

# The Burden of IBS: Looking at Metrics

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*Current Gastroenterology Reports* 2009, 11:265–269  
Current Medicine Group LLC ISSN 1522-8037  
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Irritable bowel syndrome (IBS) is a prevalent and expensive condition that significantly impairs health-related quality of life (HRQOL) and reduces work productivity. Based on strict criteria, 7% to 10% of people have IBS worldwide. Community-based data indicate that IBS-diarrhea and IBS-mixed subtypes are more prevalent than IBS-constipation, and that patients may switch among subtype groups. IBS is 1.5 times more common in women than in men, more common in lower socioeconomic groups, and more commonly diagnosed in patients younger than 50 years of age. Patients with IBS visit the doctor more frequently, use more diagnostic tests, consume more medications, miss more workdays, have lower work productivity, are hospitalized more frequently, and consume more overall direct costs than those without IBS. Resource utilization is highest in patients with severe symptoms and poor HRQOL. Treatment decisions should be tailored to the severity of each patient's symptoms and HRQOL decrement.

## Introduction

Irritable bowel syndrome (IBS) is a highly prevalent condition that affects patients physically, psychologically, socially, and economically. Knowledge of the burden of illness of IBS serves several purposes. For patients, it emphasizes that many others have IBS, and that people suffering from the disorder should not feel alone with their diagnosis or disease-related experiences. For health care providers, it highlights that IBS patients constitute a large part of medical practice. Moreover, improved understanding of the impact of IBS on their patients' well-being allows providers to act on this insight by selecting treatments tailored to each patient's symptoms and health-related quality of life (HRQOL) decrement. For researchers and drug-approval authorities, IBS is

approached as a condition with a prevalence and HRQOL impact matching other major diagnoses, such as diabetes, hypertension, or kidney disease [1,2]. For employers and health care insurers, the overwhelming direct and indirect expenditures related to IBS are revealed, providing a business rationale to ensure that IBS is treated effectively. This article summarizes data regarding the burden of illness of IBS, including 1) the prevalence of IBS and its subtypes; 2) the age of onset and gender distribution; 3) the effect on HRQOL; and 4) the economic burden, including direct and indirect expenditures and related clinical predictors.

## Prevalence of IBS

Prevalence estimates of IBS in North America and Europe range from 1% to more than 20% [3,4]. This wide range indicates that IBS prevalence, like prevalence of all diseases, depends on several variables, including the case-finding definition employed (eg, Manning criteria vs Rome criteria), the characteristics of the source population (eg, primary care vs specialty clinic), and the study methods and sampling frame of the studies. To refine the prevalence estimate, it is worth evaluating studies that specifically employ consensus-based Rome definitions (which are the gold standard) and draw upon patients from the general adult community (ie, not exclusively from primary or specialty care). Four eligible studies evaluating 32,638 North American subjects meet these criteria [5–8]. In these studies, the IBS prevalence varied from 5% to 10% with a pooled prevalence of 7% (95% CI, 6%–8%) [5–8]. Although previous reviews indicate that IBS patients are divided evenly among the three major subgroups (IBS-diarrhea, IBS-constipation, and IBS-mixed) [9], the true prevalence of IBS subtypes in North America remains unclear; one study suggested that IBS with diarrhea is the most common subtype [6], whereas another indicated that mixed-type IBS is most common [7].

## Demographic Predictors of IBS

Demographic predictors of IBS include gender, age, and socioeconomic status. The odds of having IBS are higher in women than in men (pooled OR = 1.46; 95% CI, 1.13–1.88) [5–8]. Interestingly, IBS is now recognized as a key component of the Gulf War syndrome, a multi-symptom complex affecting soldiers (a predominantly male population) engaged in the Gulf War [10–12].

IBS is diagnosed more commonly in patients under the age of 50 years, although 2% to 6% of patients are 50 years or older [5–7]. These data suggest that the pre-test likelihood for IBS is higher in younger patients, but that patients of all ages may be diagnosed with the condition. This review identified two studies that reported IBS prevalence by income strata, both of which revealed a graded decrease in IBS prevalence with increasing income: 8% to 16% of people earning less than \$20,000 annually carry the diagnosis, compared with only 3% to 5% of people earning more than \$75,000 [6,8].

## HRQOL of IBS

Several studies have compared HRQOL in IBS patients with HRQOL in healthy controls or controls with non-IBS medical disorders, and these were summarized in a previous systematic review [1]. Data consistently demonstrate that patients with IBS score lower on all eight scales of the SF-36 HRQOL questionnaire compared with “normal” non-IBS cohorts. Patients with IBS have the same physical HRQOL as patients with diabetes, and a lower physical HRQOL compared with patients who have depression or gastroesophageal reflux disease [1,2]. Also, mental HRQOL scores on the SF-36 were lower in patients with IBS than in those with chronic renal failure (an organic condition marked by considerable physical and psychologic disability). In some cases, this HRQOL decrement in IBS can be so severe as to raise the risk of suicidal behavior [13,14•]. The relationship between IBS and suicidality appears independent of comorbid psychiatric diseases such as depression. However, because studies examining this relationship were performed in tertiary-care referral populations, the HRQOL decrement and suicidality risk documented in these cohorts may not be applicable to community-based populations. Nonetheless, IBS unquestionably has a negative impact on HRQOL, and failing to recognize this impact could undermine the physician-patient relationship and lead to dissatisfaction with care. As HRQOL decrements are common in IBS, routine screening for diminished HRQOL in IBS patients is recommended. Treatment of IBS should be initiated when the symptoms are found to reduce functional status and diminish overall HRQOL. Furthermore, clinicians should remain alert to potential suicidal behavior in patients with severe IBS symptoms, and initiate timely interventions if suicide forerunners are identified.

A practical limitation of determining HRQOL in the busy outpatient setting is that its accurate measurement requires a thorough and often time-consuming evaluation of biologic, psychologic, and social health domains. To help providers gain better insight into their patients’ HRQOL, a concise list of factors known to predict HRQOL in IBS might be used routinely to question patients. Indeed, several studies have identified predictors of HRQOL in IBS, the most consistent of which is the severity of the predominant bowel symptom [15–19].

Data from several studies indicate that in patients with IBS, HRQOL decreases in parallel with increasing symptom severity [14•,15,17]. It is important, therefore, to identify the predominant symptom of patients with IBS, and to gauge the symptom severity. Studies have shown that the impact of physical HRQOL symptoms in IBS are associated with an increase in the duration of symptom flares and the presence of abdominal pain (in contrast to discomfort) [19]. Mental HRQOL symptoms are associated with abnormalities in sexuality, mood, and anxiety [19]. Each domain shares a common association with symptoms of chronic stress and vital exhaustion, including tiring easily, feeling low in energy, and experiencing sleep difficulties [19]. Patients acknowledge that these symptoms prompt avoidance of socially vulnerable situations (eg, being away from restrooms) and activities (eg, eating out for dinner). In contrast, HRQOL is not strongly determined by the presence of specific gastrointestinal symptoms (eg, diarrhea, constipation, bloating, dyspepsia), degree of previous gastrointestinal evaluation (eg, flexible sigmoidoscopy or colonoscopy), or common demographic characteristics (eg, gender, age, marital status) [17].

These findings suggest that in addition to the physiologic epiphenomena used to gauge HRQOL (eg, stool frequency and characteristics, IBS subtype), it may be more efficient to assess HRQOL by gauging global symptom severity, addressing symptom-related fears and concerns, and identifying and eliminating factors contributing to vital exhaustion in IBS. This process may occur through teaching coping mechanisms and relaxation skills, developing a greater sense of self-efficacy by encouraging control over IBS symptoms, promoting lifestyle modifications to reduce symptoms (ie, diet, exercise, quitting smoking), and encouraging patients to recognize their own limitations. When provided in concert with standard medical therapies, these approaches yield improved overall HRQOL [20–22]. In short, treating bowel-related symptoms of IBS is important but may not be sufficient to impact overall HRQOL. In addition to treating symptoms, providers should attempt to positively modify the cognitive interpretation of IBS symptoms—that is, acknowledge and address the emotional context in which symptoms occur.

But none of this can happen if providers fail to measure overall HRQOL. To assist with clinic-based HRQOL assessments, a short HRQOL questionnaire was developed specifically for use in everyday clinical practice. The questionnaire can be administered in the waiting room, and a nurse can quickly score the results and put it on the doctor’s intake sheet as done for vital signs. This type of information may be much more valuable in IBS than the typical vital signs of temperature, blood pressure, heart rate, and respiratory rate. Based on previous research, including interviews with patients, experts, and our own database studies, we created a questionnaire with only four questions (Fig. 1) [23]. Most patients fill out the

**How bad are your bowel symptoms?**

- None: no symptoms
- Mild: symptoms can be ignored
- Moderate: symptoms cannot be ignored
- Severe: symptoms affect your lifestyle
- Very severe: symptoms markedly affect lifestyle

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**Do you feel like your bowel symptoms mean there's something seriously wrong with your body?**

- No, not at all
- Yes, slightly
- Yes, somewhat
- Yes, quite a bit
- Yes, a great deal

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**Do you feel tense or "wound up"?**

- Most of the time
- A lot of the time
- From time to time, occasionally
- Not at all

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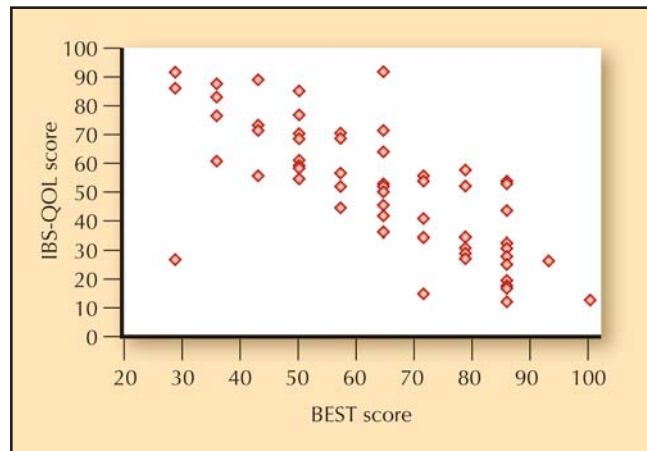
**Can you still enjoy the things you used to enjoy?**

- Definitely as much
- Not quite as much
- Only a little
- Hardly at all

**Figure 1.** The "BEST" questionnaire to measure health-related quality of life in the office setting. The answers to these questions can be scored from 0 (best) to 100 (worst) using a standard scoring algorithm, and the score can be given to the physician as a vital sign for how the patient is feeling. This information might help direct the physician in making treatment decisions. The questionnaire is designed to provide information that many physicians fail to obtain during a standard patient interview.

questionnaire in less than a minute, and a nurse can score it in under 30 seconds using a simple algorithm. The score ranges between 0 and 100, where 100 is the worst and 0 is the best score. It is called the BEST questionnaire because key words in the four questions spell out "BEST" (not necessarily because this is the "best" way to measure HRQOL): "How *bad* are your bowel symptoms?," "Can you still *enjoy* the things you used to enjoy?," "Do you feel like your bowel symptoms mean there's something *seriously* wrong?," and "Do your bowel symptoms make you feel *tense*?" Data indicate that the BEST score is an excellent substitute for the Irritable Bowel Syndrome–Quality of Life, a highly validated research questionnaire that is onerous for everyday clinical practice, suggesting that the instrument could give a quick snapshot of overall HRQOL (Fig. 2) [23]. Future research can help to better understand how this score works over multiple follow-up visits, and to better understand how having this information can improve not only provider decision-making, but also the overall patient-provider relationship.

Ultimately, questionnaires like BEST can improve patient care by bridging the gap between providers and their patients. If physicians can learn what questions to ask and if patients provide the right information, then this exchange might supply more valuable information than any vital sign or individual symptoms.



**Figure 2.** The four-question "BEST" score compared with the 34-question Irritable Bowel Syndrome–Quality of Life (IBS-QOL) score. These data are from a study of 58 people with IBS designed to evaluate their BEST scores compared with their IBS-QOL scores. The graph shows that as the BEST increases, the IBS-QOL score decreases, and that the two are closely related. This suggests that the BEST score, which was purposefully designed for use in the office setting, could possibly be used as a substitute for the longer IBS-QOL for physicians who are otherwise unwilling to use longer research-oriented questionnaires in the office.

## Resource Utilization in IBS

Patients with IBS consume a disproportionate amount of resources. Burden-of-illness studies estimate that 3.6 million physician visits for IBS occur annually in the United States, and that IBS care consumes more than \$20 billion in direct and indirect expenditures [24]. Moreover, patients with IBS consume over 50% more health care resources than matched controls without IBS [25,26]. These data suggest that the economic burden of IBS stems not only from the high prevalence of the disease, but also from the disproportionate use of resources it causes.

Despite the dissemination and use of guidelines reinforcing these data [9], much of the cost of care in IBS arises from sequential diagnostic tests, invasive procedures, and abdominal operations [24,27]. For example, patients with IBS are three times more likely than matched controls to undergo cholecystectomy despite knowledge that IBS symptoms almost invariably persist following the surgery [27]. Similarly, nearly 25% of colonoscopies performed in patients younger than 50 years of age are for IBS symptoms [28], regardless of data indicating that colonoscopy has a low diagnostic yield in IBS and that negative examinations fail to improve intestinal symptoms, do not augment HRQOL, and are unlikely to provide additional reassurance compared with not performing colonoscopy [29]. Resource utilization in IBS also is driven partly by the presence of comorbid somatization—a trait found in up to one third of IBS patients that is characterized by the propensity to overinterpret normal physiologic processes [30,31]. Patients with somatization typically report a barrage of seemingly unrelated physical complaints (eg, back pain, tingling, headaches, temporomandibular joint pain, muscle aches) that may be linked to underlying

psychosocial distress [30,31]. These patients are sometimes misclassified as having several underlying organic conditions, and undergo sequential diagnostic tests as a result of the symptoms [32]. There is a linear and highly significant relationship between levels of somatization and the amount of diagnostic testing in IBS, suggesting that providers should remain alert for somatization in IBS and aggressively treat or refer somatization patients to an experienced specialist rather than perform potentially unnecessary diagnostic tests [32].

In addition to direct costs of care, IBS patients engender significant indirect costs as a consequence of missing work and impaired work performance on the job. Employees with IBS are absent 3% to 5% of the workweek, and report impaired productivity 26% to 31% of the week [33,34,35]; these rates exceed those of non-IBS control employees by 20% and are equivalent to 14 hours of lost productivity per 40-hour workweek [34]. Compared with IBS patients who exhibit normal work productivity, patients with impaired productivity have more extraintestinal comorbidities (eg, chronic fatigue syndrome, fibromyalgia, interstitial cystitis), and more disease-specific fears and concerns [35]. In contrast, the specific profile of individual bowel symptoms do not undermine work productivity [35], suggesting that enhancing work productivity in patients with IBS may require treatments that improve both gastrointestinal and nongastrointestinal symptom intensity while also modifying the cognitive and behavioral responses to bowel symptoms and the contexts in which they occur. In other words, it may be inadequate to treat bowel symptoms alone without simultaneously addressing their emotional context.

## Conclusions

Data indicate that IBS is a common condition with a large health economic burden of illness marked by HRQOL decrements, diminished work productivity, and high expenditures. Clinicians should routinely screen for diminished HRQOL by performing a balanced biopsychosocial history rather than focusing solely on bowel symptoms. HRQOL decrements should be acknowledged and addressed when making treatment decisions. Patients with severe HRQOL decrements should be screened for suicidal ideations, and identification of suicide forerunners must prompt timely intervention and appropriate referral. When faced with IBS patients reporting multiple and seemingly unrelated somatic complaints, clinicians should consider the possibility of underlying somatization, and should address somatization in lieu of performing costly and potentially unrevealing tests, procedures, and operations.

## Disclosure

Dr. Spiegel is a member of the advisory board/panel and a consultant to Prometheus and AstraZeneca. He

has received grants or research support from Amgen, Takeda, and Bristol-Myers Squibb. He is a member of the speakers' bureau for Takeda.

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