievement of goal-directed end points, compliance with guideline recommendations, and multiple technical aspects regarding patient preparation for the procedure and the procedure itself.1,2

As with other areas of clinical medicine, currently there is a concerted shift to define the critical aspects of quality delivery of colonoscopy in an effort to increase the related utility and optimize the effect, while simultaneously limiting unnecessary health care expenditures and patient risk. Future colonoscopy quality regulations may cause confusion among endoscopists, particularly long-practicing clinicians or those practicing individually outside of a hospital system. Thus, standardizing the process for illustrating how value-based care is delivered and at least 15% in women.13 These measures already are being used within voluntary central registries that are designed to track colonoscopy quality to identify providers and programs that would benefit from specific quality improvement training.

However, medical societies already are looking beyond these established measures toward the next iteration of quality end points. For example, experts have noted that multiple (rather than solitary) adenomas usually are present in the colon and that an endoscopist who finds one adenoma per colonoscopy receives the same ADR quality assessment as another endoscopist who finds multiple adenomas.14 Because every adenoma carries some risk for malignancy, it is likely that these 2 endoscopists provide different levels of CRC protection, although they receive an equal quality assessment via the ADR metric.14 Therefore, investigators have advanced the concept of tracking the “ADR-plus” rate—defined as the detection of more than one adenoma per colonoscopy—as a measure of quality. Wang and colleagues demonstrated how the use of the ADR-plus rate could further differentiate quality performance among endoscopists who had the same conventional ADR score (Figure).14

The recognition and management of sessile serrated lesions such as sessile serrated adenomas also is likely to emerge as an indicator of quality of colonoscopy. Such lesions tend to appear flat or depressed and covered

Table 1. Quality Indicators for Colonoscopy

<table>
<thead>
<tr>
<th>Current</th>
<th>Future</th>
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<tbody>
<tr>
<td>ADR</td>
<td>Adequacy of bowel preparation</td>
</tr>
<tr>
<td></td>
<td>Adequacy of polypectomy</td>
</tr>
<tr>
<td></td>
<td>ADR-plus (rate of detection of multiple adenomas within one colonoscopy)</td>
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<tr>
<td></td>
<td>Periprocedural management of antplatelet and anticoagulant drugs</td>
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<td></td>
<td>Rate of interval cancers</td>
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<td></td>
<td>Rate of lost specimens</td>
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<td></td>
<td>Rate of surgical referrals</td>
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<td></td>
<td>Recognition of sessile serrated lesions</td>
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</table>

Table: ADR, adenoma detection rate

**Figure.** Use of the ADR-plus rate to further differentiate quality performance among endoscopists with the same ADR score. There is a wide distribution of endoscopists within the optimal, one and done, none and done, and all or none categories. Endoscopists meeting the US Multi-Society CRC Task Force ADR Criterion (>25% for men) can still vary widely in terms of total adenomas detected, here measured with ADR plus, a metric independent of the ADR. The size of the circle reflects the total number of procedures performed by the endoscopist.

ADR, adenoma detection rate
Reprinted with permission from reference 14.
These agents represent another fertile area for patients who are not restarted on these instructions regarding cessation of these procedural bleeding if patients do not follow. Adverse outcomes in patients using these otherwise performed according to guidelines. In addition to missed serrated lesions, some of these interval cancers can result from inadequate polypectomy. This phenomenon is highlighted by a study of 346 neoplastic polyps removed by 11 gastroenterologists, in which 10.1% (range, 6.5%-22.7%) were incompletely resected. The increasing prevalence of antiplatelet drugs and anticoagulants poses a challenge to the appropriate periprocedural management of patients undergoing endoscopy. Adverse outcomes in patients using these agents can include procedural and postprocedural bleeding if patients do not follow instructions regardless of cessation of these agents as well as thrombotic complications for patients who are not restarted on these agents at an appropriate interval after colonoscopy. Therefore, the management of these agents represents another fertile area for quality indicators related to colonoscopy.

Other quality measures that might be used in the near future include the rate of lost polyps and the rate of surgical referral. Because of its global effect on the quality of colonoscopy, adequacy of bowel preparation also is likely to be used as a quality indicator for colonoscopy.

**Embracing Change**

In addition to the universal goal of improving patient outcomes and delivering efficient and safe care, other entities are likely to apply pressure to recognize performance and improve quality. These entities include insurers/payors for the purposes of value-based purchasing and reimbursement, regulatory agencies, accrediting bodies, and, even hospitals and group practices for the purposes of qualifying assurance and marketing to the general public. As such, the successful endoscopist should be motivated to participate in quality assurance programs in an effort to recognize any deficiencies and take advantage of programs designed to improve colonoscopy performance.

Fortunately, there is an increasing number of pathways to improve quality performance of colonoscopy. The first step is the recognition of suboptimal performance. Many commercial electronic medical record systems already have the capabilities to record and sort the quality metrics for colonoscopy described above. Use of these systems allows easy searching of specific indices and subsequent generation of performance reports. Furthermore, these data can be submitted to central tracking registries, such as the GI Quality Improvement Consortium (GIQuIC, giquic.gi.org), on a voluntary basis to obtain benchmarking performance reports relative to other endoscopists and to identify areas for quality improvement.

Indeed, Kahi and colleagues assessed endoscopic quality measure over time and reported that providing the endoscopist with a quarterly report card of performance based on these metrics (and without further directed intervention) was associated with subsequent and progressive improvement in colonoscopy quality (Table 2). Data obtained from these programs can be used to focus training and education in terms of improved cecal intubation rates and longer withdrawal times, recognition of serrated lesions, effective polypectomy, and use of appropriate screening/surveillance intervals.

Furthermore, ongoing refinement in bowel preparation should be pursued. Both split-dose and same-day bowel preparations have been shown to result in a better quality examination with fewer adverse events, although administration time can affect performance. For afternoon procedures, both 2-day, split-dose regimens and morning, same-day preparations administered in 2 doses have demonstrated efficacy, whereas for morning procedures, a nighttime, single-dose regimen is often used. Understanding of the most successful dosing strategies could lead to improved colonoscopy quality.

**Conclusion**

With the ongoing efforts by various organizations toward improved quality performance and optimal health care resource utilization, it is important for endoscopists to embrace the evolving regulatory landscape in order to ensure colonoscopy quality, positive patient outcomes, and reimbursement.

**Table 2. Effect of a Quarterly Report Card (Without Any Other Defined Intervention) on Subsequent Colonoscopy Performance Indicators**

<table>
<thead>
<tr>
<th>Variable, Rate, % (95% CI, %)</th>
<th>Before Intervention</th>
<th>Intervention</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenoma detection</td>
<td>44.7 (39.1-50.4)</td>
<td>33.9 (49.7-58.1)</td>
<td>0.013</td>
</tr>
<tr>
<td>Proximal adenoma detection</td>
<td>29.3 (24.3-34.8)</td>
<td>39.8 (35.7-44.0)</td>
<td>0.003</td>
</tr>
<tr>
<td>Distal adenoma detection</td>
<td>28.4 (23.6-33.7)</td>
<td>27.8 (24.2-31.7)</td>
<td>0.840</td>
</tr>
<tr>
<td>Advanced neoplasm detection</td>
<td>11.5 (8.4-15.5)</td>
<td>13.3 (10.8-16.4)</td>
<td>0.441</td>
</tr>
<tr>
<td>Serrated polyp detection</td>
<td>33.8 (28.5-39.5)</td>
<td>32.7 (28.7-36.9)</td>
<td>0.741</td>
</tr>
<tr>
<td>Cecal intubation</td>
<td>95.6 (92.5-97.5)</td>
<td>98.1 (96.7-99.0)</td>
<td>0.027</td>
</tr>
<tr>
<td>Number of adenomas per colonoscopy, mean (95% CI)</td>
<td>1.1 (0.7-1.4)</td>
<td>1.2 (0.9-1.5)</td>
<td>0.364</td>
</tr>
<tr>
<td>Adenoma size per colonoscopy, mean (95% CI), mm</td>
<td>5.6 (4.0-7.1)</td>
<td>5.5 (4.0-7.0)</td>
<td>0.956</td>
</tr>
</tbody>
</table>

CI, confidence interval

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**References**


**Disclosures**

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