



Mini review

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Quality Improvement Indicators in Inflammatory Bowel Disease



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Abstract

Inflammatory bowel disease (IBD) is a chronic immune-mediated disease that provides a unique opportunity for improvement in the quality of clinical care. There is high variation in the care received by IBD patients and this variation in care is often used as a surrogate for poor quality of care delivered. The American Gastroenterological Association (AGA) established a performance measurement set aimed at increasing patient safety, improving treatment, decreasing steroid use and decreasing complications related to treatment. In parallel, the Crohn's and Colitis Foundation of America (CCFA) developed a set of process and outcome quality indicators for IBD. By incorporating these quality indicators into daily practice, the goal is to improve clinical outcomes, quality of life, and decrease healthcare costs. This review, discusses the quality indicators offered by AGA and CCFA and examines both obstacles and avenues to facilitate adherence to these quality measures.

Keywords: Ulcerative colitis; Crohn's disease; Quality improvement indicators; Preventive health measures

Introduction

Inflammatory bowel disease (IBD) classified as Crohn's disease (CD) or ulcerative colitis (UC) is a chronic immune-mediated disease of the gastrointestinal tract that affects more than 1.6 million Americans [1]. IBD pathogenesis involves an exaggerated immune response against gut microbiota in the presence of genetic defects, leading to exaggerated self-injurious inflammatory responses and impaired intestinal wound healing. Genome-wide association studies have identified numerous IBD susceptibility genes, however it has not contributed to direct advancements in clinical management. The mainstay therapy for IBD involves anti-inflammatory immunosuppression dictated by the severity and location of disease. Moderate-to-severe disease is typically treated with immunosuppressive medications such as azathioprine, anti-TNF, and more recently, anti-integrin agents [2]. Thiopurine therapy is associated with a rare increased risk of myelosuppression, lymphoma, and non-melanoma skin cancer; biologic treatment is associated with increased infection risk necessitating the need for close monitoring and preventive care. Oral corticosteroids are limited to treating acute flares, have limited efficacy in maintaining remission, and are associated with harmful side-effects such as osteoporosis, adrenal insufficiency, and diabetes [3].

In addition to intestinal inflammation, the prevalence of IBD increases the risk of invasive infections, osteoporosis, and thromboembolic events independent of medications, underscoring the need for monitoring and treating systemic clinical adverse outcomes in IBD [4-6]. Importantly, IBD confers a significant increased risk of developing colorectal cancer requiring frequent and augmented screening. Patients with IBS have extensive morbidity and extensive reduction in life quality [7]. The presence of IBD estimated cost in the United States is as high as \$2.6 billion annually. [8].

The chronic nature of this illness provides a unique opportunity for improvement in the quality of care delivered. Studies have shown that there is high variation in the care received by IBD patients [9]. Variation in care is often used as a surrogate for poor quality of care delivered. Recent studies have suggested that IBD patients do not receive preventive services at the same rate as general medical patients [10]. One study reported that up to 11% of patients may even receive care that is not recommended based on practice guidelines and could even potentially be harmful [11].

For example, recommendations suggest to screen IBD patients for osteoporosis every 5 years. In fact, in clinical

practice, screening and treatment for osteoporosis was highly variable; in clinical centers that care for a high volume IBD patients, 52% of patients were screened compared to 16% of patients screened in centers with low volume IBD patients [12]. Furthermore, in some studies only 25% of patients with ulcerative colitis received adequate colorectal cancer screening [13]. These findings highlight existing gaps in IBD care and underscore the importance of implementing quality improvement measures in IBD.

In 2011, the American Gastroenterological Association (AGA) established a performance measurement set aimed at increasing patient safety, improving treatment, decreasing steroid use and decreasing complications related to treatment (Table 1) [14]. In parallel, the Crohn's and Colitis Foundation of America (CCFA) developed a set of process and outcome quality indicators (Qis) for IBD (Table 2) [15]. It is important to note that these Qis are not meant to reflect the ideal care for IBD patients, but rather are meant to be a minimum acceptable standard of care. By incorporating these quality indicators into daily practice, the goal is to improve clinical outcomes, quality of life, and decrease healthcare costs.

Table 1: AGA Adult Inflammatory Bowel Disease Physician Performance Measure Set.

IBD type
1. Inflammatory Bowel Disease: type, anatomic location and activity all assessed
Preventative care
1. Corticosteroid Sparing Therapy Prescribed
2. Corticosteroid related iatrogenic injury- bone loss assessment for those receiving corticosteroids
3. Influenza immunization
4. Pneumococcal immunization
5. Tobacco user-screening and cessation intervention
Treatment
1. Testing for latent TB before initiating anti-TNF therapy
2. Assessment of hepatitis B virus before initiating anti-TNF therapy
Inpatient Measure
1. Testing for Clostridium difficile
2. Prophylaxis for venous thromboembolism

TB- Tuberculosis, TNF- Tumor Necrosis Factor.

Table 2: Crohn's and Colitis Foundation of America's Quality Indicators for Inflammatory Bowel Disease [8].

Treatment
1. If a patient is initiating anti-TNF therapy, then TB risk assessment should be documented, and TB skin testing or interferon gamma release assay performed
2. If a patient is initiating therapy with anti-TNF, then risk assessment for hepatitis B virus should be documented

3. If a patient requires at least 10mg prednisone for ≥16 weeks, then an appropriately dosed steroid-sparing agent should be recommended
4. If a hospitalized patient with severe colitis is not improving on IV steroids within 3 days, then sigmoidoscopy with biopsy should be performed to exclude CMV, and a surgical consultation should be obtained
5. If a patient in whom a flare of IBD is suspected with new or worsening diarrhea, then the patient should undergo C. difficile testing at least once
6. If a patient with IBD is initiating 6MP/AZA, then TPMT testing should be performed before starting therapy
Surveillance
1. If a patient with UC is found to have confirmed low-grade dysplasia in flat mucosa, then proctocolectomy or repeat surveillance within 6 months should be offered
2. If a patient with extensive UC or CD involving the colon has had their disease for 8-10 years, then surveillance colonoscopy should be performed every 1-3 years
Health care maintenance
1. If a patient is on immunosuppressive therapy, then patients should be educated about appropriate vaccination including (1) annual inactivated influenza, (2) pneumococcal vaccination with a 7-year booster, and (3) general avoidance of live virus vaccines
2. If a patient with CD is an active tobacco smoker, then smoking cessation should be recommended and treatment should be offered or a suitable referral provided at least annually

TNF - Tumor Necrosis Factor, TB - Tuberculosis, CMV - Cytomegalovirus.

IBD - Inflammatory Bowel Disease, 6mp - 6-mercaptopurine.

AZA - Azathioprine, TPMT - Thiopurine Methyltransferase.

UC - Ulcerative Colitis, CD - Crohn's Disease.

With the development of these Qis, there has been an increase in the research aimed at assessing physician adherence. Studies have revealed high variation in adherence, both in inpatient and clinical settings as well as between IBD vs non-IBD specialists. Tkacz et al. [16] used data collected from a claims database to measure adherence to the quality measurements. They found performance for the AGA ranged from 0.4% for venous thromboembolism prophylaxis to 66.9% for Clostridium difficile testing. CCFA outcome measures ranged from 0.6% for fecal incontinence to 32.9% for utilization of prednisone. The highest achieved measures for AGA were *C. difficile testing* (66.9%), appropriate corticosteroid-sparing therapy (51.1%), and testing for latent tuberculosis before initiating anti-TNF therapy (45%). In hospitalized patients with IBD, Nguyen et al demonstrated adherence for VTE prophylaxis and *C. difficile testing* to be 77% and 82% respectively. Similarly in an outpatient setting, Feuerstein et al. performed a chart review of 783 patients between academic, community, and private practice to assess compliance. They found that documented compliance ranged from 16.7% for pneumococcal immunization to 89% for tobacco abuse assessment. Only 5.8% of patients had all core measures documented [18]. In a study comparing IBD

and non-IBD gastroenterologists, Bilal et al. [19] showed higher adherence for IBD physicians compared to non-IBD (71.8% vs. 58.8%). Despite the release of the AGA performance measures and the CCFA quality indicators, these studies demonstrate the need for goal directed interventions to improve adherence.

Importantly, institutional and national quality improvement projects can significantly improve adherence to these important quality measurements. For examples, simple vaccination questionnaires prior to a clinic visit increased compliance with influenza vaccination from 54% to 81% [19]. Furthermore, informing and educating gastroenterologist to adhere to quality indicators can lead to 16% improvement in compliance with current guidelines [20].

Through adherence to quality indicators, we expect to improve IBD related clinical outcomes. In a cohort of pediatric patients with IBD, Crandall et al. [21] sought to improve chronic care delivery and outcomes through network-based QI methods. Through improvements in chronic care they demonstrated an increase in the proportion of patients with inactive disease in both patients with Crohn's (55% to 68%) and UC (61% to 72%). They also showed a significant increase in the proportion of Crohn's patients not taking prednisone (86% to 90%). This data suggests that QI efforts can indeed improve clinical outcomes. Further research in adult patients with IBD is needed to evaluate improvement in outcomes.

In conclusion, there is high variation in the care delivered to our IBD patients. Despite the establishment of quality indicators from both the AGA and CCFA, studies have demonstrated room for improvement in adherence to these quality measures. These measures can have an important impact on the clinical outcomes of our patients with IBD. There are multiple avenues that could be used to implement wide-scale quality improvement including incorporating Qis into our electronic medical records, utilization of care pathways, developing treatment algorithms and many others. We hope that there will continue to be a concerted effort to improve the quality of care delivered to our patients and that this will in turn, improve their health-related outcomes.

Competing Interests and Funding

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