Journal of the Canadian Association of Gastroenterology, 2024, **7**, 121–131
https://doi.org/10.1093/jcag/gwad056
Advance access publication 20 January 2024
Review

The Fundamentals of Inflammatory Bowel Disease Management in Pregnancy: A Practical Review for the Gastroenterologist

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Abstract

This narrative review explores the management of Inflammatory Bowel Disease (IBD) during pregnancy, emphasizing its unique challenges to maternal and fetal health, particularly within the Canadian Gastroenterology setting. Seven key principles are highlighted: 1) Preconception counselling, aiming for steroid-free remission confirmed by objective markers, should be routine for female IBD patients. 2) Medication safety, with an eye to future pregnancies, should be addressed upon initiation. Methotrexate and small molecules are contraindicated during pregnancy, while most 5-ASA therapies, biologics, and thiopurines can be continued throughout pregnancy and breastfeeding. Steroids, though not without risks, can be utilized if necessary. 3) Routine monitoring during remission should include serum biomarkers and fecal calprotectin each trimester. 4) Routine endoscopy and imaging are not required, but if indicated, lower GI endoscopy, ultrasound, and unenhanced MRI can be used. Computed tomography and gadolinium enhanced MRI should be avoided. 5) Caesarean section is advised for patients with previous ileal pouch surgeries or active perianal disease, but other patients should follow obstetric indications for delivery. 6) Postpartum period may see more active disease, requiring continued monitoring. Breastfeeding is encouraged, and routine childhood vaccinations are advised, but live vaccinations in the first 6 months warrant detailed review. 7) Complex IBD patients may benefit from a multidisciplinary approach with robust communication between gastroenterologists and obstetricians.

Key words: Inflammatory Bowel Disease, Crohn's disease, Ulcerative colitis, pregnancy.

Introduction

Canadian inflammatory bowel diseases and pregnancy

Since their first classification in the early 20th century, the incidence of inflammatory bowel diseases (IBD) such as Crohn's disease (CD) and ulcerative colitis (UC) has accelerated. This incidence acceleration has only recently plateaued in Canada.[1,2] Novel medical therapies and surgical advances now enable patients with IBD to lead normal lives with average life expectancies. These factors have led to compounding prevalence and, in 2023, ~320 000 Canadians live with IBD.[3] With peak incidence in adolescence and early adulthood, Canadians with IBD face a lifetime of chronic disease management, and physicians must be prepared to equip patients with the tools to navigate life's milestones with a chronic condition.

For reproductive-aged women, this includes education around the interplay between IBD, fertility, and pregnancy. The goal of this review is to equip gastroenterologists with an updated framework for the management of IBD in pregnancy that can be applied within the Canadian healthcare system.[4]

Risks of IBD throughout pregnancy

Effect of pregnancy on disease activity

IBD activity is more likely during a pregnancy and postpartum than at other times in women's lives. The rate of IBD flare during pregnancy is higher among those with UC than with CD. While some studies suggest that those with CD are not at an increased risk of flare during pregnancy, this is not uniformly reported throughout the literature.[5–7]

Risk factors for disease flare throughout pregnancy include UC rather than CD; active disease at conception; and previous pregnancy with active disease. Among those with quiescent disease at conception, higher rates of flare during pregnancy are seen in those with UC and those with prior flare during pregnancy, while previous IBD-related surgery and the use of biologic therapy were both associated with a lower rate of intrapartum disease activity.[5,8]

The risk of active IBD throughout pregnancy is most pronounced in those with disease activity at the time of conception. This is particularly evident in those with UC. This risk suggests that preconception remission should be targeted.

Effect of quiescent IBD on pregnancy

Historically, any pregnancy in someone with IBD was considered to be high risk, and women with IBD were often counselled to avoid pregnancy altogether.[9,10] An association has been seen between IBD and preterm labour, low birth weight, spontaneous abortion, preterm premature rupture of membranes, and pre-eclampsia.[11–16] However, in studies that account for disease activity, pregnancy outcomes among those with quiescent disease are similar to the outcomes among the non-IBD population.[5,17] This, along with a demonstrated increase in adverse events in those with active disease suggests that the primary driver of adverse maternofetal outcomes is the presence and severity of disease activity rather than the diagnosis in isolation.[12,18]

Risks of active disease and pregnancy

A 2021 meta-analysis found higher rates of adverse pregnancy outcomes in those with peripartum disease activity compared to those in remission. These included elevated risks of low birth weight (OR 3.81, 95% CI 1.81–8.02); preterm birth (OR 2.42, 95% CI 1.74–3.35); small for gestational age (OR 1.48, 95% CI 1.19–1.85); spontaneous abortion (OR 1.87, 95% CI 1.17–3.0); and stillbirths (OR 2.27, 95% CI 1.03–5.04).[12] This underscores the importance of disease control before conception. While the ideal preconception remission duration lacks formal study, a 3-month period of objectively confirmed steroid-free remission is suggested.[19,20]

Preconception planning

Benefits of pre-conception counselling

During pregnancy, women are faced with advice from loved ones that are well intentioned, but often based on anecdotes and lacking in the relevant expertise. This is more pronounced in those with chronic disease and can heighten health-related anxiety in pregnancy. At the intersection of women's health and IBD, it is vital that evidence-based management and counselling are available to mitigate the additional stressors this population faces.[21–23] Preconception appointments have demonstrated reduction in peripartum disease relapse and low infant birthweight while increasing adherence to folic acid supplementation and cessation of smoking and alcohol.[11,24]

Survey data indicates that nearly 25% of women believe it is more important to tolerate symptoms to avoid foetal exposure to IBD medications, 84% reported significant concern of adverse events due to medication exposure, but only 19% identified that active disease could increase risks.[25,26] Without pre-conception counselling, discontinuation of therapy may feel safest upon learning of pregnancy. Given the discrepancy in perceived risks posed by medication compared to active disease, appropriate education pre-conception should empower women to continue safe therapy throughout pregnancy.

Routine discussions

Family planning discussions in reproductive-aged women are essential in the management of IBD. While gastroenterology appointments understandably focus on disease management, brief family planning reviews should be incorporated at key time points.

In routine IBD follow up, family planning should be discussed at diagnosis, during disease flare, when medications are changed, or when considering therapy de-escalation. By inquiring into reproductive plans at these time points, gastroenterologists open the dialogue on IBD and pregnancy and ensure that any changes in disease status or therapy incorporate reproductive plans. A practical approach to these discussions is outlined in Table 1.

Pre-conception appointments

In those considering pregnancy or with questions regarding pregnancy and IBD, dedicated preconception appointments should be undertaken. Preconception appointments can ensure disease optimization and patient education prior to pregnancy in those hoping to conceive.[28,29] In women who are undecided, a preconception appointment can still be very helpful. Voluntary childlessness is higher among women with IBD, and preconception counselling should ensure that this stems from patient values rather than misconceptions about genetic or medication risks.[28,29]

Key discussions in these consultations should focus on medication safety, disease control (both pre-conception and throughout pregnancy), health behaviours, and heritability. Disease activity should be reviewed, and remission objectively confirmed using colonoscopy for ileal/colonic disease or faecal calprotectin for recently documented endoscopic remission. Imaging confirmation is suggested for small bowel CD. For those in remission, medication safety and adherence should be reinforced. Patients with active disease should be educated regarding the associated risks and disease control should be targeted before conception is pursued.

Medication safety

5-ASA therapies

Most 5-ASA therapies are low risk in pregnancy with two notable exceptions. In animal models, phthalate coating in high doses is teratogenic, therefore, formulations other than Asacol should be used.[30] Sulfasalazine affects folic acid metabolism, increasing the risk of neural tube defects.[31] Women on sulfasalazine should take higher dose folic acid (2–5 mg daily) for at least one month preconception and through the first trimester.[32]

Thiopurines

Women in remission on thiopurine monotherapy preconception should continue throughout pregnancy. Thiopurine metabolism may be altered in pregnancy, increasing hepatotoxicity and decreasing therapeutic metabolites.[30,33] Liver enzymes should be monitored routinely, and metabolite levels checked if disease flares throughout pregnancy. While mild anaemia in neonates exposed to thiopurines has been demonstrated, negative neonatal outcomes have not been identified.[34–36] Meta-analysis data of small studies suggested a risk of preterm birth and congenital anomalies, but larger more recent studies do not corroborate this finding.[30]

Thiopurines metabolites are present in breast milk. Despite historical suggestions to avoid breastfeeding 4 h post-drug administration, the presence of these metabolites has not demonstrated risk.[37–39] Mothers should be aware of the metabolite transfer, but current evidence does not support adjustment of breastfeeding timing.

Thiopurine therapy should be continued in pregnant and breastfeeding women. The risk of some adverse events, including pancreatitis, is especially elevated at thiopurine initiation.[40] Given this, and their lack of efficacy as an induction agent, thiopurines should not be initiated as a new therapy in pregnancy.

TNF inhibitors, vedolizumab, and ustekinumab

Available tumour necrosis factor (TNF) inhibitors in Canada (infliximab, adalimumab, golimumab) cross the

Table 1. Routine pre-conception discussions with reproductive age females.

Patient population
Female patients in reproductive years
Special populations
Transgender men with a uterus

Key time points to briefly review family planning:

Time of diagnosis & disease flare
☐ Discuss current family planning goals and expectations
☐ Communicate the importance of at least 3 months of disease control prior to future conception
☐ If sexually active, confirm contraception use
☐ If planning pregnancy—advise delayed family planning and optimize disease control

Medication changes
☐ Discuss current family planning goals and expectations
☐ If planning pregnancy:
  ○ Avoid methotrexate, asacol, and small molecules
  ○ Discuss the importance of disease stability prior to conception
  ○ Consider dedicated pre-conception appointment

Contraception discussion[27]

For patients who are sexually active and:
☐ Starting on or continuing a high-risk medication (Methotrexate, Small molecule)
☐ Experiencing active disease/flare
☐ At risk of flare during de-escalation of therapy

IBD-specific considerations[27]
☐ No form of contraception is contraindicated in IBD
☐ In those with severely active disease, oestrogen-containing oral contraception can increase thromboembolism risks
☐ In those with risks for osteopenia, Depot medroxyprogesterone acetate implants should be avoided
☐ Copper intrauterine devices can lead to heavier flow and exacerbate iron deficiency anaemia

When to stop routine discussions
- After menopause
- After a hysterectomy or tubal ligation
- In cases of confirmed infertility

Prior to de-escalation of therapy
☐ Discuss current family planning goals and expectations
☐ If sexually active and not planning conception, confirm contraception use
☐ If planning pregnancy, consider delaying de-escalation of therapy until family planning complete

When patients identify they are considering pregnancy
☐ Confirm disease is inactive
☐ Consider dedicated pre-conception counselling appointment

Confirm effective contraception
☐ IUD or Implant
☐ Oral contraceptive
☐ Barrier protection
☐ Hormonal local contraception

Suggest against solely relying on:
☐ Timed intercourse
☐ Withdrawal method

If not on effective contraception suggest barrier contraception or abstinence while awaiting review with family physician or health care provider who can provide appropriate counselling and prescription for contraception

Even in periods of disease remission, patients may need to be notified or reminded that IBD monitoring may change throughout pregnancy and it is important to let their GI team know if they do conceive.

placenta beginning in the late second trimester of pregnancy, but newborn levels normalize by 6–12 months post-partum.[41,42] Previous recommendations have been to hold biologics in the third trimester due to the placental transfer. However, published studies have not shown adverse events related to in-utero placental transfer of monoclonal antibodies on newborn or childhood health and development.[43] Given the known risks of active disease to pregnancy, and of disease flares post-partum, uninterrupted use of biologics throughout pregnancy is suggested.

In those on biologics, low levels can be present in breastmilk. However, this is not associated with adverse events in exposed breastfed infants compared to controls.[44] Women on biologics should continue therapy while breastfeeding.

Limited data exist for IL-12/23 inhibitors (ustekinumab) and anti-integrin therapy (vedolizumab), but observational studies demonstrate similar maternofetal outcomes to the general population, suggesting their continuation throughout pregnancy and breastfeeding is also low risk.[45,46]

Combination therapy

Combination therapy with TNF-inhibition and thiopurines can be continued throughout pregnancy and post-partum. The risk of infection in the first year of life is slightly higher for infants whose mothers were on combination therapy.[43] If deep remission prior to pregnancy is confirmed, cessation of the immunomodulator can be discussed. If this is undertaken, our practice would be to de-escalate 3–6 months prior to planned conception and confirm sustained remission objectively prior to conception.

New biologics and small molecules

The IL-23 inhibitor Risankizumab has recently become available in Canada, with studies underway for guselkumab and mirikizumab.[47] Given their novelty, pregnancy safety data are not yet available. One report on pregnancy outcomes among patients with psoriasis, including those on Risankizumab, demonstrated similar outcomes to the general population.[48] However, this included very few women on IL-23 inhibitors.

For those on IL-23 inhibitors, the informed discussion should acknowledge the lack of available safety data in pregnancy, though it is likely that outcomes will be similar to those with ustekinumab.

Small molecules (tofacitinib, upadacitinib, ozanimod) also have limited data in pregnancy. In contrast to IL-23 inhibitors, small molecules have been considered contraindicated in pregnancy based on suggested teratogenicity in animal models.[33,45] These should be discontinued 3 months prior to pregnancy to allow effective therapy that is safe in pregnancy to be initiated.

Corticosteroids

The risk posed by corticosteroid use in pregnancy is difficult to disentangle from that of active disease. However, systemic corticosteroids in pregnancy has been associated with elevated risks of gestational diabetes, preterm birth, low birth weight, and gestational hypertension.[49,50] Historical reports of steroid-associated neonatal cleft palate have not been corroborated in recent population data.[30]

Preconception, steroid-free clinical remission should be targeted for ≥3 months to minimize both the risk posed by active disease in pregnancy and the risks of corticosteroids.

However, in the event of a peripartum flare, corticosteroids may be necessary to mitigate the risk of active disease.

Cyclosporine

Cyclosporine is used infrequently as salvage therapy in acute severe colitis. Among non-IBD pregnancies with cyclosporine exposure, it is associated with increased rates of gestational diabetes, hypertension, pre-eclampsia, preterm birth, and small for gestational-age infants.[51] The need for cyclosporine is rare in IBD, and rarer still in pregnancy. Given the risks of emergency colectomy during pregnancy—including potential foetal demise—cyclosporine should be considered if needed in steroid and infliximab refractory colitis. This should be in a centre with expertise and be a shared decision between the patient, gastroenterologist, colorectal surgeon, and obstetrician.

Contraindicated medications

At preconception appointments, medications should be reviewed for potential teratogenicity. Methotrexate and small molecules should be discontinued 3 months before conception and other maintenance therapy initiated.[30]

Monitoring of inactive IBD in pregnancy

Serum markers

Biochemical markers like c-reactive protein (CRP), haemoglobin, and albumin should be monitored each trimester to detect inflammatory activity, bearing in mind the expected changes of pregnancy. Mild CRP elevation occurs in pregnancy, and albumin naturally decreases, especially in the third trimester.[52,53] Haemoglobin and platelets both also decrease throughout pregnancy. Iron deficiency anaemia in a pregnant patient is also not uncommon.[54] Isolated mild changes in individual values should not prompt concern, but the biochemical profile throughout pregnancy should be monitored with a clinical context in mind, and further workup pursued if needed.

Stool markers

Faecal calprotectin, unaffected by pregnancy, is a useful monitoring tool in IBD.[55,56] Baseline levels should be established preconception and, if elevated, should prompt consideration of endoscopic assessment prior to pregnancy.

Throughout pregnancy, faecal calprotectin has been demonstrated to increase prior to clinical disease activity, suggesting utility in the prediction of disease flares.[57] Faecal calprotectin should be monitored preconception and each trimester.[55,57]

Investigating active disease in pregnancy

Routine monitoring of IBD in pregnancy with imaging and endoscopy is not recommended but should be used to investigate active symptoms.

Endoscopy

In the setting of active disease, unsedated flexible sigmoidoscopy is safe throughout pregnancy and is preferable for left-sided disease.[58] Colonoscopy is more invasive and carries higher but still very low absolute risks of perforation and bleeding.[59] Additionally, it carries procedural sedation risks.[60] If an endoscopic assessment is warranted and will change management, it is not contradicted in pregnancy. When required, risks and benefits should be reviewed. The risk of procedural sedation is minimized in the second trimester and beyond. Minimal effective sedation should be utilized, as maternal hypoxia or hypotension carries elevated risks to the foetus. Multidisciplinary review should include anaesthesiologists' and obstetricians' expertise if the need for deep sedation is anticipated. In early pregnancy, foetal heart rate confirmation with Dopplers is recommended before and after procedures. In the third trimester, foetal monitoring should be considered.[61] All patients should be in the left lateral or left pelvic tilt position to avoid vena cava or aortic compression.[62]

Intestinal ultrasound

Intestinal ultrasound (IUS) is non-invasive and safe in pregnancy. It is effective in the determination of disease location and detection of strictures, abscesses, and enteroenteric fistulas.[63,64] While it has lower sensitivity than contrast-enhanced magnetic resonance enterography (MRE)—it offers a valuable diagnostic option within the limitations of pregnancy.

IUS should be used to assess peripartum disease activity and has demonstrated utility in the detection of preclinical small bowel activity.[65] However, a gravid uterus can limit visualization in the TI and the sigmoid colon as pregnancy progresses.[64,66]

Given its safety in pregnancy, IUS is recommended in the assessment of active small bowel disease. However, it is important to note that this imaging modality is not universally available across Canadian centres, and the level of expertise and frequency of use can impact the reliability of the ultrasound findings.

Magnetic resonance imaging

Magnetic resonance imaging (MRI) poses minimal risk in pregnancy and does not utilize ionizing radiation. However, contrast-enhanced MRI relies on gadolinium, which crosses the placenta.[67] A population-level study of enhanced MRI exposure demonstrated an elevated rate of still birth or neonatal death (adjusted RR 3.70, 95% CI 1.55–8.85).[68,69] Based on current evidence, gadolinium should be avoided in pregnancy.

While unenhanced MRE is less accurate, it remains a valuable small bowel assessment tool in pregnancy and is particularly beneficial in centres without IUS access.

Computed tomography

Computed tomography (CT) uses ionizing radiation and should be avoided in pregnancy if possible. The highest risk is associated with exposure between 8 and 15 weeks gestational age.[70,71] Abdominal and pelvic CTs carry radiation dose exposure up to 50 mGy in one exam.[67,70] While significant teratogenicity has not been reported with radiation exposure below 50 mGy, the minimal threshold for adverse events is in the range of 60–310 mGy.[70,71] Given the risk, and availability of other methods of disease assessment, CT should be avoided in pregnant women with IBD unless absolutely necessary.

Approach to active disease management in pregnancy

Management of active IBD during pregnancy should involve shared decision making with the patient, obstetrician, gastroenterologist, and colorectal surgeon.

Monitoring clinical symptoms, biochemical markers, and faecal calprotectin aids early detection and intervention in

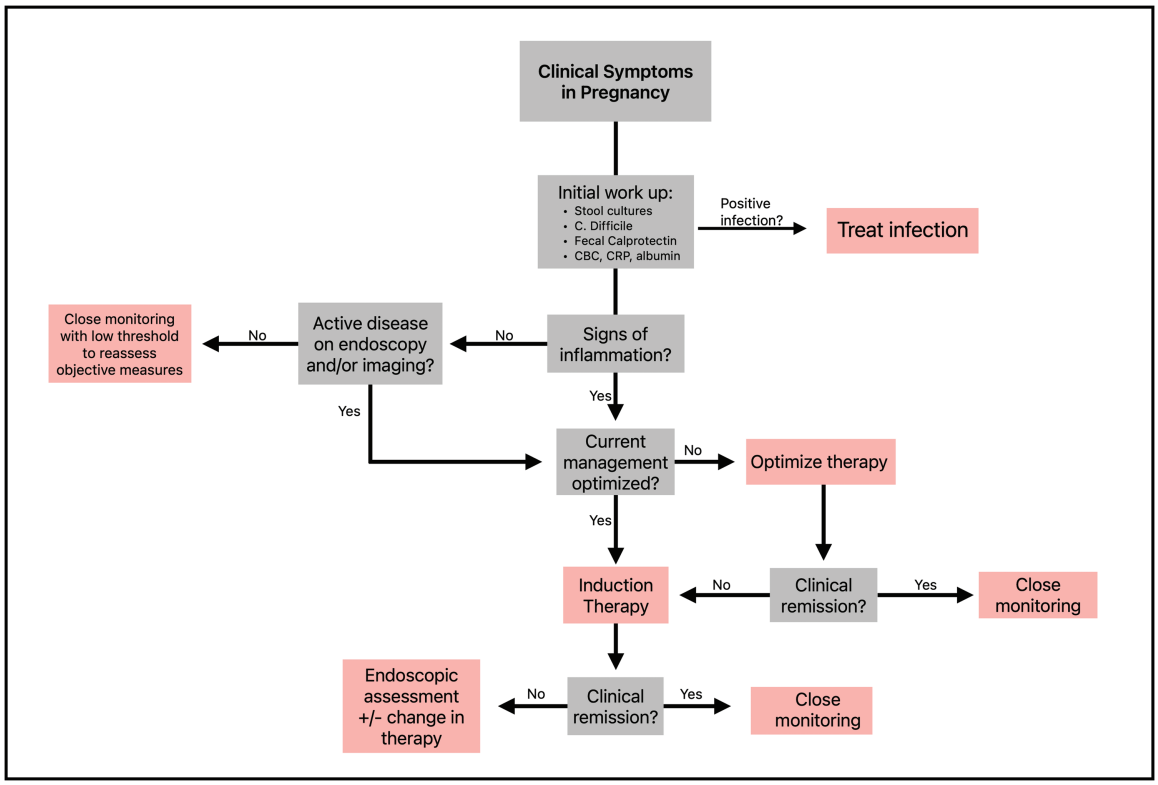

Figure 1. Approach to clinically active IBD in pregnancy. In those with active disease, investigations should include an assessment of inflammatory features and infectious workup at the outset. If there are signs of active inflammation on non-invasive investigations, medication optimization or induction therapy can be considered without endoscopic assessment. Induction therapy can include a tapering prednisone course; budesonide course; re-induction of biologics; or 5-ASA induction. Rectal 5-ASA or rectal steroids should be used for isolated distal disease. Changes in therapy should only be considered with endoscopic or imaging confirmation.

disease flare-ups. In cases of moderately to severely active disease, we recommend close follow-up and referral to a tertiary IBD care centre with obstetrician involvement.

If active disease is suspected, and non-invasive investigations are not sufficient to inform treatment decisions, endoscopic assessment should be based on disease location: sigmoidoscopy for left-sided colonic involvement and colonoscopy for ileal or right-sided colonic disease. Small bowel imaging should be considered for ileal or small bowel disease. We have outlined an approach to workup and management of active disease in Figure 1.

The general principles of induction and maintenance therapy throughout pregnancy are in keeping with the guidelines for non-pregnant individuals with limited exceptions. Throughout pregnancy, methotrexate and small molecules should be avoided, and thiopurines can be maintained but should not be initiated. Table 2 outlines our approach to medication optimization throughout pregnancy. Throughout pregnancy the use of early biologics or a change in therapy without documented steroid failure is justified, with the understanding that corticosteroids in pregnancy carry higher maternofetal risks than advanced therapies. However, disease remission should be targeted and steroids are still a valuable tool for symptom management and to mitigate the significant risks of active disease throughout pregnancy.

For patients with stricturing disease and partial obstructive symptoms, assessment of inflammatory burden is needed. If active inflammation is found, medical therapy should be optimized. Early assessment by a colorectal surgeon is suggested, especially for cases of obstructive or penetrating disease. If necessary, the safest time for surgical intervention is the second trimester. However, if emergent indications for surgery such as acute high-grade obstruction, megacolon, or severe haemorrhagic colitis are present surgery should not be delayed.

Method of delivery

Vaginal delivery

Most women with IBD can safely opt for a vaginal delivery. Vaginal deliveries may result in a more diverse foetal microbiome, potentially reducing the risk of immune-mediated disease.[75,76] However, this needs further investigation to elucidate the magnitude of potential benefit.

One common concern among pregnant women with IBD is the potential of perianal injury.[77] Reassurance can be provided that rates of any perineal trauma, including high-grade tears affecting the anus, are not significantly higher in those with IBD, and vaginal delivery does not predispose to the development of perianal CD.[78]

Caesarean section

Women with IBD have historically been more likely to undergo caesarean delivery. Caesarean deliveries are associated with higher rates of postpartum infection than vaginal deliveries—a risk that can be increased in those with IBD or on immunosuppressive therapies.[79] There is also an elevated rate of postpartum bowel surgeries among women with IBD undergoing elective caesarean.[79,80] Given the benefits of

Table 2. Treatment optimization throughout pregnancy.

1. Confirm adherence to therapy

Review of medication adherence should be undertaken. In cases of non-adherence, beliefs and values should be explored, and re-assurance should be provided regarding the safety and importance of continued therapy throughout pregnancy.

2. Determine if therapeutic drug monitoring (TDM) is warranted[a]

2a. TNF inhibitors
- Infliximab levels increase throughout pregnancy, while adalimumab levels decrease[72]
- Prophylactic monitoring is not recommended in pregnancy
- In active disease during pregnancy, our practice would be to use TDM to rule out antibodies.

2b. Azathioprine
- Active metabolites tend to decrease in pregnancy
- Toxic metabolites can increase
- In those with active disease and low active metabolites and high toxic metabolites, a change in therapy should be considered.[73,74]

3. Increase dose or change therapy

In those with mild—moderate disease activity, an increase or change in therapy alone can be sufficient.

5-ASA
- Consider combination of oral and rectal 5-ASA therapy in those with mild—moderate UC who are already on monotherapy 5-ASA

Thiopurines
- Active disease in pregnancy while on thiopurine monotherapy should prompt a change in therapy
- Thiopurines should not be used for induction therapy

Risankizumab
- Efficacy of dose escalation has not been shown
- Secondary loss of response should prompt consideration of a change in therapy

TNF inhibitors[b]
- Secondary loss of response leading to flare should prompt dose escalation
- Secondary loss of response with neutralizing antibodies should lead to a change within class
- Secondary loss of response at maximum dose should prompt consideration of change in therapy

Vedolizumab
- Secondary loss of response should prompt dose escalation
- Secondary loss of response at maximum dose should prompt consideration of a change in therapy

Ustekinumab
- Secondary loss of response should prompt dose escalation or repeat IV loading dose
- Secondary loss of response at maximum dose should prompt consideration of change in therapy

4. Risks and benefits of corticosteroid course

Corticosteroid induction is indicated while a change in therapy is pursued in those with moderate to severe disease activity, or in those who have not responded to dose optimization.

Pregnancy-specific risks[49,50]
- Gestational diabetes
- Preterm birth
- Low birth weight
- Gestational hypertension

Considerations
- Prior reports of corticosteroid-associated neonatal cleft palate have not been identified in recent data.[30]
- The potential risks posed by corticosteroids may be confounded by the known risks of active disease in pregnancy.

[a]Drug concentrations of other IBD medications are unlikely to change therapy and are not routinely considered.[73]
[b]The "maximum" doses we utilize in practice are infliximab 10 mg/kg every 4 weeks, adalimumab 80 mg every 1 week, golimumab 40 mg every 4 weeks, vedolizumab 300 mg IV every 4 weeks or 190 mg SC every 1 week, and Ustekinumab 90 mg every 4 weeks.

vaginal delivery, there are only two populations in whom c section should be recommended based on IBD:

1. Active perianal CD or prior rectovaginal fistula—due to the implications of perianal or pelvic trauma in this population.[78]
2. IPAA surgeries—those who have undergone prior Ileal Pouch-Anal Anastamosis (IPAA) surgery should be counselled on the risk of sphincter damage. Caesarean delivery is thought to mitigate this risk. However, there are limited data available, and patient preference should be considered with multidisciplinary review given the potential pronounced impact on faecal continence that sphincter damage carries in this population.[81,82]

In other populations with IBD, method of delivery should be based on patient values and obstetrical indications.

Postpartum

Disease monitoring

It is important to counsel patients to continue medication and close monitoring postpartum, to mitigate the increase in immune-mediated diseases activity. Postpartum IBD flares are reported with rates of 14%–32%.[83,84] Medication cessation is a risk factor, and women commonly report this is driven by concerns around medication safety while breastfeeding.[85] Women should continue their therapy and monitor biochemical measures and faecal calprotectin every 3–6 months throughout the first postpartum year.

Breastfeeding

Chronic gastrointestinal conditions have been associated with low milk production and difficulties with latching. These difficulties are exacerbated by the fatigue, discomfort, and sleep deprivation of the early post-partum period.[86] In women with IBD, decreased rates of breastfeeding are also potentially associated with perceived medication risks.[85] Women should be reassured that the majority of IBD medications can be safely continued while breastfeeding, as outlined above.

Offspring of women with IBD have an elevated risk of developing IBD (5%–10%).[87,88] This is more pronounced in children who have both parents affected (33%).[89] Breastfeeding may help to mitigate this risk as a negative correlation is seen between IBD diagnosis and breastfeeding (OR 0.71 for CD and 0.78 for UC).[90] Similarly, breastfeeding is associated with a reduction in early onset IBD by ~30%.[91]

Box 1.Key Points

Preconception

- Active inflammatory bowel disease at conception and throughout pregnancy is associated with adverse maternofetal outcomes
- Steroid free remission for at least 3 months prior to conception should be targeted and confirmed with objective measures
- Preconception counselling is crucial to educate and empower women with IBD in the management of their disease and their reproductive planning
- Methotrexate, small molecules, and phthalate coated 5-ASA medications should be avoided 3 months prior to conception and throughout pregnancy

Monitoring

- Routine blood work should be monitored preconception and each trimester, with awareness of expected changes in biochemical markers throughout pregnancy
- Faecal calprotectin is unaffected by pregnancy and should be monitored every trimester
- Endoscopic investigation is higher risk in pregnancy, though not contraindicated. It should only be considered in cases in which it will change management, and appropriate monitoring should be incorporated
- Unenhanced MRI and bowel ultrasound are safe imaging modalities in pregnancy
- CT and gadolinium enhanced MRI should be avoided

Medications

- Women with IBD considering pregnancy should be counselled that most IBD medications are safe throughout pregnancy and in breastfeeding and should be maintained
- Corticosteroids may be necessary in pregnancy for control of active disease. Specific pregnancy risks should be discussed prior to initiation
- Early biologic use or change in therapy prior to steroid dependence should be considered in pregnancy to minimize steroid exposure

Delivery and Post-Partum

- Most women with IBD can safely opt for vaginal delivery
- Caesarean section should be recommended in cases of active perianal CD; history of rectovaginal fistula; or history of IPAA surgery
- Increased disease activity is common in the post-partum period—women should be counselled to remain on medication and continue close monitoring

Multidisciplinary Approach

- Moderately to severely active disease in pregnancy should prompt referral to a tertiary care centre with collaboration between gastroenterologists, colorectal surgeons, and obstetricians

Women with IBD should be encouraged to breastfeed while providing a non-judgemental environment in which they feel their mental and physical health is supported in endeavouring to ensure that their child is well-nourished. The optimal duration of breastfeeding has not been established

Vaccinations

Appropriate immune responses to inactivated vaccinations have been demonstrated in infants born to mothers with IBD, including those with in-utero biologic exposure.[92] Routine childhood vaccinations are recommended.

However, live vaccinations may carry elevated risks following in-utero exposure to immunosuppressive therapy. This is highlighted in one case report of fatal disseminated Bacillus Calmette-Guerin following vaccination in a 3-month-old infant exposed to infliximab in-utero.[93] Avoidance of live vaccinations in these infants throughout the first 6 months of life has been recommended. In Canada, the only live vaccine administered within this timeframe is the rotavirus vaccine.[94,95]

Observational studies have demonstrated no significant adverse reactions to the rotavirus vaccine in incidentally exposed infants.[96] A 2023 study of 168 biologic exposed infants receiving the rotavirus vaccine found no serious adverse events. Three infants required medical attention—one for vomiting associated with reflux, one for diarrhoea, and vomiting associated with a milk allergy, and one for a rash felt unrelated to vaccination. This study suggests that the rotavirus vaccine may be offered to infants with in-utero exposure to TNF inhibitors.[97] However, rare events may not yet be appreciated with the small number of exposed infants. We recommend informed discussion with parents, acknowledging that, while

there is a low likelihood of risk, there is a need for more data to fully quantify this risk.

Multidisciplinary approach and the Canadian setting

A multidisciplinary approach is vital in the management of IBD in pregnancy. For women whose disease is in remission, the gastroenterologist's role is one of education, empowerment, and monitoring. In the setting of active disease, the expertise of the gastroenterologist, obstetrician, and colorectal surgeon are key to successful management throughout pregnancy.

Healthcare delivery varies across Canada. In the community gastroenterology setting we have outlined suggested preconception discussion intervals and points to review. For women with more complicated IBD or obstetrical histories, it may be beneficial to refer to a centre with a specific focus on IBD and pregnancy, which now operate in most Canadian provinces. These centres tend to involve close collaboration between obstetricians with expertise in high-risk pregnancies, gastroenterologists, and colorectal surgeons.

We would suggest that, where possible, pregnant women with stricturing disease and obstructive symptoms, those with moderately to severely active disease, and those with complex perianal fistulizing disease be referred to a multidisciplinary clinic for consultation preconception or throughout pregnancy.

Funding

None declared.

Conflicts of interest

Y.L. has received honoraria for Advisory Board participation and speaker fees from Janssen, Abbvie, Takeda, Pfizer, and Merck; E.S. and S.M. have no conflicts to disclose.

Data availability

As a review article, there are no data associated with this manuscript.

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