

**COMMENTARY**

# Endoscopic Services in the United States: By Whom, for What, and Why?

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The Peterson et al<sup>1</sup> article in the Journal examines the declining volume of endoscopic procedures performed by family physicians (FPs) in both urban and rural settings. In a relatively short, 3-year time period, the percentage of colonoscopies, sigmoidoscopies, and upper endoscopies performed by rural FPs declined by half. Urban FPs performed fewer endoscopic procedures overall in comparison to their rural counterparts; however, they also experienced a statistically significant decline in sigmoidoscopies and endoscopies over the study interval. This commentary will focus on the relevance of this issue from the standpoint of health care delivery with particular reference to colorectal cancer (CRC) screening, assessments of endoscopic quality, and potential solutions, including training paradigms in flexible endoscopy.

## Importance of Endoscopic Screening

While a variety of diseases are managed diagnostically and therapeutically through flexible endoscopy, colorectal neoplasia is demographically the most important. CRC screening specifically remains a high priority as it is the third most common cancer in men and women in the United States.<sup>2</sup> A number of modalities are available for CRC screening,<sup>3,4</sup> but 62% of patients choose screening

colonoscopy.<sup>3</sup> The advantages of colonoscopy are several, including a high sensitivity for detecting cancer and adenomas, the potential for synchronous diagnosis and treatment, and intervals of 10 years between interventions following normal examinations in average risk settings.<sup>4</sup>

## Assessing Endoscopic Quality

The quality of colonoscopy is critical in achieving the overall goal of screening, namely reduction in cancer risk. The adenoma detection rate (ADR) is a quality measure defined as the proportion of screening colonoscopies that detect at least 1 adenoma or CRC. Corley et al<sup>5</sup> studied more than 250,000 colonoscopies with a 10-year follow-up period and demonstrated that the ADR was inversely associated with risk for interval CRC. Specifically and powerfully, for every 1% increase in ADR, there was a corresponding 3% decrease in CRC.<sup>5</sup>

Another quality measure of adequate endoscopic evaluation of the colon is the withdrawal time, defined as the time from cecal intubation to the point when the colonoscope is completely removed from the rectum.<sup>7</sup> A mean withdrawal time of at least 6 minutes has been recommended by a multi-society task force.<sup>8</sup> Barclay et al<sup>7</sup> evaluated 2053 screening colonoscopies performed by 12 experienced gastroenterologists and found an almost linear relationship between withdrawal time and neoplasia detection rates. In addition, advanced neoplasia was detected more frequently in colonoscopies that had longer withdrawal times.

The adequacy of the bowel preparation before screening colonoscopy has also been shown to be related to the overall quality and yield of endoscopic evaluation. Failure to adequately prepare the colon can lead to missed lesions and the need for repeat colonoscopies at earlier intervals.<sup>9</sup>

In summary, to achieve the public health goal of colonoscopy, namely reduction of CRC, it is ap-

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See Related Article on Page 460.

parent that inspection quality as reflected by prep adequacy and withdrawal time, and cancer precursor recognition and management as reflected by ADR, be consistently achieved.

### Who Should Provide Endoscopic Services

Endoscopic services are currently performed by gastroenterologists, surgeons, FPs, and advanced practice providers throughout the United States. The American Society for Gastrointestinal Endoscopy (ASGE) and American Board of Surgery (ABS) have recently documented their respective stances on training endoscopic practitioners. These stances have not been in full agreement, with contrasting literature being cited by various groups.<sup>11</sup> The ASGE recommendations currently require a minimum of 130 esophagogastroduodenoscopy (EGDs) with successful intubation of the esophagus and pylorus in over 95% of cases, and 275 colonoscopies with a cecal intubation rate of 90% as a beginning experience for entertaining competence.<sup>12</sup> The limitations of a purely number-based approach to competence are well recognized by all societies, as learning curves across many procedural domains including endoscopy are clearly dependent on individual as well as educational variables.<sup>13</sup>

The ABS recently emphasized the foundational importance of competency rather than volume-only based resident training. Their recertification case log data demonstrates a high reliance on surgeons in the provision of endoscopic services, especially in rural areas.<sup>11</sup> In the United States, 39.8% of a general surgeons' procedural practice in rural and underserved areas involves flexible endoscopic procedures. In Canada, surgeons were found to be the primary physicians providing flexible endoscopic services in rural areas.<sup>14,15</sup> The ABS requires that all graduating general surgery residents achieve the endoscopic case volume minimum requirements of the Residency Review Committee for Surgery of the Accreditation Council for Graduate Medical Education, specifically to include 35 esophagogastroduodenoscopies and 85 colonoscopies by the completion of a 5-year residency. The ABS has also sanctioned a standardized scoring tool assessing performance on such clinical endoscopic procedures as a required assessment for all residents nationwide.<sup>16</sup> Within the past several years the ABS, in collaboration with The Society of American Gastrointestinal and Endoscopic Surgeons, has developed a curriculum to improve endoscopic train-

ing in surgical residencies called Fundamentals of Endoscopic Surgery. This curriculum, required of all general surgery residents nationwide for board examination eligibility, includes Web-based didactics in flexible endoscopy as part of a longitudinal curricular strategy over the course of a 5 year residency, and culminates in a high-stakes cognitive and technical examination, the latter being performed on a virtual reality simulator.<sup>11</sup>

FPs trained in endoscopic services, as mentioned in this article of the *Journal*, can provide CRC screening, and perform approximately 2% of all colonoscopies in the United States.<sup>17</sup> Several studies have shown that FPs and primary care physicians (PCPs), particularly when a specialist is on standby, can achieve the same benchmarks of endoscopic quality, including ADR, as compared with experienced gastroenterologists.<sup>17-20</sup> A meta-analysis performed by Wilkins et al<sup>18</sup> examined 18,292 patients who underwent colonoscopy performed by PCPs. The mean estimated ADR was 28.9% and major complication rate was 0.04%. They concluded that PCPs are able to achieve quality and safety metrics comparable to those of other providers, as advocated for by associations including ASGE, the American College of Gastroenterology, and Society of American Gastrointestinal and Endoscopic Surgeons.<sup>18</sup>

Lastly, nonphysicians (ie, nurses, nurse practitioners, and physician assistants) have been studied in their performance of upper and lower endoscopies. A systematic review and meta-analysis in 2014 demonstrated that the majority of studies involving nonphysician performance of endoscopy focused on flexible sigmoidoscopy for CRC screening. The adverse event rate was 0.3 per 1000 sigmoidoscopies with adenoma detection rates ranging from 9.9% to 23.7%. In those studies that included colonoscopies performed by nonphysicians (n = 3), the cecal intubation rate was 93.5%, ADR was 26.4%, and adverse event rate 2.2 per 1000 colonoscopies. The meta-analysis concluded that nonphysicians can perform endoscopy, particularly sigmoidoscopies, with similar outcomes and adverse events compared with physicians.<sup>21</sup> The expanded use of endoscopic techniques by FPs, other PCPs, and nonphysicians may allow for wider access of CRC screening throughout the US, especially in rural and underserved areas.

## Ways Forward

Endoscopic services continue to be vital in screening programs for CRC, as well as in diagnosing and treating other common and demographically important gastrointestinal pathologies. No matter who the provider of endoscopic services is, access to these services, especially in rural and underserved areas is vital to public health. Standardized competency-based strategies, of which Fundamentals of Endoscopic Surgery is a prototype, coupled with ongoing practice performance benchmarking and quality assurance measures, can serve to ensure access, including in areas that are underserved by specialty providers. To achieve the goals of endoscopic care, and especially with reference to the demographically important area of CRC screening, it is critical that any and all providers be capable of and accountable to quality benchmarks, and able to provide appropriate intervention for the pathology identified so as to avoid unnecessary duplication of procedures. In the authors' opinion, FPs can, and in all likelihood should remain part of that equation, given their demonstrated commitment as a specialty to all segments of the population served.

To see this article online, please go to: <http://jabfm.org/content/32/4/454.full>.

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