

# Minimizing the Burden of Colorectal Cancer Screening – An Approach in Rural Areas

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## Abstract

There are many barriers to screening colonoscopy including cost and access to the procedure in rural and underserved areas.

## Methods

A previously published case series of colonoscopy performed by rural family physicians is reviewed.

## Results

There were a total of 731 colonoscopies performed by two family physicians in a rural outpatient office from 1996-2001. The adenoma detection rate was 21.3%, with villous adenomas found in 3.1% of cases and adenocarcinomas in 0.8%. There was a low incidence (0.54%) of minor conscious sedation complications and no major complications. Patient satisfaction with the office-performed colonoscopy was high.

## Discussion

Numerous studies have now shown that properly trained family physicians can perform colonoscopy safely and effectively, meeting standard quality benchmarks. Colonoscopy credentialing barriers for family physicians persist in some regions. Training more family physicians to perform colonoscopy will provide much needed access to these procedures, especially in rural and underserved areas.

## Background

Less than half of the US population is currently being screened for colorectal cancer by any method.<sup>1</sup> The barriers to screen-

ing are many but include inadequate access to colonoscopy, especially in rural areas. In one meta-analysis, which included 264 studies, laxative preparation was described as the biggest barrier.<sup>2</sup> Anxiety, anticipation of pain, embarrassment, a sense of vulnerability, inadequate knowledge of the importance of screening, and fear of cancer diagnosis were additional barriers. Practical barriers included inconvenience, transportation, scheduling, and cost. On the other hand, incentives to have a colonoscopy include physician endorsement, a family history of colon cancer, knowing someone with colon cancer, and perceived accuracy of the test.

Cost barriers can be substantial. The cost of colonoscopy ranges from \$450 to \$5000. Office exams usually eliminate the expense of a facility fee. The author obtained grant funding from 2008-2009, which permitted screening of 31 uninsured patients at our institution. Thirty-five percent of those screened were diagnosed to have adenomatous polyps, much higher than the typical average. In one report of a study in China, 87% were willing to get colonoscopy if it was free, but only 53% were willing if they had to pay for the exam.<sup>3</sup>

We present our experience in outpatient colonoscopy performed by rural family physicians. In the US, five percent of family physicians offer colonoscopy, mostly in rural and underserved areas, according to survey results from the American Academy of Family Physicians (AAFP).<sup>4</sup> Two previous large studies have demonstrated the ability of trained family physicians to perform colonoscopy safely and competently.<sup>5,6</sup> Since 1984, this has been a core skill taught annually at the AAFP scientific assembly,<sup>7</sup> and the mission of colonoscopy in underserved areas has been supported by family medicine.<sup>8</sup> My original study was published to verify these findings in an outpatient setting.<sup>9</sup>

Since then new data by family medicine<sup>10</sup> and the water navigation method have emerged. To support this renewed direction in colorectal screening in the community, the previously published study is reviewed here, and some additional perspective is given.

## Methods

This was a retrospective case review of 731 colonoscopies. All of the procedures were performed by the rural physician authors. Institutional Review Board approval for the study was granted at East Carolina University. Cold biopsy removal of polyps only was used. Polyps >1 cm or those requiring snare polypectomy were referred to gastroenterology or surgery for removal.

After the examination, patients participated in a satisfaction survey. The physician authors were both trained to do flexible sigmoidoscopy during residency and attended AAFP and University of Maryland-sponsored training courses in colonoscopy. Both were proctored initially by a gastroenterologist colleague in a city 45 miles away from the office where the exams were performed.

## Results

Conscious sedation was used. The drug dose averages were diazepam 4.6mg, meperidine 43.4mg, and midazolam 2.6mg. Table 1 shows the indications and the adenoma yield. Table 2 shows the cecal intubation rate over time. The pathology yield

**Table 1:** Adenomatous Polyp Yield by Indication

Most Common Indication	Percent of Patients	Adenoma Yield
Previous polyps	22.2%	32.3%
Rectal bleeding	19.8%	16.7%
FH of colon cancer	10.5%	18.5%
Abdominal pain	10.0%	15.5%
Screening	9.3%	17.7%
Guaiac positive stool	6.5%	25.4%
Iron deficiency anemia	4.2%	14.0%

**Table 2:** Cecal Intubation Rates

1996-1998	89%	229/256
1999-2001	94.6%	442/467
Overall	92.8%	671/723

included a total of 215 adenomatous polyps in 156/731 procedures, with a 21.3% overall incidence of adenomas. Villous adenomas were present in 3.1% (23/731). There were six adenocarcinomas (0.8%). Among male patients greater than 50 years of age, there was a 27.2% incidence of adenomas, and among female patients, the incidence was 21.4%. Fifty-six percent of polyps were in the transverse or ascending colon beyond the reach of the flexible sigmoidoscope. Only 24% of patients with proximal polyps had concurrent left-sided polyps.

The complications were quite low in this series. Four patients (0.54%) had bradycardia and hypotension responding to intravenous saline and atropine. One patient with atrial fibrillation had a good outcome with resolution within 24 hours. One patient with post-polypectomy bleeding required an overnight hospital observation without transfusion. There were no colon perforations. Nineteen patients (2.6%) were referred to a gastroenterologist for removal of polyps > 1 cm. Ten patients (1.4%) were referred to colorectal surgery for removal of large villous adenomas or adenocarcinomas. There was excellent correlation of specialty findings with the original examination.

Patient satisfaction was documented with 90% of patients rating the experience as a 7 to 10 on a 10-point scale. The mean patient satisfaction score was 8.8. Ninety-two percent reported they would have a repeat exam in the family medicine office.

## Discussion

These results indicate that family physicians that are properly trained perform colonoscopy safely and effectively with high patient satisfaction. The standard benchmarks for cecal intubation >90% and adenoma detection of >20% were achieved.<sup>11</sup> A substantial percentage of family physicians can and should be trained to perform colonoscopy to improve access to screening in rural areas. In 2004, only 46% of Family Medicine training programs offered colonoscopy training.<sup>12</sup>

A recent meta-analysis by Wilkins et al.<sup>13</sup> included >18,000 cases from 12 studies of primary care physician (PCP) performed screening colonoscopies. The adenoma detection rate was 29%, and cancer detection rate was 1.7%. The major complication rate was 0.04%, and there were no deaths. The outcomes met parameters for quality and safety outlined by the American Society for Gastrointestinal Endoscopy, the American College of Gastroenterology, and the Society of American Gastrointestinal Endoscopic Surgeons.<sup>11</sup> The study concluded that PCP performed screening colonoscopy was safe and effective.

There are significant credentialing barriers for primary care physicians. After performing more than 300 colonoscopies in private practice and moving to an academic practice in North Carolina, the author was advised not to apply for privileges to perform colonoscopy at the local hospital in 2002. Shortly after the application was made, by-laws were passed by the hospital that allowed only surgeons and gastroenterologists to perform colonoscopy, thus barring primary care physicians from doing these procedures. This occurred despite the recommendation

by the Joint Commission for Accreditation of Hospitals that privileges for procedures should be based on demonstrated competence and not specialty training.

The author continued to perform colonoscopy in the outpatient clinic setting between 2002-2004 after being proctored by both a staff gastroenterologist and a general surgeon with endoscopic training. Both proctoring physicians wrote letters of support for credentialing. A total of 89 additional colonoscopies were performed during and after this proctoring, some including snare polypectomy. Adenomas were detected in 25% of cases, and a >95% cecal intubation rate was achieved. There were no complications.

Despite this, the author was asked to stop performing office-based colonoscopy in 2004, secondary to a letter received from one of the local gastroenterologists expressing his outrage over these procedures being done by a family physician. Others have commented on this as a credentialing “arms race.”<sup>14</sup> It may have been well intentioned, but failure to achieve merit-based credentialing in the American medical system has been to the detriment of our underserved communities.<sup>15</sup> Medical subspecialists do not and will not settle there.

Fortunately, collaboration has been formed with our general surgery group that will allow training of our interested family medicine residents in the endoscopy center. Extended flexible sigmoidoscopy continues to be performed in our outpatient center by our own faculty. The addition of the water method offers promise to make this more acceptable to patients and to expand access for the uninsured. The author’s goal remains that of training motivated family medicine residents who will provide much needed access to these procedures in rural and underserved areas.

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