

# Review of Societal Recommendations Regarding Management of Patients With Inflammatory Bowel Disease During the SARS-CoV-2 Pandemic

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## INTRODUCTION

Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), emerged in Wuhan, China in December 2019, and has rapidly expanded globally.<sup>1</sup> Patients who develop this disease typically present with fever and respiratory symptoms and less commonly experience a change in their bowel habits or other gastrointestinal symptoms.<sup>2</sup> The World Health Organization declared this coronavirus outbreak as a Public Health Emergency of International Concern on January 30, 2020, and as a pandemic on March 11, 2020. As of June 8, 2020, there were almost 7 million confirmed cases and almost 400,000 deaths from the disease worldwide.<sup>3</sup>

Inflammatory bowel disease (IBD), consisting of Crohn's disease (CD) and ulcerative colitis (UC), affects millions of people worldwide.<sup>4</sup> Patients with IBD are often prescribed immunosuppressive or biologic medications for treatment, which may predispose them to an increased risk of infection. Although data in patients with IBD contracting COVID-19 are still limited, both providers and patients have particular concerns regarding the risk of infection with SARS-CoV-2 and how to manage their medications during the COVID-19 pandemic.<sup>5</sup> The Centers for Disease Control and Prevention states that patients who are immunocompromised may be at higher risk for severe illness.<sup>6</sup> There are inadequate data for the optimal management of patients with IBD in the setting of COVID-19, and patients and gastroenterologists have been left to rely on societal consensus statements and expert opinion to guide management during these unprecedented times.<sup>7, 8</sup>

Given the limited evidence, we evaluated gastrointestinal society and IBD organization websites and the literature for consensus statements and advice regarding the management of IBD during COVID-19 and compared their recommendations.

## METHODS

We conducted a search of the medical literature using PubMed to assess for recommendations or consensus statements regarding the management of IBD during COVID-19. Articles were identified using terms including “inflammatory bowel disease” or “Crohn's disease” or “ulcerative colitis” and “coronavirus” or “COVID-19.” The search was restricted to English language. Titles were reviewed and all relevant articles were examined in detail. In addition, we also searched gastroenterology society and IBD organization websites for consensus statements and recommendations for patients and providers during COVID-19. Information regarding risk factors, prevention, routine care (including office visits, testing, endoscopy, and surgery), and medication management of patients with IBD in the setting of COVID-19 was collected from each reference and is summarized in the Results.

## RESULTS

### Potential Risk Factors for COVID-19 in Patients With IBD

There is no evidence that patients with IBD are at increased risk of infection with SARS-CoV-2 or COVID-19 disease compared with the general population. Data from China did not show immunomodulator use to be a risk factor for severe disease, and a large IBD group in France, with 50% of patients on anti-tumor necrosis factor agents, did not report any patients with severe COVID-19.<sup>1, 9</sup> The International Organization for the Study of Inflammatory Bowel Disease (IOIBD) states that patients with IBD do not have an increased risk of infection with SARS-CoV-2; however, it is uncertain if patients with IBD who are exposed to SARS-CoV-2 have a higher risk of developing COVID-19 or have a higher mortality than patients without IBD.<sup>10, 11</sup> Other organizations, including the American Gastroenterological Association

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(AGA), the Gastroenterological Society of Australia, and the European Crohn's and Colitis Organisation (ECCO), agree that there are no data to support an increased risk of infection among patients with IBD.<sup>7, 12, 13</sup>

The Centers for Disease Control and Prevention cites older age, comorbidities, pregnancy, and smoking tobacco as possible risk factors for infection, and therefore many organizations note that patients with IBD and these characteristics are at increased risk of more severe COVID-19.<sup>6, 13-20</sup> Despite the paucity of data, most groups agree that immunosuppressive medications increase the risk of COVID-19 among patients with IBD,<sup>14-19</sup> and several IBD societies have added that IBD disease activity and malnutrition may be risk factors for infection with SARS-CoV-2.<sup>14-17</sup> Groups from Canada and the United Kingdom classify patients with IBD into low-, medium- or moderate-, and high-risk groups using these variables (Table 1).

### Prevention of COVID-19 in Patients With IBD

SARS-CoV-2 infection is thought to be spread from person to person by droplet transmission and possibly airborne inhalation of aerosolized particles.<sup>21</sup> In addition, viral particles have been identified in the stool suggesting possible fecal transmission, but this has not been verified.<sup>22-27</sup> All societal recommendations agree that patients with IBD should, at a minimum, take the same precautions as the general population to prevent infection and should follow local public health advice. Recommendations for prevention of COVID-19 among patients with IBD according to risk category are summarized in Table 2.

Health care workers with IBD face challenges during the COVID-19 pandemic. The IOIBD states that it is uncertain if health care workers with IBD on immune-modifying medications working in an environment with patients with known or suspected COVID-19 should continue working in that same environment.<sup>10, 11</sup> Although the recommendations for personal protective equipment (PPE) for health care workers with IBD do not differ from those for the general population, IBD societies agree that considerations should be made to redeploy vulnerable health care personnel to duties with reduced exposure to patients with confirmed or suspected COVID-19.<sup>8, 15, 28</sup> In addition, the Crohn's & Colitis Foundation suggests that all health care workers with IBD consider wearing a face mask and gloves and practice social distancing in the workplace.<sup>15</sup>

Vaccinations, smoking cessation, and avoidance of nonsteroidal anti-inflammatory medications are recommended as routine health maintenance among patients with IBD to reduce the risk of disease flare and poor outcomes from infections.<sup>29</sup> Australian and European IBD societies highlight the importance of these measures to reduce the risk of severe COVID-19, although the logistics of vaccination during the pandemic must be considered.<sup>8, 9, 18</sup>

**TABLE 1. Risk of Severe Illness From COVID-19 Among Patients With IBD**

	Crohn's & Colitis UK	Crohn's & Colitis Canada
Low risk	<ul style="list-style-type: none"> <li>5-ASAs, rectal therapies, oral administered topical acting steroids (budesonide or beclomethasone)</li> <li>Medication for bile acid diarrhea or antidiarrheals</li> <li>Antibiotics for bacterial overgrowth or perianal disease</li> </ul>	<ul style="list-style-type: none"> <li>Age &lt; 65 y and not taking immunosuppressive or biologic medications</li> <li>IBD in remission, not malnourished, no comorbidities</li> </ul>
Medium/moderate risk	<ul style="list-style-type: none"> <li>&lt; 20 mg/d prednisolone (or equivalent)</li> <li>Any biologic, immunosuppressant, Janus kinase inhibitor within last 3 mo</li> <li>Any immunosuppressant or biologic medication within last 3 mo</li> <li>Taking low-risk category medication or no medication and disease flares or is not well controlled</li> </ul>	<ul style="list-style-type: none"> <li>Age &lt; 65 y and taking immunosuppressives or biologic medications</li> </ul>
High risk	<ul style="list-style-type: none"> <li>≥ 20 mg/d prednisolone (or equivalent)</li> <li>Initiated new biologic medicine within 6 wks in combination with another immunosuppressant or steroids</li> <li>Short gut syndrome requiring nutritional support</li> <li>Parenteral nutrition</li> <li>Active disease despite treatment with medication in moderate-risk category</li> <li>Age &gt; 70 y or comorbidities* and medication in moderate-risk category</li> </ul>	<ul style="list-style-type: none"> <li>Age ≥ 65 y</li> <li>OR</li> <li>Age &lt; 65 AND:               <ul style="list-style-type: none"> <li>Systemic steroids ≥ 20 mg/d</li> <li>Moderate/severe active inflammation</li> <li>Moderate/severe malnutrition</li> <li>Need for parenteral nutrition</li> </ul> </li> </ul>

Adapted from Crohn's & Colitis Canada and Crohn's & Colitis UK.

\*Comorbidities include hypertension, diabetes, asthma, emphysema, chronic obstructive pulmonary disease, coronary artery disease, prior stroke, and heart disease. 5-ASAs indicates 5-aminosalicylates.

### Routine Care of Patients With IBD in the Setting of COVID-19

#### Outpatient clinics, laboratory testing, and imaging

Many IBD societies agree that in-person appointments should be avoided and switched to telephone or video visits when possible and that contact with health care facilities for nonurgent testing should be minimized (Table 3).<sup>8</sup>

**TABLE 2.** Recommendations for Prevention of COVID-19 Among Patients With IBD

Risk Group	Recommendations
All patients	<p>Follow general precautions to prevent infection<sup>*,†,‡,§,¶,**,††,‡‡,§§</sup></p> <ul style="list-style-type: none"> <li>Frequent hand washing with soap and water or hand sanitizer (&gt; 60% alcohol)</li> <li>Avoid touching eyes, nose, and mouth</li> <li>Cover your mouth when coughing or sneezing with a flexed elbow or tissue</li> <li>Avoid close contact with anyone who is sick</li> <li>Stay home as much as possible</li> <li>Distance yourself from others by 6 feet<sup>†</sup></li> <li>Wear a cloth face cover when going out in public<sup>†</sup></li> <li>Clean and disinfect frequently touched surfaces daily</li> <li>Ensure vaccination against flu and pneumococcus<sup>‡‡,§§</sup></li> <li>Avoid nonsteroidal anti-inflammatory drugs<sup>††</sup></li> <li>Stop smoking<sup>††,‡‡</sup></li> <li>Maintain adequate supply of medication<sup>††,‡‡,§§</sup></li> </ul>
Moderate risk	<ul style="list-style-type: none"> <li>Avoid in-person meetings, public transport, and public spaces<sup>¶¶</sup></li> <li>Discontinue any nonessential travel<sup>§§¶</sup></li> <li>Work at home or discuss options for modified duties with employer<sup>†</sup></li> <li>Perform only essential self-care tasks (i.e. food shopping)<sup>**</sup></li> <li>Use services for vulnerable people to avoid contact with others<sup>†</sup></li> </ul>
High risk	<ul style="list-style-type: none"> <li>Self-isolate or “shield” (avoid all contact with others)<sup>†,***</sup></li> <li>Use services for vulnerable people to avoid contact with others<sup>†</sup></li> <li>Leave home for infusion treatment only<sup>¶¶</sup></li> <li>Family members should also work from home, use services for vulnerable people to avoid contact with others, and keep a clean residence as best as possible<sup>¶¶</sup></li> </ul>

\*Recommendations adapted from the World Health Organization.  
 †Recommendations adapted from the Centers for Disease Control and Prevention.  
 ‡Recommendations adapted from the American Gastroenterological Association.  
 §Recommendations adapted from the Crohn’s & Colitis Foundation.  
 ¶Recommendations adapted from the International Organization for the Study of Inflammatory Bowel Disease.  
 \*\*Recommendations adapted from Crohn’s & Colitis Canada.  
 ††Recommendations adapted from Crohn’s & Colitis UK.  
 †††Recommendations adapted from the British Society of Gastroenterology.  
 ‡‡Recommendations adapted from Crohn’s & Colitis Australia.  
 §§Recommendations adapted from the European Crohn’s and Colitis Organisation.  
 ¶¶Recommendations adapted from Queiroz et al.<sup>19</sup>

<sup>15-18</sup> Providers should consider using clinical disease scores and fecal calprotectin levels to guide decision-making as their initial testing instead of endoscopy.<sup>8, 10, 11</sup> Other testing modalities such as radiology or capsule endoscopy can be considered, although access to these services during the pandemic may be

limited and influence the choice of investigation for patients with IBD.<sup>8</sup>

### Infusions

Infusion suite services should be maintained as a priority area or essential service.<sup>8, 10, 11</sup> Patients should continue to receive infusions at an infusion center, assuming that the infusion center has a screening protocol in place and that extra precautions are taken to minimize the risk of exposure to COVID-19 (Table 3).<sup>7, 8, 10, 11, 13, 17, 30</sup> The ECCO task force suggests that postponing infusions of infliximab to every 10 weeks and infusions of vedolizumab by an additional 4 weeks may be possible in a select group of patients in remission; however, the original schedule is probably the best strategy.<sup>30</sup> Other societies also suggest possibly extending infusion intervals when feasible; however, this extension must be done cautiously to avoid loss of response.<sup>10, 11, 19</sup> The Crohn’s & Colitis Foundation proposes that patients schedule infusions at off-peak hours or consider home infusion, whereas the AGA and IOIBD specifically recommend against home infusion because of safety and logistical issues.<sup>7, 10, 11, 15</sup>

### Endoscopy and surgery

On March 13, 2020, the American College of Surgeons released a statement recommending that hospitals and health systems review all elective procedures with a plan to minimize, postpone, or cancel elective surgeries, endoscopies, or other invasive procedures to support the expected surge in critical patient care needs and to minimize the use of essential items needed to care for patients including PPE, cleaning supplies, ventilators, and intensive care unit beds.<sup>31</sup> Soon after the statement was released, gastrointestinal and IBD organizations issued opinion statements supporting these recommendations and advising appropriate PPE (Table 3).<sup>32, 33</sup>

However, it has been proposed that patients with IBD should continue to undergo endoscopy in certain situations: to diagnose new severe IBD, to exclude cytomegalovirus in acute severe UC if noninvasive tests are equivocal, to direct surgical intervention in patients with severe disease or suspected cancer, to assess patients with partial obstructive symptoms for balloon dilation, or to intervene in a dominant biliary stricture in a patient with concomitant primary sclerosing cholangitis and cholangitis.<sup>7, 34</sup> Iacucci et al propose algorithms for the timing of endoscopy in each of these situations.<sup>34</sup>

Patients with IBD and urgent perianal sepsis should undergo a day-case procedure. However, complex IBD surgeries should be deferred if possible, and the timing should be regularly reviewed at a multidisciplinary team meeting. Emergency surgeries, such as colectomy for acute severe UC and intestinal resection for penetrating disease in CD, should continue as part of routine care; however, the choice of postoperative therapy to prevent recurrence needs to be considered in context of COVID-19.<sup>8</sup>

**TABLE 3.** Summary of Recommendations for Routine Care of Patients With IBD During COVID-19

	Recommendations
Clinic	<ol style="list-style-type: none"> <li>1. Minimize face-to-face interaction and convert appointments to telephone or video visits if possible. <sup>*,†,‡,§,¶,††,‡‡</sup></li> <li>2. Consider using a telephone triage system to evaluate clinical urgency for new IBD visits. <sup>§</sup></li> </ol>
Laboratory and imaging studies	<ol style="list-style-type: none"> <li>1. All routine blood tests should be deferred, and therapy-associated/safety laboratory monitoring should be reduced to the minimum safe frequency. <sup>§</sup></li> <li>2. Delay diagnostic imaging in patients with mild symptoms or borderline biomarkers. <sup>§</sup></li> <li>3. Consider the use of fecal calprotectin and clinical disease scores to guide treatment. <sup>§</sup></li> </ol>
Endoscopy	<ol style="list-style-type: none"> <li>1. Postpone all elective endoscopic procedures, including IBD surveillance. <sup>*,**,††,§§,¶¶</sup></li> <li>2. Perform endoscopy only in patients with moderate to severe symptoms in whom evaluation will urgently change management. <sup>*,††,‡‡</sup></li> <li>3. All members of the endoscopy team should wear a full set of PPE; N95 respirators (or equivalent) for all gastrointestinal procedures. <sup>**,††,‡‡,§§</sup></li> <li>4. Consider double-gloving for all procedures. <sup>††</sup></li> <li>5. Procedures should be performed in a negative pressure room for patients with suspected or confirmed COVID-19. <sup>†,**,‡‡</sup></li> </ol>
Surgery	<ol style="list-style-type: none"> <li>1. Postpone all elective surgery. <sup>†,§,**,¶¶</sup></li> <li>2. Consider testing for SARS-CoV-2 before emergency surgery. <sup>¶¶</sup></li> </ol>
Infusions	<ol style="list-style-type: none"> <li>1. Patients should continue to receive infusions as prescribed. <sup>*,†,‡,§,¶,††,‡‡</sup></li> <li>2. Patients should be prescreened for symptoms 24-48 hours prior and come unaccompanied. <sup>§,**,††,‡‡</sup></li> <li>3. Patients should wear masks. <sup>**,††</sup></li> <li>4. Maintain at least 6 feet between patients, and patients and providers when possible. <sup>§,††,‡‡</sup></li> <li>5. Sanitize chairs between patients. <sup>§,††</sup></li> <li>6. All staff should wear appropriate PPE and follow meticulous hand hygiene. <sup>§,††,‡‡</sup></li> <li>7. Consider moving to off-site infusion unit. <sup>§</sup></li> <li>8. Delay lower-priority infusions (ie, iron, electrolytes). <sup>§</sup></li> <li>9. Consider accelerated infliximab infusion. <sup>†,‡‡</sup></li> <li>10. Convert premedications to oral. <sup>‡‡</sup></li> </ol>

\*Recommendations adapted from Crohn's & Colitis Foundation.

†Recommendations adapted from Crohn's and Colitis Canada.

‡Recommendations adapted from Crohn's and Colitis UK.

§Recommendations adapted from the British Society of Gastroenterology.

¶Recommendations adapted from Crohn's & Colitis Australia.

‡‡Recommendations adapted from the European Crohn's and Colitis Organisation.

†††Recommendations adapted from Queiroz et al.<sup>19</sup>

††††Recommendations adapted from the American Gastroenterological Association.

‡‡‡Recommendations adapted from the International Organization for the Study of Inflammatory Bowel Disease.

§§§Recommendations adapted from the Joint GI Society Statements.<sup>20,32</sup>

¶¶¶Recommendations adapted from Mao et al.<sup>14</sup>

PPE indicates personal protective equipment.

## Medication Management for Patients With IBD Not Infected With SARS-CoV-2

All gastrointestinal organizations we researched recommend that patients should stay on their IBD maintenance medications as prescribed during the COVID-19 pandemic.<sup>7,8,10,11,13-18,20</sup> Clinicians maintain that the risk of disease flare off medications is greater than that of contracting SARS-CoV-2.<sup>20</sup> This risk is related to the potential need for high-dose steroids, increased contact with a health care facility for evaluation, hospitalization, or surgery. Moreover, delaying biologics increases the risk of immunogenicity and loss of response.<sup>35</sup> A summary of society recommendations per medication class is outlined in Table 4. Enteral nutrition, probiotics, 5-aminosalicylates, antibiotics, and local steroids do not suppress the immune system and are safe to continue or start for treatment.<sup>7,14,16</sup> Societies are overall in agreement with the recommendations to taper steroids and continue IBD therapy as prescribed, although the British Society of Gastroenterology suggests stopping thiopurines in patients aged >65 years or with comorbidity who are in sustained remission.<sup>8</sup>

## Medication Management for Patients With IBD With Suspected or Confirmed COVID-19

Patients with IBD who have been in close contact with someone with proven COVID-19 should self-isolate and follow local recommendations. The ECCO task force states that it is not necessary to stop medications on the basis of exposure alone.<sup>13</sup> The Surveillance Epidemiology of Coronavirus Under Research Exclusion (SECURE-IBD) is a database that was established to monitor and report outcomes of COVID-19 occurring in patients with IBD.<sup>36</sup> Providers for IBD are encouraged to report all confirmed cases, regardless of severity, to this database. The recommendations for medication management of patients with IBD who have confirmed SARS-CoV-2 or COVID-19 are summarized in Table 4. Although the IOIBD states that it is uncertain if biologics should be held in patients with confirmed SARS-CoV-2, the AGA notes that it is reasonable to delay the next dose for 2 weeks to monitor for the onset of symptoms.<sup>7,10,11</sup> For patients with COVID-19 and quiescent IBD, biologics, immunomodulators, and small molecules should be delayed until after symptoms resolve, typically 7-14 days or after 2 nasopharyngeal polymerase chain reaction tests are negative.<sup>7,9-11</sup> For patients involved in clinical trials, the IOIBD recommends that patients stop treatment if they test positive for SARS-CoV-2 or develop COVID-19.<sup>10,11</sup>

## Medication Management During IBD Flare

Although the IOIBD recommends that patients with moderate to severely active CD or UC (both new disease or relapsing) should be treated with the same therapies as one would have chosen in the pre-COVID-19 era, other organizations propose special considerations. Chinese IBD societies recommend



**TABLE 4.** Summary of Recommendations for Medication Management of Patients With IBD During COVID-19

Medication	Risk of SARS-CoV-2 or COVID-19*	Patients Without SARS-CoV-2 or COVID-19	Patients With SARS-CoV-2 or COVID-19
5-ASA	No increased risk	<ul style="list-style-type: none"> <li>• Continue taking as prescribed</li> </ul>	<ul style="list-style-type: none"> <li>• Continue taking as prescribed</li> </ul>
Locally acting steroids	No increased risk	<ul style="list-style-type: none"> <li>• Continue taking as prescribed</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertain if patients should stop treatment.*</li> <li>• Oral budesonide is likely safe†</li> </ul>
Corticosteroids	Prednisone (> 20 mg/d) increases risk	<ul style="list-style-type: none"> <li>• Use extra precaution if taking steroids</li> <li>• Confirm the need for steroids and taper if possible</li> </ul>	<ul style="list-style-type: none"> <li>• Stop therapy (taper as appropriate)</li> <li>• Consider rapid taper by 10 mg/week‡</li> <li>• Consider switch to budesonide or budesonide MMX when feasible‡,§</li> </ul>
Immunomodulators	Uncertain if increased risk	<ul style="list-style-type: none"> <li>• Uncertain if dose should be reduced in combination therapy with anti-TNF*</li> <li>• Consider holding in patients aged &gt; 65 y or with significant comorbidity§,‡</li> <li>• Initiation of monotherapy with thiopurine or methotrexate not advised§</li> <li>• Use caution in starting with steroids or anti-TNF‡,§</li> </ul>	<ul style="list-style-type: none"> <li>• Hold therapy</li> </ul>
Anti-TNF	Uncertain if increased risk	<ul style="list-style-type: none"> <li>• Continue at prescribed intervals</li> <li>• Switching from infusion to injectable is not advised†,‡,§</li> <li>• Consider subcutaneous drug for new starts†,‡</li> <li>• Consider monotherapy with early therapeutic drug monitoring for new starts§</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertain if patients should stop therapy if test positive for SARS-CoV-2*</li> <li>• Consider delaying 2 weeks to monitor for development of COVID-19†</li> <li>• Hold therapy if confirmed COVID-19§</li> </ul>
Anti-integrin	No increased risk	<ul style="list-style-type: none"> <li>• Continue at prescribed intervals</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertain if patients should stop therapy if test positive for SARS-CoV-2 or develop COVID-19*</li> <li>• If positive for SARS-CoV-2, consider delay 2 weeks to monitor for development of COVID-19†</li> <li>• Hold therapy if confirmed COVID-19§</li> </ul>
Anti-I-12/23	No increased risk	<ul style="list-style-type: none"> <li>• Continue at prescribed intervals</li> <li>• Consider starting over other infused biologics in patients who need new therapy†,‡</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertain if patients should stop therapy if test positive for SARS-CoV-2 or develop COVID-19</li> <li>• If positive for SARS-CoV-2, consider delay 2 weeks to monitor for development of COVID-19</li> <li>• Hold therapy if confirmed COVID-19§</li> </ul>
Janus kinase inhibitor	Uncertain if increased risk	<ul style="list-style-type: none"> <li>• Continue at prescribed intervals</li> <li>• New starts should be avoided unless no other alternatives‡,§</li> </ul>	<ul style="list-style-type: none"> <li>• Hold therapy</li> </ul>

\*Recommendations adapted from the International Organization for the Study of Inflammatory Bowel Disease.

†Recommendations adapted from the British Society of Gastroenterology.

‡Recommendations adapted from the European Crohn's and Colitis Organisation.

§Recommendations adapted from the American Gastroenterological Association.

¶Recommendations per Mao et al.<sup>14</sup>

Locally acting steroids include budesonide and budesonide MMX. Corticosteroids include prednisone. Immunomodulators include thiopurines (6-mercaptopurine, azathioprine), methotrexate, and cyclosporine.

Anti-integrin includes vedolizumab. The Janus kinase inhibitor includes tofacitinib.

Anti-IL-12/23 indicates anti-interleukin 12/23—includes ustekinumab; anti-TNFs, anti-tumor necrosis factors—include infliximab, adalimumab, certolizumab pegol, and golimumab; budesonide MMX, budesonide multi-matrix system; 5-ASAs, 5-aminosalicylates—refers to oral or rectal mesalamine.

against a new prescription or increased dose of an immunosuppressant in epidemic areas, and the ECCO task force suggests that providers postpone the start of treatment based on individual risk assessment.<sup>13, 14</sup> However, for patients requiring new therapy, IBD societies propose therapeutic options that

limit risk and reduce patient contact with a health care facility (Table 4). For example, providers should consider using budesonide over corticosteroids, avoiding immunomodulators and Janus kinase inhibitors, and using monotherapy with anti-tumor necrosis factor drugs rather than combination therapy

when possible (Table 4).<sup>7, 8, 10, 11</sup> Furthermore, providers should consider subcutaneous biologics for new treatment starts to avoid a burden on infusion units and decrease the risk of exposure.<sup>8, 30</sup>

In patients with active IBD and confirmed SARS-CoV-2 and/or COVID-19, the risks and benefits of treatment must be weighed against the severity of COVID-19.<sup>7</sup> In outpatients with mild symptoms of COVID-19, safer IBD therapies such as vedolizumab should be prioritized. In patients who are hospitalized with severe COVID-19, the choice of therapy for COVID-19 should take into account the coexisting IBD if feasible. On the other hand, if patients are hospitalized for severe IBD and test positive for SARS-CoV-2 or have mild COVID-19, then standard algorithms for hospitalized patients with IBD should be applied with a focus to limit intravenous steroids to no more than 3 days.<sup>7, 37</sup>

## DISCUSSION

The COVID-19 pandemic has swept across the world, and gastroenterologists are now managing patients with IBD in an unprecedented way. Providers are commonly using telemedicine, limiting nonurgent laboratory and imaging evaluation, and reserving endoscopy only for select situations that will guide management decisions. As data regarding COVID-19 in patients with IBD are sparse, gastroenterologists are faced with complex decision-making and must rely on expert opinions and consensus. In this study, we summarize the available recommendations and consensus statements from organizations throughout the world on the management of IBD during COVID-19.

At the time of this writing, 1379 confirmed cases of COVID-19 in patients with IBD have been reported to the SECURE-IBD registry internationally.<sup>36</sup> Preliminary analysis of publicly reported data shows worse outcomes in patients who are older, have more comorbidities, and are prescribed corticosteroids.<sup>36</sup> However, many questions remain on how to best manage patients with IBD in the setting of the COVID-19 pandemic. It is unknown if patients with IBD are at higher risk of severe COVID-19 or worse outcomes. It is hypothesized that patients with IBD may be at increased risk of COVID-19 because the COVID-19 receptor, the angiotensin converting enzyme 2, is highly expressed in the terminal ileum and colon of patients with IBD.<sup>38</sup> However, a recent study shows that patients with IBD do not have higher expression during inflammation, and some biologic therapies are associated with lower levels of ACE2.<sup>39</sup> Moreover, early data from Wuhan of 318 patients with IBD during a local outbreak of disease did not report any COVID-19, although all biologic and immunosuppressive therapy was held in this patient population.<sup>40</sup> It is not clear if treatment needs to be held in patients who test positive for the virus but do not have symptoms, or in patients who have very mild symptoms. Despite the lack of evidence, most current recommendations and consensus statements propose

holding biologics, immunomodulators, and small molecules for patients who test positive for SARS-CoV-2 without COVID-19 and in all patients with COVID-19, regardless of the severity. Although this practice may result in some patients losing efficacy of their therapy, prioritizing patient safety in the setting of limited data should be considered.

Future research on IBD during COVID-19 should focus on the following:

- Risk stratification for severe COVID-19 among patients with IBD.
- The development of evidence-based algorithms for medication management in patients with confirmed SARS-CoV-2 without symptoms, mild COVID-19, and severe COVID-19.
- Long-term outcomes for patients with COVID-19 and IBD.
- The role for SARS-CoV-2 vaccination in patients with IBD and its prioritization.

As many practices and institutions shift focus toward reopening endoscopy units and resuming surgery as the number of new COVID-19 cases decreases, new policies are needed. The American Society for Gastrointestinal Endoscopy recommends screening of all patients with a COVID-19 questionnaire within 72 hours of procedure or testing for COVID-19, careful preparation and cleaning of rooms, physical distancing by patients and staff when possible, and appropriate PPE worn by all staff.<sup>41</sup> All procedures should be ranked based on a tier system of urgent, semi-urgent, or elective, and patients whose state might rapidly worsen or become more vulnerable to COVID-19 if endoscopy is deferred should be prioritized. This includes patients with IBD who have the potential to deteriorate or require empiric high-dose steroids if procedures are delayed.<sup>41</sup>

Caring for patients with IBD during COVID-19 has posed unique challenges for both patients and providers, and decisions regarding the evaluation and treatment of disease have become more complex. The pervasive concerns surrounding the novel coronavirus require providers to present patients with evidence-based information regarding the risks of COVID-19 and the best treatment of their IBD. Analysis of the SECURE-IBD registry and additional research are needed to further our knowledge about COVID-19 in patients with IBD and to help better advise patients and guide management in an unprecedented time.

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