

# Follow-up Care in Inflammatory Bowel Disease

## *An Integrative Review*

### ABSTRACT

Inflammatory bowel disease is characterized by chronic inflammation of the gastrointestinal tract and is associated with high risks for complications, surgeries, and frequent hospitalizations. Approximately one in four inflammatory bowel disease patients are readmitted to the hospital within 90 days of discharge in the United States. Although existing literature showed a timely clinic appointment with gastroenterologists is a protective factor for disease flare-ups and hospitalizations, the follow-up appointments were found to be either lacking or significantly delayed. Further, evidence-based guidelines in timely inflammatory bowel disease care are lacking. Thus, this integrative review examined current literature to identify effective strategies for achieving timely clinic appointments with gastroenterologists in inflammatory bowel disease. A comprehensive search of three electronic databases (PubMed, Embase, and Cumulative Index of Nursing and Allied Health Literature [CINAHL] Plus) was conducted from January 2009 to September 2019 using the key terms: inflammatory bowel disease, ulcerative colitis, Crohn's disease, appointments, and time to appointment. Nine articles met the inclusion criteria. The main interventions for timely inflammatory bowel disease care included (i) clinic-wide scheduling protocols, (ii) a dedicated healthcare team, (iii) efficient referral process, (iv) appointment management based on disease acuity and severity, and (v) addressing shortage of inflammatory bowel disease clinicians. Further research is needed to quantify the magnitude of timely inflammatory bowel disease care interventions with controls and evaluate the efficacy with a head-to-head trial. Through timely referrals, evaluations, and treatments, these quality improvement endeavors will ultimately improve quality of care and contribute to reduction in preventable hospitalizations and associated healthcare costs from delayed outpatient inflammatory bowel disease care.

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Inflammatory bowel disease (IBD) is a chronic disorder that includes Crohn disease and ulcerative colitis. The disorder is characterized by relapsing and remitting inflammation of the gastrointestinal tract and a high risk for complications, surgeries, and frequent hospitalizations (Peyrin-Biroulet et al., 2016). The prevalence of IBD among adults in the United States (U.S.) was estimated to be 1.3% of the population (3 million) in 2015 and exceeded 0.3% (10 millions) in Western countries in 2016 (Dahlhamer, Zammitti, Ward, Wheaton, & Croft, 2016; Ng et al., 2018).

### Background

Economic burden from IBD is substantial. Direct costs of IBD were approximately \$6.3 billion in 2004 (Kappelman et al., 2008). Hospitalizations accounted for one third of total healthcare costs (Cohen et al., 2010),

and readmission of IBD patients incurred an additional \$576 million nationwide in 2013 (Barnes et al., 2017). Nonetheless, in a systematic review consisting of mainly U.S. institutions, one in four IBD patients were found to be readmitted within 90 days (Nguyen et al., 2019b). These readmissions are associated with hospitalization-related morbidity and mortality, healthcare costs, and poor quality of life (Barnes et al., 2017; Keller, Windsor, Cohen, & Chand, 2019; Knowles, Gass, & Macrae, 2013).

To decrease high readmission rates in IBD, one proposed intervention is a timely clinic appointment with a gastroenterologist (Malhotra, Phatharacharukul, & Thongprayoon, 2018; Nguyen, Nugent, Shaw, & Bernstein, 2011). To prevent hospitalizations and disease complications and achieve mucosal healing, current IBD guidelines emphasize identifying moderate high-risk IBD patients early and starting appropriate therapies in a timely fashion before the disease progresses (Lichtenstein et al., 2018; Maaser et al., 2018). This is attainable through timely clinic appointments with a gastroenterologist, which has been shown to be associated with lower rates of surgeries, disease flares, and IBD-related hospitalizations (Mathias et al., 2020; Nguyen et al., 2011). On the other hand, lack of clinic appointments with a gastroenterologist was a predictor for readmission within 90 days in IBD patients (Malhotra et al., 2018).

The optimal timeframe for clinic appointments with gastroenterologists is not well-defined in the U.S. and Europe; however, the Canadian gastroenterology (GI) workgroup reached a consensus: in active IBD, the maximal wait time for consultation with gastroenterologist is defined as 14 days (Leddin et al., 2013; Paterson et al., 2006). Nonetheless, the available data showed the wait time in North America significantly exceeded this target goal. In the U.S., the mean wait time was 26 days for any gastrointestinal disorders ( $n = 626,000$ ) (Hayhurst, 2017). In Canada, the wait time was 92 median days in any GI disorders ( $n = 1,374$ ) and 72 mean days in IBD patients ( $n = 73$ ) nationwide (Leddin et al., 2013) and was as long as 185 days ( $n = 200$ ) at a local IBD center (Mathias, van Zanten, Kits, Heisler, & Jones, 2018).

Despite these suboptimal data, literature is lacking about clinic-wide interventions and recommendations to ensure timely outpatient GI appointments in the IBD population. Thus, this integrative review examined current global evidence on strategies for reducing wait times and prioritizing urgent adult patients to outpatient clinic appointments with gastroenterologists to ultimately improve access to IBD care, quality of care, and clinical outcomes.

## Methods

### Information Sources and Search

This integrative review sought to answer the question: “What are the evidence-based interventions to improve

access to outpatient gastroenterology care in adult patients with IBD?” The integrative review was performed based on Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines for reporting systematic reviews (Moher et al., 2015). A comprehensive search of three electronic databases (PubMed, Embase, and Cumulative Index of Nursing and Allied Health Literature [CINAHL] Plus) was conducted. The search strategy included the use of combinations of the keywords and relevant Medical Subject Headings (MeSH) terms: *inflammatory bowel disease OR ulcerative colitis OR Crohn’s disease, appointments, AND time to appointment* (see Supplementary File 1, available at: <http://links.lww.com/GNJ/A65>). The search strategies including MeSH terms, truncation, Boolean operators, and search filters were utilized to broaden or narrow the focus.

Articles were included if they met the following criteria: (1) contained interventions or recommendations to improve IBD patients’ access to outpatient appointments at GI clinic; (2) published between January 2009 and September 2019; (3) contained an adult population (18+ years); and (4) were written in English. Exclusion criteria were: (1) non-peer-reviewed articles; inaccessible full-text, book chapters, or conference abstracts; (2) experimental studies that evaluated medical/surgical interventions or case studies; (3) studies focusing on a pediatric population or transition of care from adolescent to adult IBD care; (4) studies focusing on endoscopy or primary care follow-up appointments; and (5) GI or IBD service in an inpatient setting.

A total of 594 (PubMed, Embase, and CINAHL Plus) records were first obtained by searching the databases with the keywords, and 6 additional records were obtained by screening the reference lists for relevant articles. After applying the inclusion and exclusion criteria to the search results and removing 21 duplicates, 210 records remained for review. Titles and abstracts were screened for criteria relevant to the practice question and an additional 188 records were excluded. The remaining 22 full-text records were reviewed for eligibility based on relevance and inclusion criteria. Nine records were incorporated in the final synthesis (Figure 1).

## Results

This integrative review contains nine studies published between 2012 and 2019. Based on the Johns Hopkins Nursing Evidence-Based Practice Scale (Dang & Dearholt, 2018), each article was assessed for evidence level and quality rating, as seen in Table 1. The levels of evidence ranged from II to V, and the quality of the articles was rated A or B. Selected study designs were

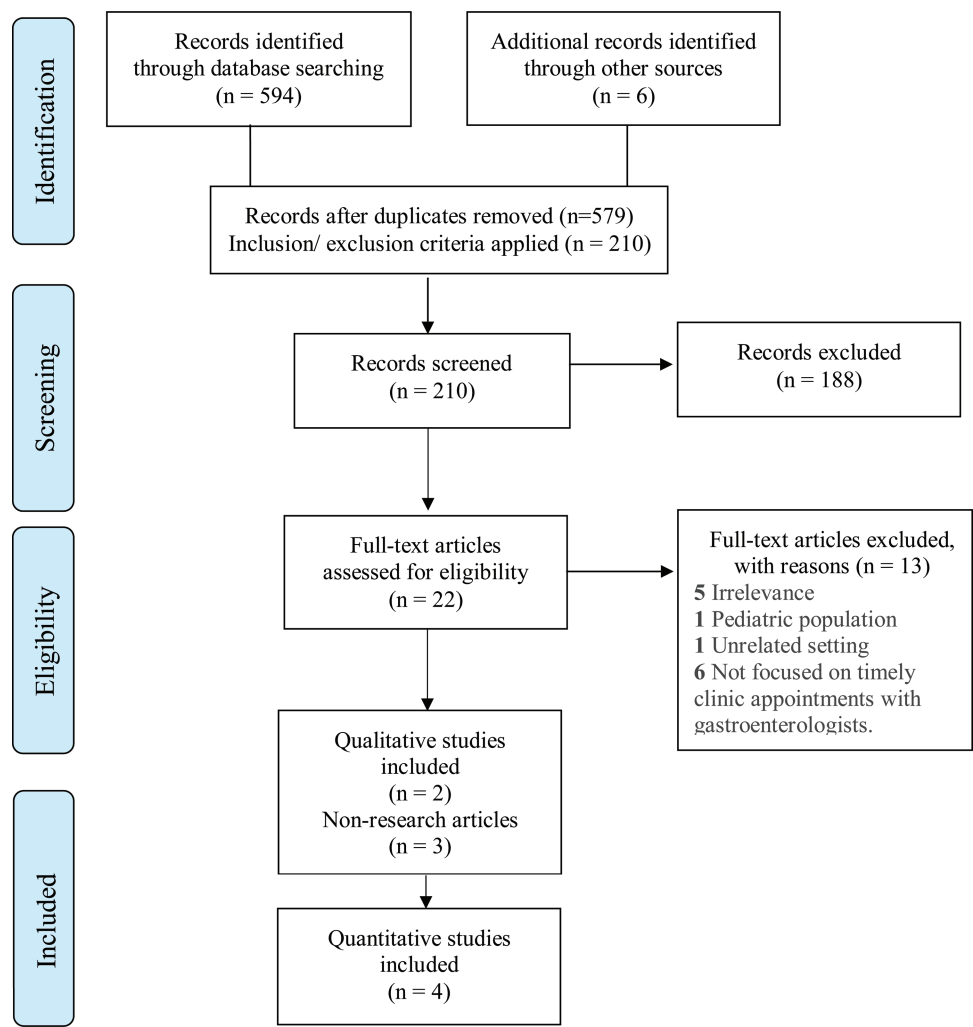


FIGURE 1. PRISMA flow diagram.

two quasi-experimental studies, two qualitative studies, two descriptive studies, two quasi-experimental quality improvement (QI) projects, and an expert opinion. Sample sizes ranged from 26 to 82,593 participants. All the studies occurred in the U.S., Canada, or Europe. Of the two quasi-experimental studies and two QI projects that involved interventions, the settings were all in IBD centers or units within GI clinics at urban academic centers, except for one in an internal medicine clinic. Target populations were all IBD patients except one QI project, which examined patients with any gastrointestinal diagnoses.

Themes that emerged from the analysis of these articles on interventions for timely IBD care were: (i) clinic-wide scheduling protocols (Matteson-Kome, Lopez, Sliger, Mathews, & Bechtold, 2014; Rejler, Tholstrup, Elg, Spangeus, & Gare, 2012); (ii) a dedicated healthcare team (Castiglione et al., 2016; Lesnovska, Frisman, Hjortswang, Hjelm, & Borjeson, 2017; Rejler et al., 2012; Schoultz & Macaden, 2016); (iii) efficient referral process (Kinnucan et al., 2019;

Mathias et al., 2018); (iv) appointment management based on disease acuity and severity (Kinnucan et al., 2019; Reinglas et al., 2019); and (v) addressing a shortage of IBD clinicians (Nguyen, Bouchard, & Diong, 2019a; Schoultz & Macaden, 2016).

Interventions for Timely IBD Care  
*Clinic-Wide Scheduling Protocols*

One QI initiative at the University of Missouri GI clinic involved implementing a protocol based on an advanced access clinic model where a patient service representative notified the Director of Ambulatory Services if the first appointment availability exceeded 10 days. Then, either the referred gastroenterologist or the unit Director overbooked an existing clinic appointment slot, or the Director created a special appointment time outside of typical appointment slots (Matteson-Kome et al., 2014). This intervention increased the number of new GI patients seen within 10 days from 35.1% to 75.2% over 1 year (Matteson-Kome et al., 2014).

TABLE 1. Key Findings From Articles

Number	Author and Year	Evidence Type	Sample, Sample Size, Setting	Findings That Help Answer the EBP Question	Observable Measures	Limitations	Evidence Level, Quality
1	Castiglione et al. (2016)	Quasi-experimental	$n = 1,706$ IBD patients CD: 930, UC: 806 M: 930, F: 806 Mean age (CD, UC): 35, 29 Active disease (CD, UC): 806, 930 IBD unit at School of Medicine "Federico II" in Naples, Italy	At a 2-year follow-up, a dedicated IBD helpline: <ul style="list-style-type: none"> <li>Reduced IBD-related hospitalization from 13.8% to 9.2%</li> <li>Increased clinic appointments with gastroenterologists from 61.4% to 65.8%</li> <li>Improved satisfaction with access to care in 82% (<math>n = 91</math>) of patients</li> </ul>	IBD-related hospitalization The number of clinic appointments with gastroenterologists Patients' satisfaction rates with appointment scheduling	Limited generalizability: sample was from a single tertiary center Did not evaluate time-to-appointment as an outcome A small sample size for the follow-up questionnaire on the patient's experience (111 patients) Lack of control group	Level II, quality B
2	Kinnucan et al. (2019)	Nonresearch Expert opinion	N/A	The IBD referral pathway provides guidance for clinicians in emergency department/inpatient service, primary care, and GI clinic on stratifying disease risks of IBD patients based on clinical presentations and triaging to the appropriate level of care	N/A	Due to lack of literature in this topic, scientific rationale for this algorithm is dependent on the authors' expertise and is not entirely evidence-based Does not consider the complex presentations (e.g., complications, extraintestinal manifestations, and medication-related adverse events) Low utility in areas with few healthcare resources in IBD care	Level V, quality B
3	Lesnovska et al. (2017)	Qualitative Explorative Focus group interviews	$n = 26$ IBD patients CD: 10, UC: 16 M: 14, F: 12 Median age: 62 Semistructured interviews with 5 groups and 2 individuals GI clinic of Linköping University in Sweden	Patients defined optimal IBD care as accessibility to clinical services during flares or afterwards Patients preferred having a reliable communication method with clinic staff and a designated care team	Patients' perception of IBD healthcare delivery in outpatient setting	Limited generalizability due to purposive sampling Response bias from conducting interviews Inconsistency in methodologic coherence: two young men were unwilling to participate in a group interview, so individual interviews were performed separately	Level III, quality B

(continues)

TABLE 1. Key Findings From Articles (*Continued*)

Number	Author and Year	Evidence Type	Sample, Sample Size, Setting	Findings That Help Answer the EBP Question	Observable Measures	Limitations	Evidence Level, Quality
4	Mathias et al. (2018)	Nonexperimental Descriptive Retrospective cohort	n = 200 IBD patient referrals for new clinic appointments with IBD specialists Nova Scotia Collaborative IBD program in Canada	A mean wait time to clinic appointments with gastroenterologists: 26.4 weeks Most IBD referrals (79.5%) were low-quality lacking important information (e.g., endoscopy reports and cross-sectional imaging) A long wait time for IBD appointments was associated with increased flares, hospitalizations, and redundant referrals for semi-urgent patients	Association between referral quality and wait time Correlation between referral quality and patient outcomes, such as disease flares, hospitalizations, and additional referrals	Diagnoses (UC vs. CD) and disease severity/characteristics not available Association between referral quality and wait time was only found in univariate analysis likely due to low statistical power Information bias: possible missing information due to the use of multiple types of electronic medical records Need an evidence-based criterion to evaluate the triaging criteria	Level III, quality A
5	Matteson-Kome et al. (2014)	Nonresearch QI project	n = 2,478 patients with GI conditions referred to gastroenterologists University of Missouri GI clinic in the United States	Implementing a clinic-wide standardized protocol involving early identification of delayed appointment availabilities and intervening increased the proportion of new GI patients seen ≤10 days from 35.1% to 75.2% at 1-year follow-up	Time to new patient clinic appointment with gastroenterologists	Target population: all patients at GI clinic, not IBD-specific. No details on gastrointestinal diagnoses Limited generalizability: a single-center study conducted at only one private for-profit hospital with GI services in the city Confounding: provider/physician vacations in July and August and increased number of return visits limited new patient visit availabilities Variability in patient volumes among different GI subspecialty providers	Level V, quality B

*(continues)*



TABLE 1. Key Findings From Articles (*Continued*)

Number	Author and Year	Evidence Type	Sample, Sample Size, Setting	Findings That Help Answer the EBP Question	Observable Measures	Limitations	Evidence Level, Quality
6	Nguyen et al. (2019a)	Nonexperimental Descriptive Retrospective cohort	$n = 82,593$ IBD patients CD: 38,697, UC: 40,137, IBD-unclassified: 3,759 M: 39,528, F: 43,065 Mean age: 49.6 Samples from provincial health databases of Ontario in Canada	Patients with moderate to high regional access to gastroenterologists were more likely to receive nonemergency (outpatient) IBD care by specialists Moderate to high access to IBD care was a protective factor for IBD-related emergency department visits	Frequency of nonemergency IBD care IBD-related emergency department visits within the last 12 months	Reasons for IBD-related ED visits not specified A short follow-up (15 months) to estimate the long-term outcomes Confounding: due to the inability to control for the disease severity, outpatient IBD care can increase risks for emergency department visits in high disease severity (treatment selection bias). To overcome it by indication, regional data, which is less associated with disease severity, was measured Gastroenterologists were labeled as IBD specialists, not by IBD fellowship or IBD patient volumes	Level III, quality A
7	Reinglas et al. (2019)	Quasi-experimental	Phase 1: Retrospective • $n = 1,357$ • CD: 874, UC: 483 • M/F (%) in CD: 47.5/52.5, in UC: 45.5/54.5 Phase 2: Prospective • $n = 261$ • CD: 64%, UC: 32% • M: 44.1%, F: 55.9% • Mean age: 39 IBD center of McGill University Health Center, Canada	Phase 1: • Specialized IBD care reduced hospitalization from 42.8% to 12.4%. Phase 2: • Rapid access clinic allowed clinic evaluation within 3 days and improved IBD health outcome	Phase 1: Quality of care as measured by quality indicators before and after the referral to the IBD center • Percentages of ordering diagnostic studies for IBD care • Rates of steroids vs. biologics • Rates of active IBD and remission Phase 2: Frequency of unplanned ED visits/admissions within 30 and 90 days from rapid access clinic	Transparency: • IBD diagnoses (CD or UC) for the surgery rate before referral is provided only in Phase 1 • The actual number of IBD-related ED visits and admission data is not reported (percentages only) • The baseline data for time to appointments before implementing rapid access clinic is not available in Phase 2. • No matched control (As identified by authors): • Selection bias: a single-center study • Partly retrospective • Lack of "systematic mapping of patient-reported outcomes"	Level II, quality B

(continues)

TABLE 1. Key Findings From Articles (*Continued*)

Number	Author and Year	Evidence Type	Sample, Sample Size, Setting	Findings That Help Answer the EBP Question	Observable Measures	Limitations	Evidence Level, Quality
8	Reijer et al. (2012)	Nonresearch QI project	n = 481 IBD patients IBD unit in internal medicine clinic at Highland hospital in Sweden Access to care information obtained from local administrative database and chart review	Assessed the effect of an annual follow-up phone call reminding patients to contact IBD nurse for any questions or concerns on access to care and patient outcome Used a quality parameter from two quality models—Donabedian and the Clinical Value Compass	Wait time for new and returning clinic appointments with gastroenterologists Contact route (before hospitalization)	A single-center study No control Transparency: baseline data for time-to-appointment are not reported	Level V, quality B
9	Schoultz and Macaden (2016)	Qualitative Descriptive Cross-sectional online surveys	n = 767 IBD patients M: 204, F: 406 Age <16: 37 patients; 16-65: 671; >65: 54 Sampled obtained via nationwide surveys in Scotland, U.K., and coordinated by Crohn's and Colitis U.K. and Scottish government	The key themes to improve IBD care: 1. Access: increasing volumes of IBD nurses and gastroenterologists; having a designated nurse 2. Quality of life: taking a holistic approach in care 3. An explicit IBD care pathway	IBD patients' perspectives and experiences of current IBD services	(As identified by authors): • Due to the online delivery of surveys, study information was provided without an oral explanation or oral consent • Limited generalizability: not all people responded to surveys; sample population is limited to those who live in the U.K. and have an internet access to complete the online survey	Level III, quality A

Note. CD = Crohn disease; F = female; EBP = evidence-based practice; ED = emergency department; GI = gastroenterology; IBD = inflammatory bowel disease; M = male; QI = quality improvement; UC = ulcerative colitis.

In a GI clinic in Sweden, Rejler et al. (2012) evaluated the quality of different areas of IBD care using two quality models—the Donabedian and the Clinical Value Compass—and found that a clinic-initiated annual check-up increased access to care. This proactive approach primarily consisted of a yearly phone call (i) to remind patients of the availabilities of the IBD nurse whom they could call with any concerns or questions to avoid preventable emergency department visits; and (ii) to offer clinic appointments with a gastroenterologist for routine and acute flares within as soon as 2 days as needed. This approach in conjunction with quality-of-life questionnaires and/or laboratory tests increased the rate of annual check-up from 75% to 98% (471/481) for these IBD patients. Thus, the literature showed having a protocol for a model-based clinic-wide scheduling process facilitated timely IBD care, although the methods varied (Matteson-Kome et al., 2014; Rejler et al., 2012).

### *Dedicated Healthcare Team*

For patients who established care with gastroenterologists, common barriers to timely IBD care were fragmentation of patient-provider communication (Lesnovska et al., 2017; Schoultz & Macaden, 2016). In two qualitative studies, IBD patients reported feeling frustrated when not knowing whom, when, and where to contact for advice and support; having difficulties getting hold of clinic staff on the phone; and having to explain their complex disease to multiple staff members (Lesnovska et al., 2017; Schoultz & Macaden, 2016). To address this lack of continuity of care, three studies examined the role of a dedicated IBD clinic scheduler and nurse in IBD care and showed improved accessibility to scheduling and clinical services in GI clinics, and enhanced patient satisfaction while decreasing hospitalizations (Castiglione et al., 2016; Rejler et al., 2012; Schoultz & Macaden, 2016). These results showed a dedicated healthcare team can be utilized to improve access to IBD care.

### *Efficient Referral Process*

According to Mathias et al. (2018) in a retrospective study, 80% of the new patient referrals lacked basic information (e.g., reason for referrals) or pertinent diagnostic studies (e.g., endoscopy reports and imaging studies) resulting in delay of a clinic appointment by an average of 12 weeks. In an effort to make the referral process efficient, an IBD committee recently developed a referral algorithm to guide non-IBD specialists on stratifying new IBD patients by disease risks and referring to the right level of clinician in a timely fashion (Kinnucan et al., 2019). These findings shed light on the impact of a quality referral process on timeliness of clinic appointments, diagnoses, and treatments and

importance of improving the efficiency of the referral process to avoid unnecessary wait times from lack of care coordination (Kinnucan et al., 2019; Mathias et al., 2018).

### *Appointment Management Based on Disease Severity and Acuity*

Two studies proposed managing appointments based on disease severity and acuity. A quasi-experimental study at a GI clinic by Reinglas et al. (2019) proved a gastroenterologist's screenings for urgent appointment requests achieved a "fast track evaluation" in 224 urgent patients (85.7%) within 3 days. In an expert opinion by Kinnucan et al. (2019), an IBD committee developed a referral algorithm to guide non-IBD specialists in emergency department, primary care clinics, and general gastroenterologists. The pathway involves triaging clinical urgency and disease severity based on clinical manifestations and inflammatory markers, and referring to the right level of care for timely referrals thus achieving "timelier care."

Although study settings and study designs varied, both studies showed prioritizing clinic evaluations of IBD patients based on clinical urgency can facilitate timely IBD care for patients with severe disease and acute flares (Kinnucan et al., 2019; Reinglas et al., 2019).

### *Addressing Shortage of IBD Clinicians*

Improving the shortage of IBD clinicians was another method of achieving timely IBD care. A qualitative national survey in Scotland in 2014 showed IBD patients felt the number of available IBD physicians and nurses was inadequate during flares and after-hours (Schoultz & Macaden, 2016). Nguyen et al. (2019a) explored this further in a population study in Canada and discovered that moderate to high prevalence of IBD-specialized gastroenterologists attenuated emergency department visits in IBD patients. These findings highlighted that ensuring a sufficient number of IBD specialists was an important factor for IBD patients in access to care and acted as a protective factor for negative health outcomes (Nguyen et al., 2019a; Schoultz & Macaden, 2016).

## **DISCUSSION**

This integrative review revealed potential interventions to ensure timely clinic appointments with gastroenterologists in the IBD population. Although the majority of interventions are focused on large centers, some strategies may be modified for application in small centers. First, clinic-wide standardized protocols were able to achieve timely outpatient IBD care. One study also proposed a standardized referral pathway using key markers to help guide clinicians in different settings in their assessment and triage (Kinnucan et al.,



2019). However, variances in study methods and optimal timeframes for time to appointments made it difficult to compare the efficacy between different studies and generalize to a wider population (Matteson-Kome et al., 2014; Rejler et al., 2012). It is speculated that this is due to a paucity of literature and guidelines in outpatient GI follow-up and timely access to IBD care. In other chronic diseases, such as heart failure, practice guidelines clearly define a posthospital discharge follow-up visit between 7 and 14 days (Yancy et al., 2013). This timeframe was associated with reduced readmission and also adopted as a national quality indicator (Joint Commission, 2018; Lee, Yang, Hernandez, Steimle, & Go, 2016). Further studies are needed to evaluate the appropriate timing for outpatient GI follow-ups and strategies for effectively managing clinic appointments in the IBD population.

For GI clinic administrators, the literature encouraged the use of a dedicated IBD scheduling process as well as a personal nurse coordinator for IBD patients due to the communication barrier and discontinuity of care resulting from a centralized scheduling process and randomly assigned nurses used for all gastrointestinal diagnoses (Lesnovska et al., 2017; Schoultz & Macaden, 2016). A specialty medical home adopted by University of Pittsburgh Medical Center gastroenterology group provides a good example of integrating a personal nurse coordinator in the patient-centered IBD care. The nurse provides disease-specific care coordination throughout the healthcare system and plays an integral role in the multidisciplinary team. It is important to note that this model as a whole resulted in reducing hospitalization rates and healthcare costs as well as achieving rapid access to care—within 72 hours for new or returning IBD patients (Regueiro et al., 2016). Based on these positive findings, IBD practices should consider allocating dedicated schedulers, nurses, and a helpline for IBD patients for continuity of care as well as improved access to clinical services, health outcomes, and patient satisfaction (Castiglione et al., 2016; Rejler et al., 2012; Schoultz & Macaden, 2016).

For GI clinics and referring providers, this review highlighted the importance of collaborative efforts to improve the quality and efficiency of the referral process. For example, equipping referring providers with a template of IBD referral requirements (i.e., past endoscopies, pathology, cross-sectional imaging, etc.) could prevent new referral delays and redundant testing while allowing more fruitful encounters with IBD specialists. This will allow timely evaluation, diagnosis, and treatment within appropriate therapeutic windows by IBD specialists (Mathias et al., 2018).

Prioritizing clinic appointments based on the clinician's assessment of disease severity and acuity was also proposed as an intervention for timely IBD care.

The premise of an “IBD referral algorithm” and “rapid access clinic” is that timely outpatient IBD care can be achieved by identifying “sicker” patients with a triaging algorithm and accelerating evaluations of more urgent patients, whereas less acute patients may be managed more expeditiously by a general GI provider or undergo initial workup by their primary care provider (Kinnucan et al., 2019; Reinglas et al., 2019). However, more studies are needed to establish supporting evidence for these triaging algorithms and validate efficacy with rigorous controlled studies.

The last proposed intervention was to address the inadequate number of IBD clinicians. Although the national data in gastroenterologists or IBD specialists are lacking, a recent report by the Association of American Medical Colleges (2019) showed the projected shortage in specialty care was estimated between 24,800 and 65,800 largely due to the aging population and retiring physicians. Considering the high prevalence and incidence of IBD in the U.S., it is paramount to identify and implement effective strategies to minimize regional disparities in IBD specialists (e.g., provide IBD specialists with incentives to serve in rural areas, increase IBD fellowships, provide more thorough training of IBD to general gastroenterologists, and increase IBD education for registered nurses and specialized training for advanced practice registered nurses).

This review revealed several key gaps in the literature. Although the studies discussed the importance of timely outpatient care in IBD in different study designs, time-to-appointment was measured in only four studies (Castiglione et al., 2016; Matteson-Kome et al., 2014; Reinglas et al., 2019; Rejler et al., 2012), limiting the ability to quantify and compare the effect of the interventions. Further, these four intervention studies lacked a theoretical model or evidence-based literature to justify their study methodologies. Moreover, an operational definition of outcomes for timely access was not clearly stated in some studies, which was a threat to construct validity (Castiglione et al., 2016; Reinglas et al., 2019). Lastly, although the referral algorithm is a novel approach to facilitating timely care, the supporting literature is lacking, and its efficacy on timeliness or clinical outcomes has not yet been validated (Kinnucan et al., 2019).

## Implications

Future studies should (i) quantify the magnitude of timely IBD care interventions using measurable outcomes and controls; (ii) conduct head-to-head trials to evaluate the efficacy of various interventions on time-to-appointment as a primary outcome; (iii) evaluate the effect of educating primary care physicians and general local gastroenterologists on the “IBD referral pathway” and IBD referral requirements; (iv) examine

the direct relationship between timely clinic appointment and health outcomes (e.g., hospitalizations); and (v) define appropriate follow-up intervals for appointments with gastroenterologists based on disease acuity and severity of IBD.

## Limitations

There are several limitations in this review. First, the study settings were all in outpatient clinics in urban academic centers, limiting generalizability to community gastroenterologist offices and rural centers. Additionally, one QI project included patients with any GI diagnosis, not just IBD; however, the study was pertinent to the evidence question and provided additional insights. Further, among quasi-experimental QI projects, some did not measure time-to-appointment. Even when measured, the studies lacked baseline data for comparison. Additionally, some intervention studies did not have controls or adjust for confounding factors. Meanwhile, in qualitative studies, there was selection bias due to purposive sampling and response bias due to using self-reported surveys and focus group interviews. Finally, the data in the literature did not include information on IBD type, disease severity, and disease activity, reducing the transparency and generalizability.

## CONCLUSION

This is the first integrative review on clinic-wide interventions to achieve timely IBD care with meaningful takeaways from a QI standpoint. The review highlighted a number of barriers to timely IBD care and the interventions to target these barriers. These findings can raise awareness among a wide range of healthcare professionals on a continuum of care. For referring providers (primary care providers, local gastroenterologists, emergency department providers, and hospitalists), this review will help them make purposeful risk assessments of IBD patients and send high-quality referrals with supporting information to a GI clinic. For administrators of GI clinics, the review provides different modalities to facilitate timely evaluation and treatment of IBD patients, such as standardized scheduling protocols, proactive annual follow-up phone calls, a designated IBD healthcare team, and urgent appointments for high-acuity patients.

QI efforts should be made to implement a systematic strategy to foster a seamless care continuum from the time IBD patients first enter a healthcare system in an emergency department or primary care setting to establishing care with gastroenterologists. Through timely referrals, evaluations, and treatments, these endeavors targeting different barriers of clinic appointments will not only improve access to IBD care but also ultimately improve quality of care and contribute

to a reduction in preventable hospitalizations and associated healthcare costs related to lack of follow-ups with gastroenterologists.✱

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