The Current State of Flexible Sigmoidoscopy Training in Family Medicine Residency Programs

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Background and Objectives: The US Preventive Services Task Force has recommended that adults ages 50 and over be screened for colorectal cancer. Flexible sigmoidoscopy (FS) is one available screening option. This study determined the current state of FS training in US family medicine residencies. Methods: Directors of the Accreditation Council for Graduate Medical Education-accredited family medicine residencies were surveyed regarding FS training. Results: Of 486 mailed surveys, 370 (76%) were completed and returned. Fifty-two percent of responding residency programs trained at least one resident in FS in 2003. Residents in these programs performed a mean of 20.1 ± 1.2 FSs during their training. In 2003, 44% of family medicine graduates from these programs were certified by their programs as competent to perform FS. Fewer residents were certified in FS by programs in the eastern versus western United States. Military programs certified more residents than did non-military programs. Conclusions: More than half of programs offered FS training, but less than half of family medicine graduates were certified by their programs as competent. There were significant differences for FS training by region and program type.

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The American Cancer Society estimates that in 2004, 146,940 new cases of colorectal cancer were diagnosed among men and women in the United States, and 48,100 men and women died of colorectal cancer. While the US Preventive Services Task Force has strongly urged all adults ages 50 and over to be screened for colorectal cancer, only about one third of them are screened. All current screening guidelines for colorectal cancer include fiberoptic flexible sigmoidoscopy (FS) as a screening option, and evidence exists as to the effectiveness of FS for colorectal screening and as a method that may decrease mortality from distal colorectal cancers by 40%–50%.

Thirty percent of primary care physicians perform FS and are responsible for two thirds of all FSs performed nationally. A number of studies have reported on the implementation of FS in primary care and several studies have examined competency-based training in FS. If trained in FS during their residency program, most family physicians continue to perform FS in their future practice. A recent survey from the National Cancer Institute concluded that there was potential to increase capacity of screening sigmoidoscopy through training more primary care physicians to perform the procedure.

To date, no study has evaluated the extent of FS training in family medicine residency programs or the number of residents who are certified to perform FS after graduation. In this publication and in the survey, we use the term “certified” to mean “competent in performing FS” as determined by the physician supervising the FS training at the individual residency program. This project examines the current state of FS training in accredited US family medicine residency programs.

Methods

Instrument

A survey instrument was developed to determine the extent of FS training being offered in family medicine residency programs in the United States. The survey collected information on program type, state location, and whether FS training was offered to residents. For programs that offered training, we asked location of training (eg, hospital-based gastrointestinal suite, sur-
Residency Education

of surgery clinic, or family medicine clinic) and supervisor of training (eg, family physician, general surgeon, or gastroenterologist). Open-ended questions were asked to ascertain (1) the number of graduates from the previous year’s class, (2) the minimum number of FSs that residents were expected to perform, (3) the number of graduates from the previous year’s class who were certified in FS, and (4) for those who were certified, the average number of FSs they performed during their residency program.

Survey Procedures

In January 2004, surveys were mailed to program directors of the 486 family medicine residency programs approved by the Accreditation Council for Graduate Medical Education. To ensure anonymity, no names or numbers appeared on the survey instruments. Additionally, a postcard was mailed with the survey, and respondents were asked to return the postcard separately from the survey so we could identify those who returned surveys and remove their names from the mailing list. To obtain an adequate response rate, the survey was mailed a second and third time at 20-day intervals to nonrespondents. No other means of contact to nonrespondents was attempted. The study was reviewed and approved by our local Institutional Review Board.

Data Analysis

For statistical comparison of the number of FSs performed in residency programs and the number of residents certified in FS at graduation by program type and region, we used Pearson chi-square analysis. Student t test was used to compare the mean number of FSs performed and the number of residents certified in FS by program type and region of the country in which the program was located. We used analysis of variance (ANOVA) to examine differences in the percent of graduates certified in FS, the mean number of FSs performed per resident, and the minimum number of FSs that residents were expected to perform by geographical region and program type. SPSS software, version 11.5, was used for all analyses.

Results

Of the 486 surveys mailed, 370 (76%) were completed and returned. Of the program directors who responded, 325 (89%) reported that their program offered FS training, but only 189 (52%) of the programs had actually trained at least one resident in FS in 2003. Among those programs that had trained at least one resident in FS, the number of FSs performed by the residents during their 3 years of residency training ranged from 1 to 150, with a mean of 20.1 (SD=1.2) FSs per resident. Sixty-five (34%) of the programs reported that their residents performed 1 to 10 procedures, 79 (42%) of the programs reported 11 to 25 procedures, 54 (29%) of the programs reported 26 to 50, and five (3%) of the programs reported that residents performed more than 50 procedures during residency training. Directors of programs that trained at least one resident reported that 44% of their graduates were certified in FS.

Only 168 (45%) of residency programs reported that one or more of their June 2003 graduates were certified to perform FS upon graduation. Among these programs, nine (5%) were community based, 108 (64%) were community based and medical school affiliated, 22 (13%) were community based and medical school administered, 18 (11%) were medical school based, and 11 (7%) were military programs. Of the 168 programs that certified at least one resident in FS, on average 4.9 residents graduated from each of these residency programs with certification in FS, and each of the certified residents performed an average of 23 FSs.

We also found significant regional differences. Ninety-eight percent of programs on the west coast offered FS training, but only 82% of programs on the east coast and 80% of programs in the plains-mountain states offered FS training ($P=.008$). Residents on the east coast performed fewer FSs than residents in other regions; however, this was a nonsignificant difference (Table 1). Among programs offering FS training, significantly more residents in military programs were certified in FS compared to residents trained in nonmilitary program types ($P<.0001$) (Table 2). Another difference found by program type was the minimum numbers of procedures residents were expected to perform, with military programs expecting a minimum of 18 procedures and other program types expecting between 8 and 11 procedures.

Fifty-one percent of residents were trained exclusively by family physicians, and FS training occurred exclusively in family medicine clinics in 43% of residency programs. In only 6% of programs was training performed exclusively by gastroenterologists, and in only 8.5% of programs did training occur exclusively in hospital-based gastroenterology suites (Table 3).

Discussion

Approximately 90% of US family medicine residency programs offer training in FS, but only just over half of programs actually trained at least one resident. Only 45% of residency programs certified one or more residents in FS in June 2003 as competent to perform FS, and only 44% of graduates from these programs left residency training certified in FS.

It is unclear why there is such a large discrepancy between the number of programs offering FS (89%) and the number that actually certify residents in FS (45%). One possible explanation is that some programs may have abandoned training in FS as a screening procedure in favor of referral for colonoscopy. Another explanation is that resident interest in FS training is declining.
However, the reason why so few residents are certified cannot be determined from our results.

There were differences across geographical regions in regard to FS training and in the percent of residents certified in FS from those programs that provided training. More family medicine graduates from these programs (54%) were certified in FS in western states, and fewer (33%) were certified in FS in eastern states. Our findings are contrary to actual screening rates by FS as reported by the American Cancer Society, with 46% east, 38% south, 41% midwest, 36% plains-mountains, and 38% in the west.

An interesting finding of this study is that all of the responding military programs that offered training in FS had the highest percent (98%) of residents certified in FS. Compared to other program types, colorectal screening and apparently training in FS is stressed in military programs. The percent of military graduates certified in FS contrasts with only 35% of the graduates from community-based and medical school-based programs that are certified. Medical school-based programs also offered residents fewer procedures, with their mean being 18.1 compared to the national mean of 20.1, but this difference was not significant. These differences are likely explained by the highly specialized environment found in medical school-based programs that may discourage performance of screening FS in favor of other screening modalities, such as colonoscopy.

The majority of FS training is done by family physicians and is conducted in family medicine clinics. It is relatively uncommon for residency programs to offer FS training exclusively for gastroenterologists or other specialists. It is also uncommon for residency programs to offer FS training exclusively in hospital-based gastroenterology suites or other specialty clinics.

There is no national consensus of objective criteria to determine procedural competence in FS. Without clear objective criteria, residency programs are left to either develop their own objective criteria for certification or to establish a minimum number of procedures to be performed during residency training. As an example of performance criteria, Holman et al established a mean procedure time of 18 minutes and mean insertion depth of 51 cm by military residents. In a recent paper endorsed by several societies, including the American College of Gastroenterology, the American Gastroenterological Association, and the American Society for Gastrointestinal Endoscopy,
the minimum number of FSs was set at 30 procedures, with visualization of the splenic flexure and retroflexion maneuver as performance-based criteria.22

Primary care physicians cite several reasons as barriers to performance of FS in practice. These include cost, patient discomfort, equipment availability, low probability of finding a lesion, time taken to perform the procedure, and risks of the procedure.23 Additionally, there is uncertainty about the preferred method of colorectal cancer screening. However, physicians trained in FS are more likely to screen patients for colorectal cancer by FS or by one of the other acceptable methods.23 FS is a relatively expensive office procedure, and it is estimated that a primary care physician would need to perform 75 procedures per year to “break even” based on the Medicare reimbursement rates.9 In general, family physicians perform a relatively low volume of FSs, from 48 to 84 procedures per year.9,19

A criticism of FS is that it cannot detect proximal colonic lesions, eg, polyps or cancer compared to colonoscopy.24,25 Because of this and the uncertainty of what the preferred colorectal screening method is, some have argued that the FS training efforts of family medicine residency programs are misguided, and these critics suggest colonoscopy as the preferred screening modality. However, all major organizations, including the American Cancer Society, the US Preventive Services Task Force, and the American Academy of Family Physicians, include FS as an option for colorectal cancer screening. Further, colonoscopy, compared to FS, is more costly, risky, and less convenient, eg, more thorough bowel prep and more time lost from work secondary to conscious sedation. Our prior study showed that only 4% of US family medicine graduates seek colonoscopy credentials following graduation.26 It has yet to be decided if it is time for family medicine residency programs to transition FS training to colonoscopy training.

**Limitations**

Our survey relied on recall from program directors, and directors may have overestimated the number of residents certified in FS and the number of procedures performed per resident. Another limitation of our study is that we did not assess the actual numbers of graduates that performed FS upon graduation. Further, while we did ask about the minimum number of procedures expected before a program would certify a resident as

<table>
<thead>
<tr>
<th># of Programs Offering FS Training</th>
<th># of Graduates</th>
<th># Certified in FS</th>
<th>Mean # of FSs Per Resident ± SE**‡</th>
<th>Minimum # of FS Residents Expected to Perform ± SE**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community based</td>
<td>31</td>
<td>84 (26)</td>
<td>174</td>
<td>43</td>
</tr>
<tr>
<td>Community based and medical school affiliated</td>
<td>218</td>
<td>92 (200)</td>
<td>1,434</td>
<td>554</td>
</tr>
<tr>
<td>Community based and medical school administered</td>
<td>51</td>
<td>84 (43)</td>
<td>336</td>
<td>129</td>
</tr>
<tr>
<td>Medical school based</td>
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<td>107</td>
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<tr>
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<td>100 (13)</td>
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<td>96</td>
</tr>
<tr>
<td>Total</td>
<td>364</td>
<td>89 (325)</td>
<td>2,399</td>
<td>929</td>
</tr>
</tbody>
</table>

Table 2
Flexible Sigmoidoscopy (FS) Training in Family Medicine Residencies, by Program Type (n=364)*

* Six program directors did not specify program type.
** In programs that provide flexible sigmoidoscopy training
† Only complete data from a program (ie, program type, number of graduates, and number of certified graduates) were used in the calculation of the percentage of the class certified in FS.
‡ In residents who performed one or more FSs

SE—standard error

1 P=not significant, 2 P=<.0001

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1 P=not significant, 2 P=<.0001
competent to perform FS, we did not assess whether programs used any formal competency measures (e.g., procedure time or depth of insertion). While the term “certified” has been used in the literature to describe trainees competent in FS, this term may have been misunderstood or misinterpreted by some program directors.

Additionally, we did not assess programs training residents in the performance of biopsy or other endoscopic procedures (e.g., esophagogastroduodenoscopy or colonoscopy). We also did not obtain any information (e.g., location or program type) from nonrespondents, so, while we did have a good response rate (76%) to our survey, we cannot generalize our results to all family medicine residency programs.

**Conclusions**

While the vast majority (89%) of family medicine residency programs claimed to offer FS training, only 44% of all graduating family medicine residents from those programs providing training in 2003 were determined to be certified in FS. We found significant differences in FS training by geographical region (highest in the western United States and lowest in the eastern United States) and program type (highest in military programs and lowest in community-based and medical-school based programs).

Future studies are still needed to determine how great a priority FS training should be in family medicine residency programs. If it is determined to be a high-priority training need, future studies should examine competency measures in regard to FS training. National standards should be established to determine the minimum number of procedures required and other performance criteria of competency.

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**REFERENCES**