Providing data for serrated polyp detection rate benchmarks: an analysis of the New Hampshire Colonoscopy Registry CME

Joseph C. Anderson, MD,[1,2] Lynn F. Butterly, MD,[2,3,*] Julia E. Weiss, MS,[4] Christina M. Robinson, MS[5]

White River Junction, Vermont; Hanover, Lebanon, New Hampshire, USA

Background and Aims: Similar to achieving adenoma detection rate (ADR) benchmarks to prevent colorectal cancer (CRC), achieving adequate serrated polyp detection rates (SDRs) may be essential to the prevention of CRC associated with the serrated pathway. Previous studies have been based on data from high-volume endoscopists at single academic centers. Based on a hypothesis that ADR is correlated with SDR, we stratified a large, diverse group of endoscopists (n = 77 practicing at 28 centers) into high performers and low performers, based on ADR, to provide data for corresponding target SDR benchmarks.

Methods: By using colonoscopies in adults aged ≥50 years (4/09-12/14), we stratified endoscopists by high and low ADRs (<15%, 15%-<25%, 25%-<35%, ≥35%) to determine corresponding SDRs by using 2 SDR measures, for screening and surveillance colonoscopies separately: (1) Clinically significant SDR (CSSDR), meaning colonoscopies with any sessile serrated adenoma/polyp (SSA/P), traditional serrated adenoma (TSA), or hyperplastic polyp (HP) >1 cm anywhere in the colon or HP >5 mm in the proximal colon only divided by the total number of screening and surveillance colonoscopies, respectively. (2) Proximal SDR (PSDR) meaning colonoscopies with any serrated polyp (SSA/P, HP, TSA) of any size proximal to the sigmoid colon divided by the total number of screening and surveillance colonoscopies, respectively.

Results: A total of 45,996 (29,960 screening) colonoscopies by 77 endoscopists (28 facilities) were included. Moderately strong positive correlation coefficients were observed for screening ADR/CSSDR ($P = .69$) and ADR/PSDR ($P = .79$) and a strong positive correlation ($P = .82$) for CSSDR/PSDR ($P < .0001$ for all) was observed. For ADR ≥25%, endoscopists' median (interquartile range) screening CSSDR was 6.8% (4.3%-8.6%) and PSDR was 10.8% (8.6%-16.1%).

Conclusions: Derived from ADR, the primary colonoscopy quality indicator, our results suggest potential SDR benchmarks (CSSDR = 7% and PSDR = 11%) that may guide adequate serrated polyp detection. Because CSSDR and PSDR are strongly correlated, endoscopists could use the simpler PSDR calculation to assess quality. (Gastrointest Endosc 2017;85:1188-94.)

(footnotes appear on last page of article)

Serrated polyps are an important focus of colorectal cancer (CRC) screening because the associated pathway may account for up to 30% of all CRCs.[1] Subsets of serrated polyps share molecular and epidemiologic features with interval cancers, that is, tumors diagnosed within 3 to 5 years of colonoscopy.[2,3] Furthermore, serrated polyps, which include sessile serrated adenomas/polyps (SSAs/Ps), traditional serrated adenomas (TSAs), and hyperplastic polyps (HPs) are common, detected in 9% to 21% of patients presenting for screening colonoscopy.[4-9] Serrated polyps, particularly SSA/Ps, can be difficult to detect, given their flat morphology and indistinct borders.[1] This may contribute to the observed significant variation in proximal serrated polyp detection rates (SDRs) among endoscopists.[6-8] The importance of serrated polyp detection and the variation in detection rates among endoscopists suggest the need for a benchmark rate, similar to the adenoma detection rate (ADR), for detection rates of serrated polyps, particularly for large or proximal serrated polyps or SSA/Ps, which have malignant potential. However, unlike ADR for potentially precancerous adenomas, a benchmark for an SDR has not yet been established.

A realistic benchmark range should be derived from a diverse population of endoscopists rather than a small

Use your mobile device to scan this QR code and watch the author interview. Download a free QR code scanner by searching "QR Scanner" in your mobile device's app store.

group of high-volume individuals. Similar to investigations for ADR,[10] further examination into higher performing endoscopists may provide information about optimal SDRs. Studies performed at single academic centers showed a correlation between an endoscopist's ADR and proximal SDR.[7,8] One method to determine target SDRs might involve assessing SDRs for endoscopists with high and low ADRs, respectively. This approach would rely on the intuitively reasonable assumption that endoscopists whose techniques result in high ADRs might similarly achieve high SDRs. If demonstrated to be a reasonable assumption through strong correlation of ADR and SDR results, then SDRs for high performing and low performing endoscopists (based on ADR) could inform a benchmark range for SDR, with the former providing an optimal target benchmark.

One important consideration for establishing benchmark rates is whether to include data from surveillance in addition to screening examinations. Providing evidence to set benchmark targets for quality indicators is critically important in guiding consistent quality within screening programs, as has been demonstrated for the use of benchmark ADRs. ADR benchmarks were determined based on screening populations.[11-13] However, some clinicians and a few published studies have assessed ADR based on results for screening and surveillance patients combined. To investigate the validity of this practice, the New Hampshire Colonoscopy Registry (NHCR) investigated ADRs within screening and surveillance populations respectively and published results indicating a statistically significant difference between screening and surveillance for ADR, although not for SDR.[4] Additional evidence will clarify this issue further; therefore, data for SDR benchmarks should be presented separately by screening and surveillance indications.

Estimating SDR benchmarks requires refining the definitions of which lesions to include within the category of SDR, based on their ability to be CRC precursors. By using the comprehensive data from the NHCR,[4,5,14-17] together with suggested criteria from an expert panel,[1] we calculated 2 SDRs for each NHCR endoscopist. One rate was based on factors that may be predictive of clinically significant serrated polyps, including size, location, and histology that differentiated the subtypes of serrated polyps. This clinically significant SDR included any SSA/P, TSA, and any HP >1 cm anywhere in the colon or any HP >5 mm in the proximal colon only. The other SDR assessment, proximal SDR, was based on the detection of any serrated polyp proximal to the sigmoid colon (also separately assessed based on serrated polyps proximal to the splenic flexure), regardless of size or histologic subtype. Although clinically significant SDR includes clinically important serrated polyps, proximal SDR may be easier for endoscopists to calculate because it relies simply on location and does not require polyp size or histology for polyps in the distal colon to assist in differentiating between non-precancerous HPs and possible SSA/Ps.

The key objective of our analysis was to present the NHCR endoscopists' median and interquartile range (IQR) of SDRs stratified by the endoscopist's ADR, providing evidence toward establishing these important SDR benchmarks. Furthermore, we examined the correlation between the clinically significant SDRs and the proximal SDRs described earlier to determine whether the simpler measure of proximal SDR might be sufficient as a quality measure.

METHODS

The NHCR is a population-based, statewide registry collecting data from endoscopy sites throughout New Hampshire.[14,15,17,18] All data collection, study procedures, and informed consent forms were approved by the Committee for the Protection of Human Subjects at Dartmouth College (study no. 00015834) as well as by other relevant human subjects reviewing bodies at participating sites. Before colonoscopy, patients provided informed consent and completed a self-administered patient questionnaire. Immediately after the colonoscopy, the NHCR procedure form was completed by endoscopists or endoscopy nurses. Data collected include indication (detailed options within screening, surveillance, or diagnostic categories), findings (location and size of polyps or other lesions), quality of bowel preparation, completion of examination, and withdrawal time. For all findings, the NHCR requested reports directly from the pathology laboratory used by each participating endoscopy facility. Trained NHCR staff verified and entered the pathology results into the NHCR database, linking pathology to individual polyps from the procedure form.[14]

Cohort

Our analysis included only those colonoscopies with an indication of either screening or surveillance. Surveillance colonoscopies for familial adenomatous polyposis or hereditary nonpolyposis colon cancer and inflammatory bowel disease as well as all diagnostic colonoscopies (eg, for anemia, bleeding, or diarrhea) were excluded from this analysis. The study sample included colonoscopies done between April 2009 and December 2014 in participants aged ≥50 years for which pathology reports had been received and abstracted and which were performed by endoscopists with at least 100 colonoscopies in the NHCR database (N = 47,362 colonoscopies). Colonoscopies with poor bowel preparation (N = 906) or that were incomplete (N = 460) were excluded, leaving 45,996 colonoscopies.

Definitions and outcome measures

Indication for examination. On the NHCR procedure form, an indication of screening was offered for