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ORIGINAL CONTRIBUTIONS

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# Outcomes of Anorectal Disease in a Health Maintenance Organization Setting

## The Need for Colorectal Surgeons

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**PURPOSE:** The current trend in health delivery is managed care, in which the primary care provider (PCP) manages patient care and triages specialty referrals. It has not been established, however, that PCPs can accurately diagnose, treat, or triage anorectal disorders. **MATERIALS AND METHODS:** A retrospective study was undertaken at a health maintenance organization that hired a colon and rectal surgeon. Charts of the first 100 consecutive consultations for anorectal complaints were analyzed for accuracy of diagnosis and appropriateness of care. **RESULTS:** Correct diagnoses were made by 45 of 85 (53 percent) PCP physicians, 6 of 15 (40 percent) PCP physician assistants, and 8 of 15 (53 percent) general surgeons. A delay to diagnosis or appropriate treatment occurred in 25 patients (25 percent), resulting in an adverse outcome in 15 people. Of these, five complications were caused by delayed diagnosis, and ten patients had symptoms that persisted from 5 months to 14 years (mean, 4.5 years). Seven unnecessary referrals to a gastroenterologist resulted in three unnecessary colonoscopies. Of 19 patients evaluated by a general surgeon, 4 had inadequate/inappropriate operations, 5 were untreated because of misdiagnosis, 3 correctly diagnosed were untreated, 3 had inappropriate follow-up, 1 was referred to a gastroenterologist, and 2 were advised to have appropriate treatment. **SUMMARY:** The PCP correctly diagnosed anorectal disorders in 51 percent of cases and referred patients promptly 75 percent of the time. Of the 25 percent with delay, 60 percent experienced a complication or persistent symptoms. Fifteen of 19 (79 percent) patients seen by a general surgeon were inappropriately managed. [Key words: Anorectal surgery; Outcome assessment; Managed care programs]

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A growing trend in health care delivery is managed care. In this system, primary care providers (PCP) evaluate, diagnose, and treat patients and, at their discretion, triage them to specialists. Currently, 56 million Americans are enrolled in health maintenance organizations,<sup>1</sup> with growth expected at the rate of 20 percent per year for the next decade.<sup>2</sup>

Managed care evolved in an attempt to curb escalating health care costs. These rising costs were often attributed to the high price of specialty care, which incurred the additional expense of specialists' fees and more sophisticated testing.

Advocates for managed care made the assumption that health care could be provided at a lower cost by using generalists instead of specialists whenever possible. This assumption is true if outcomes of treatment by generalists and specialists are similar.

Anorectal disease, although common, is not uniformly well taught in training programs for several reasons. First of all, it is usually seen and managed in the outpatient setting and, therefore, not within a hospital training program. Second, there is a dearth of academic colon and rectal surgeons, and, therefore, exposure to such experts during training is limited. Third, with only 1,054 board-certified colon and rectal

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surgeons in the United States, students, residents, and physicians may never have the opportunity to learn from such individuals. Therefore, physician and non-physician PCPs may have no formal training in anorectal disease, yet under managed care, they are expected to manage these diseases in their practices. This study was undertaken to assess whether PCPs are accurately diagnosing, treating, and triaging anorectal disorders.

### MATERIALS AND METHODS

A retrospective study was undertaken at Community Health Plan, Latham, New York, a nonprofit health maintenance organization, which hired a full-time board-certified colon and rectal surgeon (CRS) on November 1, 1993. Founded in 1978, Community Health Plan served a patient population of 286,749 in its 37 health centers and affiliated practices in upstate New York, Vermont, and western Massachusetts at the time of this study.

All physician and nonphysician providers at Community Health Plan health centers are salaried, with no financial incentives or disincentives for specialty referrals, testing, procedures, or hospitalizations. No administrative approval is required for such services within the provider network.

All patients are first seen by a PCP who then decides to either treat or triage the patient. All specialty

consultations require referral from a PCP. Surgical referrals are directed to the department of surgery. Elective referrals are reviewed by a surgical physician assistant who then triages them to specific surgeons. Urgent referrals are handled immediately either by the surgeon on call or by direct contact with another surgeon if available. At the time of this study, the Community Health Plan surgery department consisted of four board-certified general surgeons in addition to the colon and rectal surgeon. All health center providers had been notified in writing that a colon and rectal surgeon was joining the staff and what the range of that practice entailed.

Charts of the first 100 consecutive initial consultations to the CRS for anorectal complaints, for which a definitive diagnosis was established, were reviewed by the author and analyzed for accuracy of diagnosis and appropriateness of care. Complications caused by delay in diagnosis or treatment were noted. Results of evaluations by gastroenterologists or general surgeons were evaluated.

### RESULTS

Correct diagnoses were made in 45 of 85 cases (53 percent) by physician PCPs and 6 of 15 cases (40 percent) by physician assistant or nurse practitioner PCPs. Overall, 51 of 100 (51 percent) diagnoses made by PCPs were correct.

|     |              | CRS         |                   |              |          |           |        |           |      |          |            |          |      |                    |  |
|-----|--------------|-------------|-------------------|--------------|----------|-----------|--------|-----------|------|----------|------------|----------|------|--------------------|--|
|     |              | Hemorrhoids | Fissure           | Incontinence | Pruritis | Pilonidal | Abcess | Fistula   | Mass | Rectocol | Proctalgia | Prolapse | Cyst | Fistula in Fissure | Other                                    |
| PCP | Hemorrhoids  | 22          | 11                |              |          |           |        |           |      |          | 1          |          |      | 2                  | 2 (Proctitis, Diverticulosis)            |
|     | Fissure      | 1           | 7                 | 2            |          |           |        |           |      |          | 1          |          |      | 1                  | 1 (None)                                 |
|     | Incontinence | 2           |                   | 1            | 1        |           |        |           |      | 1        |            |          |      |                    |  |
|     | Pruritis     |             | 1                 |              | 5        |           |        |           |      |          |            |          |      |                    |  |
|     | Pilonidal    |             |                   |              |          | 4         |        |           |      |          |            |          |      |                    | 1 (None)                                 |
|     | Abcess       |             |                   |              |          | 1         | 4      | 2         |      |          |            |          |      |                    | 1  |
|     | Fistula      |             |                   |              |          | 1         |        | 2         |      |          |            |          |      |                    |  |
|     | Mass         | 1           |                   |              |          |           |        |           | 0    |          |            |          |      |                    | 5 (4 None, 1 Hypertrophied anal papilla) |
|     | Rectocol     |             |                   |              |          |           |        |           |      | 1        |            |          |      |                    |  |
|     | Proctalgia   |             |                   |              |          |           |        |           |      |          | 2          |          |      |                    |  |
|     | Prolapse     | 1           |                   |              |          |           |        |           |      |          |            | 2        |      |                    |  |
|     | Cyst         |             |                   |              |          |           |        |           |      |          |            |          | 1    |                    |  |
|     | Other        | 3           | 1                 | 1            |          |           |        | 1         |      |          |            |          |      |                    | 3  |
|     |              | None        | Hypertrophic scar | None         |          |           |        | Granuloma |      |          |            |          |      |                    | None<br>Condyloma<br>Foreign body        |

Figure 1. Diagnoses by primary care providers (PCPs) and colon and rectal surgeons (CRSs).

Figure 1 illustrates the concordance of diagnoses by CRS and PCPs. The most commonly made diagnosis by PCPs was hemorrhoids, correct in 22 of 38 cases (58 percent). In 13 instances, symptoms were caused by a fissure; however, in one case each, symptoms were caused by proctalgia fugax, proctitis, and diverticulosis. Diagnosis of fissure was correct in 7 of 13 patients (54 percent), pruritus in 5 of 6 patients (83 percent), pilonidal in 4 of 5 patients (80 percent), abscess in 4 of 8 patients (50 percent), and fistula in 2 of 3 patients (67 percent). Interestingly, the diagnosis of mass was made five times by a PCP, but no mass was found by the CRS. Diagnosis of incontinence, made five times by PCPs, was correct only once (20 percent).

In 25 patients (25 percent), there was a delay to diagnosis or appropriate treatment. Criteria for inclusion in this category are 1) prior visits for the same complaints, 2) persistent symptoms affecting lifestyle, and 3) complications caused by a delay in diagnosis. Difference between the first and second category is a subjective assessment of the degree of impairment of a patient's lifestyle based on history and information available in the patient's medical record. Inclusion in the latter two categories was deemed an adverse outcome. Delay in diagnosis or treatment resulted in an adverse outcome in 15 of 25 patients (60 percent), with complications occurring in 5 patients and prolonged symptoms affecting lifestyle occurring in 10 patients .

### Complications

Four patients developed fistulas in undiagnosed fissures, with one of the fistulotomies resulting in a symptomatic keyhole deformity. One patient developed hepatitis C after receiving 77 transfusions during a 14-year period for massive lower gastrointestinal bleeding caused by an undiagnosed hemorrhoidal source.

### Prolonged Symptoms

Ten patients suffered with persistent symptoms for periods ranging from 5 months to 14 years (mean, 4.5 years). These symptoms had a significant negative impact on the patients' lifestyles. Five of these patients had fistulas, and one each had a pilonidal cyst, massive recurrent lower gastrointestinal bleeding caused by hemorrhoids, rectal prolapse, hemorrhoids, and fissure.

### Unnecessary Referrals

Chart review revealed that seven patients had unnecessary referrals to gastroenterologists, two for fissures, and one each for fistula, pilonidal cyst, hemorrhoids, pruritus, and rectal prolapse. Of these, three underwent colonoscopy, which was unnecessary to establish the diagnoses of fistula, pilonidal cyst, and hemorrhoids.

### Evaluation by General Surgeon

Nineteen patients had prior evaluation by a general surgeon for the same complaint (Table 1). Diagnoses were correct in 8 of 15 patients (53 percent). Results of evaluation and management by general surgeons are as follows.

### Inadequate/Inappropriate Operations

Four patients underwent inadequate or inappropriate operations, necessitating another operation. A summary of these cases is as follows.

*Case 1.* A 42-year-old female with a 14-year history of massive lower gastrointestinal bleeding and profound anemia underwent a right hemicolectomy for a source incorrectly diagnosed in the right colon. Postoperatively, the patient rebled. Subsequent hospitalization with evaluation by a CRS revealed the source to be hemorrhoidal, and hemorrhoidectomy was performed. The patient has never rebled, and her hematocrit remains more than 40 percent.

*Case 2.* A 59-year-old morbidly obese diabetic female presented with a 12-cm area of induration and erythema on the left buttock. White blood cell count was 22,600/ $\mu\text{m}$ . A general surgeon saw the patient in the emergency room where, under local anesthesia,

**Table 1.**  
Results of Evaluation by General Surgeons

|                                       |  |
|---------------------------------------|--|
| 4 Inadequate/inappropriate operations |  |
| General surgeons                      | Colon and rectal surgeons                    |
| Right hemicolectomy                   | Hemorrhoidectomy                             |
| Incision and drainage ischiorectal    | Incision and drainage horseshoe, fistulotomy |
| Sigmoid resection                     | Perineal rectosigmoidectomy                  |
| Excision of external hemorrhoids (×3) | Hemorrhoidectomy                             |
| 5 Untreated because of misdiagnosis   |  |
| 3 Correct diagnosis, no treatment     |  |
| 3 Inappropriate follow-up             |  |
| 1 Referral to gastroenterologist      |  |

he made a small incision and evacuated an estimated 10 to 15 ml of pus. The patient was admitted for intravenous administration of cephazolin. When the patient did not improve within 48 hours, consultation with a CRS was requested. At that time, the patient was noted to have a foul smelling infection with necrotic tissue. Antibiotic coverage was broadened to include anaerobes. The patient was taken to the operating room, and under general anesthesia exploration revealed a horseshoe abscess. Wide debridement and primary fistulotomy according to Hanley's technique<sup>3</sup> was performed, with resultant complete healing.

*Case 3.* A 74-year-old female with rectal prolapse underwent sigmoid resection without dissection below the peritoneal reflection. Symptoms persisted postoperatively. Evaluation by a CRS revealed full-thickness rectal prolapse, which was subsequently successfully treated by a perineal rectosigmoidectomy.

*Case 4.* A 45-year-old male with an 11-year history of hemorrhoidal symptoms underwent excision of external hemorrhoids on three separate occasions by a general surgeon during this period. Symptoms persisted during this entire period, and his chart reflected frequent visits for these complaints. Evaluation by a CRS revealed significant mixed hemorrhoids that were treated by hemorrhoidectomy. He has had no further visits for anorectal complaints.

### Misdiagnosis

Five patients were misdiagnosed by general surgeons and, therefore, did not receive treatment. Three had fistulas, one had a pilonidal cyst, and one had a prolapsed hemorrhoid.

### Correct Diagnosis/No Treatment

The correct diagnosis was made by general surgeons in three patients, but no treatment was offered. Two had fissures, and one had hemorrhoids.

### Inappropriate Follow-Up

Three patients did not have appropriate follow-up by general surgeons. Two of these had incision and drainage of a perirectal abscess but were discharged from care without follow-up. These patients developed fistulas requiring fistulotomy. The third patient had undergone polypectomy one year earlier, which revealed dysplasia in the biopsy. The patient had been instructed to undergo repeat sigmoidoscopy in a

year to evaluate the polypectomy site. The general surgeon, who had not done the original polypectomy, performed a rectal examination only, and informed the patient that no additional evaluation was necessary at the time.

One patient was referred by a general surgeon to a gastroenterologist for evaluation of pruritus. Two patients were correctly diagnosed by general surgeons and advised to have the correct procedure: in one case, hemorrhoidectomy and the other, rectocele repair. One patient was being cared for by an out-of-state general surgeon, and no records were available. In summary, 15 of 19 patients (79 percent) seen by general surgeons were inappropriately managed.

## DISCUSSION

An explosion in the the breadth of medical knowledge and technology in recent decades is responsible for the current cadre of medical specialists, who account for two-thirds of practicing physicians in the United States.<sup>4</sup> This increase in the number of specialists is felt to be partially responsible for increased costs of medical care. To help control these rising costs, managed care has emerged.

One of the ways in which managed care saves health care dollars is by reorganizing the pool of health care providers. Managed care uses fewer physicians per patient population than in traditional fee-for-service medicine, with a proportionally greater decrease in the number of specialists. In addition, nonphysician providers are used to deliver medical care. In a recent study by Weiner,<sup>5</sup> the number of physicians for a patient population of 100,000 ranged from 77.3 to 119.1 in various health maintenance organizations compared with 180.1 in the general population. The number of specialists per 100,000 population in health maintenance organizations ranged from 41.6 to 57.6 compared with 114.4 in the general population. Nonphysician providers ranged from 14.1 to 26.8 per 100,000 patient population.

Another way managed care saves money is by providing medical care in a more cost-effective way. Medical care is more cost-effective when provided by generalists compared with specialists if outcomes are the same. But are they?

Results of the Medical Outcomes Study reported by Greenfield *et al.*<sup>6</sup> concluded that similar short-term and long-term outcomes were obtained in the treatment of hypertension and noninsulin-dependent diabetes by family practitioners, general internists, cardi-

ologists, and endocrinologists. However, inspection of the data reveals that the patients of cardiologists had significantly more baseline comorbid illnesses and that patients of endocrinologists had more diabetic foot disease and realized a greater improvement in such than patients of generalists. The authors then comment that "the more intense care provided by subspecialists might have the maximum impact not on mild to moderately ill patients studied but rather on very sick patients with complicated treatment regimens."

Two prospective studies of asthma patients who had required hospitalization showed better clinical results and lower hospital readmission rates when they were treated by specialists.<sup>7, 8</sup> What these studies suggest is that a generalist's knowledge may be adequate to care for mildly ill patients, but sicker patients may have a better clinical outcome, which is ultimately more cost-effective, when managed by a specialist.

Generalists cannot possibly keep up with all the latest developments in all fields. Therefore, their fund of knowledge has to wait until news of new treatment modalities trickles down to them. A study by Ayanian *et al.*<sup>9</sup> showed that generalists were less aware of the latest drug treatments for myocardial infarction than specialists and, therefore, less likely to use such treatments.

In the surgical literature, case volume has been shown to correlate with clinical outcome. In a very recent study, Rosen *et al.*<sup>10</sup> compared mortality rates for colon surgery performed by board-certified colon and rectal surgeons with other institutional surgeons. Mortality rate for colon and rectal surgeons, who averaged 260 cases each, was 1.4 percent, whereas the mortality rate for general surgeons who averaged more than 60 cases each was 6.8 percent and that for general surgeons who did fewer than 60 cases each was 9.5 percent. In addition, case review supported technical or judgmental error in 29 percent of deaths.

In a study of surgical procedures performed in New York state hospitals in 1986,<sup>11</sup> colectomy was one of five procedures shown to have a significant volume-mortality relationship. For colectomy, the standardized mortality rate for patients of low-volume physicians to those of high-volume physicians was 1.26, which was statistically significant.

Similar data exist for other procedures. Cameron<sup>12</sup> reported that the mortality rate for pancreaticoduodenectomy at Johns Hopkins Hospital dropped from 24 percent before 1980, when they performed fewer

than 10 per year, to 2.6 percent between 1988 and 1990, when they performed 116 such procedures. He then compared that with the 15.2 percent mortality rate for the 112 pancreaticoduodenectomies performed at 33 other hospitals throughout the state during the latter time period.

Survival following surgery for ovarian cancer has been shown to be influenced by the presence in the operating room of a subspecialist in gynecologic oncology.<sup>13</sup> This improvement in survival was a direct result of the more aggressive surgical approach to achieving optimum cytoreduction by gynecologic oncologists compared with gynecologists and general surgeons. Despite more extensive operations performed by gynecologic oncologists, postoperative mortality rate and ultimate survival were better.

Anorectal surgery is taught in both general surgery residencies and colon and rectal fellowships. However, a study by Hyman and Hebert<sup>14</sup> showed the mean number of anorectal procedures performed by graduating surgery residents from 1987 to 1991 was 30, with a mean of 8.3 hemorrhoidectomies, 3.2 sphincterotomies, 7.7 drainage of abscesses, and 4.8 fistulotomies.

Once in practice, experience remains limited.<sup>15</sup> Initiates in general surgery in 1989 report 2.7 percent of their caseload to be in anorectal surgery. Recertification candidates in general surgery by the American Board of Surgery for the year 1987 to 1988, who had been in practice for 10 to 15 years, likewise had 3.5 percent of operative cases in anorectal surgery. Average hypothetical number of hemorrhoidectomies per practicing general surgeon in 1987 was 3.4. With this dearth of experience, it is not surprising that in the present study general surgeons made a correct diagnosis in only 53 percent of cases and incorrectly managed care in 79 percent of cases.

This study was not intended to malign or condemn the PCP or general surgeon. The point is that, as our health care delivery system changes, so must our educational system. It is not sufficient or appropriate to decree that generalists will now do the work of specialists. If generalists are now going to be our primary health care deliverers, then we must equip them with the proper tools. This can be accomplished by increasing exposure of generalists to specialists, rather than decreasing such exposure. In a study by Galandiuk,<sup>16</sup> presence of a surgical subspecialist on a general surgery residency program dramatically enhanced the number and variety of cases performed in that specialty by the residents.

It is ludicrous to expect that a generalist, in three years of training, can have the knowledge acquired by a specialist in the five to eight years required for training in each field. It is, nevertheless, possible for a generalist to acquire a broader base of skills by changing the training process. However, equally as important, if not more so, than teaching and expecting generalists to do more is teaching them to know the limits of their knowledge and training. Prompt *appropriate* referrals to subspecialists for sicker or more complicated patients or when expected results do not materialize from treatment regimens would result in better clinical and more cost-effective outcomes.

In the present study, it was possible to see the outcomes for anorectal disease in a managed care system. Almost one-half of the diagnoses were incorrect, 15 percent of patients suffered an adverse outcome because of delay in diagnosis or treatment, 7 percent had unnecessary referrals to a gastroenterologist resulting in 3 percent undergoing unnecessary colonoscopy, 4 percent underwent inappropriate surgical procedures necessitating reoperation in all, and additional hospitalizations in 2 percent with a prolongation of hospitalization in 1 percent. These results do not demonstrate good medical care, were certainly not cost-effective, and do not represent progress in delivery of medical care.

This leaves us with a conclusion and a challenge. The conclusion is obvious: colon and rectal surgeons need to be available to patients in managed care systems. The challenge is more daunting. If we are going to improve management of anorectal disease in the managed care environment, colon and rectal surgeons need to take the lead. Colon and rectal surgeons need to develop educational tools to enable PCPs to learn about anorectal disease and its management. At the residency level, colon and rectal surgeons need to become more involved in the teaching of primary care residents. To teach those already in practice, continuing medical education programs need to be developed. In the managed care setting, algorithms for management of anorectal complaints need to be formulated so patients will be managed and triaged appropriately.

For those who might feel threatened that their specialty is being "invaded" by generalists in managed care, rest assured. There will always be a need for specialty care. The only thing that will change by educating PCPs about anorectal disease is that patients will be diagnosed, treated, and triaged appropriately.

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