

Irritable Bowel Syndrome: Toward a Cost-Effective Management Approach

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Abstract

Objective: To examine the economic implications of current irritable bowel syndrome (IBS) management practices and formulate recommendations based on these implications.

Methods: Relevant English-language research publications in which the direct and indirect costs of IBS were examined, identified using a search of records contained in Medline.

Results: Review of the identified publications indicates that in Western nations, IBS management is associated with high direct costs (particularly for diagnostic testing, office visits, pharmacotherapy, and emergency department visits). Indirect costs, associated with lost wages and decreased productivity, account for the largest proportion of the IBS economic burden. Moreover, rapid projected growth in IBS disease-related costs indicates a need for more focused attention toward improved treatment of IBS. More cost-effective management might be achieved by diagnosing and instituting nonpharmacologic and pharmacologic management earlier in the disease process. Under such an approach, patients are classified based on symptoms and a therapeutic trial is begun. More extensive, expensive diagnostic testing is reserved for patients refractory to treatment or for whom serious disease must be ruled out.

Conclusion: IBS is a condition with high direct and indirect costs. Management strategies should be evaluated both on their clinical efficacy and on their cost effectiveness. As new, IBS-specific pharmacotherapies become available, the ability to diagnose and manage the condition in a cost-effective manner can be improved.

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Irritable bowel syndrome (IBS) is a chronic and recurrent type of functional gastrointestinal (GI) disorder. Although IBS is the most common disorder diagnosed by gastroenterologists,^{1,2} many patients may not seek treatment,³ and the disease prevalence may be underestimated. IBS has been a difficult disease to diagnose, and only recently are therapies based on pathophysiology becoming available. This article reviews the economic and health burden of IBS and makes recommendations for cost-effective management of the condition.

IBS: A Difficult Condition to Diagnose

Historically, the diagnosis of IBS has been based on clinical patterns rather than physical signs because the symptoms may not be linked with clear objective findings. The condition involves changes in bowel patterns (either constipation or diarrhea) and abdominal pain, discomfort, and bloating.^{4,5} Despite such recognizable symptoms, radiologic, endoscopic, and laboratory testing reveal no significant structural or biochemical abnormalities of the GI tract.^{5,6} This lack of objective findings may occur because

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the condition is not caused by structural problems in organs of the GI system.

Recent research indicates that IBS may be caused by dysfunction of neurologic mechanism(s) that leads to alterations in GI motility and visceral sensory perception.^{6,7} For instance, scientists have found that patients with IBS experience abdominal pain at significantly lower distension volumes, respond at lower than normal thresholds to various painful gut stimuli, and have more frequent high-amplitude contractions of the rectosigmoid.⁸ Several studies have shown that IBS diagnosis is correlated with other, non-GI somatic conditions, including headache, fatigue, urologic and gynecologic symptoms, fibromyalgia, and depression.^{9,10} Together, these findings suggest that IBS may be associated with a systemic neural disorder.

Issues also arise about the characteristics of the population that seeks medical help for this condition. Based on US surveys, IBS is the seventh most common diagnosis encountered by all physicians, and its symptoms are estimated to be present in up to 20% of the population at any one time.^{1,2} In Western countries, IBS is reported by women 3 times more often than by men,¹¹ and women seek medical care for IBS twice as often as men.¹ However, cross-cultural differences in the female-to-male incidence ratio suggest that this may reflect cultural gender differences in healthcare-seeking behavior.⁸ Physicians attempting to diagnose IBS should have these patterns of care-seeking behavior in mind and need to be cognizant that some patients suffering from IBS may be hesitant to seek treatment.

The Economic Challenge of IBS

Overall Cost Estimates. A community-based study showed that annual societal costs associated with IBS are about \$8 billion (1992 \$US).¹² This estimate adjusted to 1999 \$US amounts to \$10.5 billion annually. Further, even this estimate may be low because this study did not include prescription drug costs and

indirect costs related to lost wages, and nonmedical costs such as home care.^{12,13} Indeed, IBS patients take over 2 million prescriptions annually. Fullerton¹⁴ found a wide range of estimates of the total international costs of IBS, amounting to about \$41 billion (\$US) in 8 major industrialized countries.

Cost increases are a result of increases in various aspects of medical care. Eisen et al¹⁵ performed a cross-sectional, case-controlled study of patients enrolled in the Lovelace Healthcare management organization. Over the course of 1 year, IBS respondents at Lovelace Healthcare filled more prescriptions (5.9 versus 4.8), had a greater number of outpatient visits (9.1 versus 6.9), and had higher outpatient charges (\$934 versus \$680) than patients without IBS (G. M. Eisen et al, unpublished data, 2001).

Indirect Costs. Cost estimates for the total economic burden associated with IBS are likely to be lower than actual costs because a clinical diagnosis of IBS is often not made and the indirect costs are not well characterized. In a survey of 5430 mailings from a random sample of US households,¹⁶ people with IBS symptoms missed work or school an average of 13 days per year, an absenteeism rate nearly 40% greater than among people without these symptoms. IBS affects many aspects of a patient's life because its symptoms disrupt sleep, diet, and sexual functioning.¹⁷⁻¹⁹ These changes, in turn, interfere with daily activities and disrupt the ability to function in family and work-related roles. Using the Short Form-36 (SF-36), an extensively validated quality-of-life (QOL) instrument, in a cross-sectional, point-in-time, postal survey, Hahn et al²⁰ showed that a random sample of 1000 IBS patients from both the United States and United Kingdom experienced serious QOL decrements compared with norms in all dimensions of health measured. They found that one third of the IBS patients reported work absenteeism, with an average of 1 to 2 workdays missed every 4 weeks.²⁰

Although indirect costs related to IBS have received scant research attention, several studies indicate they account for the largest proportion of total annual IBS costs. For instance, wages lost because of IBS-related absenteeism in Canada during 1999 were estimated to be slightly over \$1 billion.²¹ In a database study of 630 employees with IBS and 1260 without any GI disorders, IBS patients were found to have 3.27 more absences annually than those with no GI conditions (A. J. Chawla, PhD, et al, unpublished data, 2001). Based on expected demographic and economic changes, total indirect costs of functional digestive diseases (including functional dyspepsia and IBS) in the United States were projected to grow to \$19.6 billion in 2000.¹⁴

Diagnostic Testing: Substantial Portion of Disease Cost. Because of the absence of an objective, confirmatory test for

IBS, physicians are advised to base diagnosis on the recognition of changes in bowel patterns and pain/bloating (Tables 1, 2).^{4,22,23} Because symptoms are not specific to IBS and in some cases may signify more serious disease (eg, malabsorption, inflammatory bowel disease, cancer), diagnosis based on symptoms alone is unlikely to be accurate or prudent.²² Alarming symptoms, such as nocturnal awakening with onset of symptoms and the passage of mucus or blood with defecation, need to be more aggressively evaluated.⁶ Physicians are advised to conduct a limited number of diagnostic procedures that rule out structural and biochemical abnormalities. These are to be chosen based on the patient's age, symptom severity and duration, and medical and family history.^{10,24,25}

A considerable portion of IBS costs may be attributable to diagnostic investigations.²¹ Studies suggest that IBS continues to be overinvestigated.²⁶ For example, in a recent Canadian study, diagnostic tests for IBS accounted for \$41 million and \$59.7 million (1996 Canadian dollars) in Ontario and Quebec, respectively. In both provinces, this consumed the largest proportion of the total annual IBS direct costs (45% to 46%), exceeding the proportion expended for drugs (up to 19%), office visits (up to 29%), or emergency department visits (up to 11%).²¹ Similarly, in the United States, estimated annual costs for laboratory and radiologic investigations are higher among IBS patients (US \$196) than among patients with other, non-GI symptoms (US \$114) and accounted for 26% of the annual direct costs observed among the IBS patients studied.¹² In the United Kingdom, a recent study showed that 63% of IBS patients underwent an investigative procedure, such as barium meals or enemas, small bowel X rays, abdominal ultrasound, and occult blood testing.²⁷ Camilleri and Williams²⁶ further stated that high diagnostic costs for IBS in the United States may be the result of a system that creates incentives for overinvestigation because of

Table 1. Manning Symptoms of IBS

- Looser stools with onset of pain*
- More frequent stools with onset of pain†
- Pain relief after bowel movement†
- Visible distension†
- Sensation of distension
- Passage of mucus
- Sensation of incomplete emptying
- Bowel movement before breakfast
- Nocturnal bowel movement
- Urgency of defecation
- Pain worsening after bowel movement
- Pain eased with flatus
- Two bowel movements between meals
- Harder stools with onset of pain
- Less frequent stools at onset of pain

IBS = irritable bowel syndrome.

*Significantly more common in patients with IBS ($P < .001$).

†Significantly more common in patients with IBS ($P < .01$).

Source: Manning AP, Thompson WG, Heaton KW, Morris AF. Towards positive diagnosis of the irritable bowel. *BMJ* 1978;2:653-654. Adapted with permission.

reimbursement for individual diagnostic procedures.

Is all of this diagnostic intensity required? US, UK, and Danish studies show that initial misdiagnosis is rare,²⁸⁻³⁰ and additional testing, in the absence of a change in the nature of symptoms, seldom alters the initial diagnosis.^{10,31} Together, these studies suggest that current diagnostic practices for IBS are not cost effective and present opportunities for cost reduction through the use of more standardized diagnostic guidelines. Recently, Suleiman and Sonnenberg³² found that inexpensive and noninvasive tests (history plus physical examination, laboratory test panel, hydrogen breath test, and small bowel follow-through) of IBS provided a diagnostic probability over 80% at a cost of \$398. Use of flexible sigmoidoscopy or colonoscopy increased the diagnostic probability to a small extent but increased costs substantially.

Physician Office Visits

Patients with IBS visit physicians' offices about 3.5 million times per year.¹¹ IBS patients in both the United States and the United Kingdom have frequent office visits, with 1 study indicating an average of 4.7 and 5.2 visits per year, respectively.²⁰ These and other studies indicate that such office visit rates are much higher than those seen for patients without IBS.^{12,16,20,33} Moreover, IBS patients report a higher number of office visits for non-GI symptoms.¹⁶ In their large community survey, Talley et al¹² found that costs for office visits (US \$228) may account for 31% of the total annual cost incurred per IBS patient. Studies conducted in the United Kingdom and Canada report similar estimates.^{13,21} For instance, Bentkover et al²¹ found that in Ontario, Canada, 29% of the direct costs incurred by IBS patients were attributable to office visits to general practitioners, though a lower figure (18%) was seen in Quebec.²¹ These findings are in line with an earlier analysis from Wells et al,¹³ who estimated that visits to a general practitioner were responsible for 29% of the total estimat-

ed direct costs incurred by IBS patients in the United Kingdom in 1995. However, to the best of our knowledge, the earlier Wells study did not include charges for visits to specialists. This may be critical to accurately estimating office-visit costs. The recent Bentkover study indicated that visits to specialists were responsible for an additional 10% of resource usage.²¹

Prescription Drug Costs. Because the underlying cause of IBS is not known, treatment focuses on symptom management. Although dietary and behavioral modifications are suggested,⁷ clinical trials have failed to show the efficacy of these approaches, and most patients who receive therapy are managed with prescription drugs. Seventy-five percent of visits to gastroenterologists for IBS symptoms result in GI drug prescriptions,¹ and over 2 million prescriptions are received for IBS management annually.¹¹ Commonly prescribed drugs for IBS include antidiarrheals, antispasmodics, cathartics/laxatives, acid reducers, analgesics, and antidepressants.⁸ In a claims-based review of drug utilization data from 3149 patients diagnosed with

Table 2. Rome II Criteria for IBS Diagnosis

<p>At least 12 weeks, which need not be consecutive, in the preceding 12 months of:</p> <p>Abdominal pain or discomfort that has 2 of 3 features:</p> <ul style="list-style-type: none"> ■ Relieved with defecation, and/or ■ Onset associated with change in frequency of stool, and/or ■ Onset associated with change in form (appearance) of stool <p>Supporting symptoms</p> <ul style="list-style-type: none"> ■ Abnormal stool frequency (>3/day or <3/week) ■ Abnormal stool form (lumpy/hard or loose/watery) ■ Abnormal stool passage (straining, urgency, or feeling of incomplete evacuation) ■ Bloating or feeling of abdominal distension

IBS = irritable bowel syndrome.

Source: Reference 5.

IBS, it was found that antispasmodics were the most commonly prescribed medication for IBS (51%).³⁴ The majority of IBS patients receive 2 or more drugs, either singly or concurrently, during the year after IBS diagnosis,³⁴ which may indicate a need for more effective monotherapies that can impact the multitude of symptoms exhibited by IBS patients. Few studies have examined the prescription drug cost component in IBS sufferers. In Canadian and UK studies, costs associated with IBS prescription drug use were estimated to account for between 5% and 27% of the total annual cost of caring for IBS patients who seek medical care.^{13,21}

Inpatient/Emergency Department Services. A number of studies indicate that IBS patients are more likely to receive emergency or inpatient medical care and to incur higher expenditures related to such care than people with non-GI symptoms.¹² IBS patients in the United Kingdom and in the United States who reported receiving some form of medical assistance presented for emergency care an average of 1.5 and 1.8 times per year, respectively.²⁰ In the large US study by Talley et al,¹² 17% of such IBS patients received emergency and/or inpatient care with a median cost (1992 \$US) of \$1024. This was nearly twice the proportion of patients with non-GI symptoms who received such care (9%), and the median cost per visit was nearly twice that for controls.¹² In the Canadian study by Bentkover et al,²¹ analysis of emergency department usage revealed a similar trend: 7% and 9% of IBS patients in Quebec and Ontario, respectively, were judged to be in need of emergency department services, and these services constitute a considerable portion (7% to 11%) of the total estimated costs of IBS management in these provinces. According to 1 study, compared with charges for non-GI patients, higher hospital costs for IBS patients may be attributed not only to more frequent emergency department visits but also to the higher probability of under-

going a variety of abdominal and extra-abdominal surgeries, including gynecologic and urologic procedures, as well as removal of skin lesions, eye or nasal surgery, and breast biopsies.³⁵

Summary of Cost Analysis

IBS patients are 1.6 times more likely to present for medical care than similar patients without such symptoms,¹² and costs incurred are higher for patients with IBS than for people with non-GI symptoms who present for medical care. Excess costs have been reported in every category examined, including investigational procedures, physician office visits, outpatient hospital costs, emergency and inpatient hospital charges, and indirect costs as a result of lost wages and decreased quality of life. The average annual direct cost per IBS patient has been estimated to be 58% higher than that seen with a demographically similar patient without IBS.¹² Collectively, these studies suggest that IBS presents significant economic burdens to both the healthcare industry and society as a whole.

Recommendations for Cost-Effective Management

The economic burden of IBS is heavy and continues to grow,¹⁴ making development of effective and cost-sparing management guidelines ever more important in the absence of a curative treatment. As has been documented in other types of chronic diseases, the pattern of frequent office visits, repeated investigative procedures, and utilization of multiple prescription and nonprescription drugs^{12,27,34} indicates that IBS patients appear to suffer substantial symptoms and decreased quality of life.

Many of the therapies currently used for IBS only target 1 symptom and are ineffective or produce adverse effects. Limited success with these agents may frustrate physicians and patients. Difficulties in diagnosing the condition and dissatisfactory therapies may lead patients to “doctor shop” in an attempt to achieve relief from IBS symptoms.

Detailed cost analyses and disease burden studies highlight clear opportunities for improving the diagnosis and management of IBS. In particular, investigators have attempted to target more efficient and effective approaches that reduce resource utilization for investigative procedures, frequent office visits, and specialist referrals. With these goals in mind, a number of authors have proposed strategies and helpful guidelines (Table 3) aimed at primary care physicians, who manage the majority of IBS patients.²⁷

For instance, to avoid unnecessary, expensive, repeated, and sometimes risky investigations, physicians managing patients with suspected IBS (based on clinical features, a thorough patient and family history, and limited, complementary investigation) may initiate appropriate symptomatic treatment, with reassessment in several weeks.^{7,24,36} Most of the tests recommended for initial diagnosis of patients with mild or moderate IBS symptoms, such as blood tests and stool tests, are available to the primary care provider.³⁷ For many patients, this appears to be a prudent, low-risk, and cost-effective approach.

The currently recommended diagnostic screening procedures include but are not limited to selected laboratory tests of blood and stool samples, colonoscopy, endoscopy, proctosigmoidoscopy, biopsy, radiographic testing, GI motility studies, and ultrasound.^{8,10} In the systematic approach, patients meeting initial diagnostic criteria undergo a limited screen for organic disease. They are then categorized based on symptoms (diarrhea, constipation, gas/bloating/pain) and are then treated. Only when the symptoms are intractable are further expensive diagnostic tests required. Suleiman and Sonnenberg³² suggest that use of flexible sigmoidoscopy and colonoscopy should be reserved for cases in which serious organic disease is suspected and must be ruled out.

The management of IBS has been limited because the available IBS medications are nonspecific. Recently,

agents have been developed that specifically target IBS. Tegaserod, a partial 5-hydroxytryptamine agonist, has been found effective for accelerating orocecal transit time in female IBS patients with constipation.³⁸ Tegaserod has been shown to reduce abdominal pain, bloating, and constipation. It also improves bowel consistency.³⁹ The agent, alosetron, which was approved by the Food and Drug Administration (FDA) for female IBS patients whose predominant bowel symptom is diarrhea,⁴⁰ was recently withdrawn from the market because of safety concerns. (An FDA advisory committee meeting is planned to consider reintroducing the drug as a treatment for IBS.) Other agents under investigation include kappa-opioid antagonists and neurokinin antagonists.³⁹ Clinicians should consider new IBS-specific therapies as they become available as they may provide more effective management.

Regardless of which therapy is considered, primary care providers should proactively educate patients about the nature of IBS.^{8,29} The physician who confidently reaches a diagnosis, provides reassurance about the non-life-threatening nature of IBS, and discusses the

Table 3. Primary Care Strategies for Reducing Direct and Indirect IBS Expenditures

- Diagnose IBS based on positive symptom criteria (eg, Rome, Manning) and limited investigation
- Initiate early trial of symptomatic treatment (3 to 6 weeks)
- Establish a positive, strong physician-patient relationship
 - Educate
 - Reassure
 - Discuss precipitating factors
 - Obtain and discuss psychosocial history
- Discuss and negotiate treatment
- Conduct further investigations only if symptoms are intractable
- Discourage repeated investigations
- Refer to specialist if symptoms are severe
- Communicate and coordinate care with specialist

IBS = irritable bowel syndrome.

recurrent and often chronic nature of the syndrome confers several important benefits to the patient. The physician should emphasize that there is no cure for the condition, but it can be treated. Patients who are satisfied and confident with the physician's diagnosis are less likely to require referral to a specialist.²³ Moreover, explaining to the patient that his/her symptoms are not life-threatening but are likely to be recurrent provides necessary reassurance while laying a foundation for realistic patient expectations. Importantly, reassurance and education are likely to reduce the possibility of referral or "doctor shopping" as well as patient requests for additional, unnecessary investigations.²³ The patients should also be counseled about the various treatment options. The informed patient may experience less stress and fear, which may in turn alleviate symptoms and help the patient better cope with symptoms and maintain a higher quality of life. Promoting and maintaining patient compliance would also lead to beneficial outcomes. Further, these common-sense steps play an important role in establishing a positive physician-patient relationship and have been shown to result in fewer return visits for IBS-related symptoms, suggestive of a more positive patient outcome.²⁹

Primary care physicians are also encouraged to establish good communication with the specialists to whom they refer IBS patients with severe symptoms. Such communication can prevent duplication of tests as well as provide support to the primary care physician, who is likely to continue to manage the majority of a given IBS patient's health-care needs.²³

The search for more effective treatments for IBS holds more promise today than in the past. Until safe therapies become available, providers can take immediate and simple approaches to help improve outcomes and reduce costs associated with diagnosis and long-term IBS symptom management.

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