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## Editorial

Inflammatory bowel diseases (IBD) are chronic, immune-mediated conditions with an increasing prevalence worldwide, including in Slovenia. Recent epidemiological data confirm rising incidence and prevalence in both adult and pediatric populations, placing IBD among the most significant chronic gastrointestinal diseases in terms of long-term burden, health-care costs, and impact on patients' quality of life.

Therapeutic options have expanded considerably in the past decade. In addition to conventional agents, several classes of biologics with distinct mechanisms of action are now available, alongside small molecules such as JAK inhibitors and S1P modulators. These advances broaden our ability to tailor therapy but also underscore the need for careful positioning, sequencing, and safety monitoring. Treatment goals are increasingly guided by the treat-to-target concept and STRIDE II recommendations, emphasizing clinical remission, normalization of biomarkers, and endoscopic healing as key milestones.

Optimal IBD care must be multidisciplinary. Gastroenterologists, radiologists, endoscopists, surgeons, pharmacists, clinical dietitians, and psychologists all play essential roles in addressing the complex needs of these patients. Diagnostic tools have also advanced, with intestinal ultrasound joining colonoscopy and MRI as valuable, non-invasive modality for monitoring disease activity.

Despite this progress, one of the greatest challenges remains identifying the right treatment for the right patient at the right time. Predictors of therapeutic response, ranging from clinical features to biomarkers, genetics, pharmacokinetics, and microbiome signatures, are urgently needed to guide individualized strategies. The integration of such tools into clinical practice will be central to implementing precision medicine in IBD.

The 1st Slovenian International IBD Congress provides an important platform to exchange knowledge, share experiences, and foster collaborations. It is our hope that the discussions and insights presented here will accelerate the translation of evidence into practice and contribute to better outcomes for patients with IBD in Slovenia and beyond.

Prim. Assist. Prof. Andreja Ocepek, MD, PhD  
Guest editor

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# 1<sup>st</sup> Slovenian International IBD Congress

Brdo pri Kranju, October 17<sup>th</sup> to 18<sup>th</sup>, 2025

## Organizers

Ljubljana Gastroenterology Society ProGastro  
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## Programme

### Friday, October 17<sup>th</sup> 2025

9:00–09:30 **Registration & Welcome Coffee**

09:30–09:45 **Opening Remarks**  
*Borut Štabuc (SVN)*  
*Milan Stefanović (SVN)*  
*Andreja Ocepek (SVN)*

#### Session 1: Understanding IBD

Chairs: *Borut Štabuc (SVN)*  
*Željko Krznarić (CRO)*  
*Nataša Smrekar (SVN)*

09:45–10:00 **The Global Burden of IBD: Trends and Future Projections**  
*Željko Krznarić (CRO)*

10:00–10:15 **Is STRIDE II achievable in everyday clinical practice?**  
*Andreja Ocepek (SVN)*

10:15–10:30 **UC-CARE - How is it useful in Slovenian clinical practice?**  
*Gregor Novak (SVN)*

10:30–10:40 **Q&A Panel**

10:40–11:10 **Satellite Symposium – SOBI**  
(20 min + 10 min Q&A)

11:10–11:30 **Coffee break**

#### Session 2: Diagnostic Challenges and Disease Monitoring

Chairs: *Samo Plut (SVN)*  
*Milan Stefanović (SVN)*

11:30–11:45 **Endoscopic Advances in IBD: Where Are We Now?**  
*Mario Tadić (CRO)*

11:45–12:00 **Imaging in Crohn's and Ulcerative Colitis: Intestinal Ultrasound - "a new kid on the block"**  
*Silvija Čuković Čavka (CRO)*

12:00–12:15 **Dysplasia in IBD - what to do?**  
*Luka Strniša (SVN)*

12:15–12:30 **Q&A Panel**

12:30–13:00 **Satellite Symposium – Lek**  
(20 min + 10 min Q&A)

13:00–14:00 **Lunch break**

Saturday, October 18<sup>th</sup> 2025

<b>Session 3:</b>	<b>Medical Management of IBD – Pros and Cons</b>
Chairs:	<i>Gregor Novak (SVN)</i> <i>Marko Banić (CRO)</i> <i>Stefan Schreiber (GER)</i>
14:00–14:30	<b>Anti-TNFs as first line therapy or other advanced therapy first followed by anti-TNFs</b> <i>Marko Brinar (CRO)</i> <i>David Drobne (SVN)</i>
14:30–15:00	<b>Asymptomatic ileal Crohn’s disease - treat or not to treat</b> <i>Srdan Marković (SRB)</i> <i>Sara Nikolić (SVN)</i>
15:00–15:15	<b>JAK after JAK - nonsense or reality</b> <i>Jurij Hanžel (SVN)</i>
15:15–15:35	<b>Satellite Symposium – Johnson &amp; Johnson</b> (20 min + 10 min Q&A)
15:35–16:05	<b>Q&amp;A Panel</b>
16:05–17:00	<b>Healthy break</b>
<b>Session 4:</b>	<b>Multidisciplinary Management</b>
Chairs:	<i>David Drobne (SVN)</i> <i>Alen Biščanin (CRO)</i> <i>Sara Nikolić (SVN)</i> <i>João Sabino (BE)</i>
17:00–17:30	<b>Case 1 - Panel Based Discussion</b> <i>Jože Simonič (SVN)</i>
17:30–18:00	<b>Case 2 - Panel Based Discussion</b> <i>Nejc Bukovnik (SVN)</i>
18:00–18:30	<b>Case 3 - Panel Based Discussion</b> <i>Tadeja Pačnik Vižintin (SVN)</i>
<b>Panel:</b>	<b>abdominal surgeon, dermatologist, nephrologist, rheumatologist</b>
18:30–19:00	<b>Satellite Symposium – AbbVie</b> (20 min + 10 min Q&A)
20:00–22:00	<b>Congress Dinner</b>

<b>Session 5:</b>	<b>Iron Deficiency in IBD: Old Problem, New Solutions</b>
Chairs:	<i>Nataša Smrekar (SVN)</i> <i>Aida Saray (BIH)</i>
09:00–09:45	<b>Intravenous iron and Hypophosphatemia: Why It Deserves Attention?</b> <i>Stefan Lindgren (SWE)</i>
09:45–10:00	<b>Q&amp;A Panel</b>
<b>Session 6:</b>	<b>Nutrition &amp; Quality of Life</b>
Chairs:	<i>Andreja Ocepek (SVN)</i> <i>Matic Koželj (SVN)</i> <i>Aida Saray (BIH)</i>
10:00–10:15	<b>Nutrition in IBD: Diets, Supplements, and Malnutrition</b> <i>Irena Karas (CRO)</i>
10:15–10:30	<b>IBD is the leading cause of gastrointestinal failure</b> <i>Nada Rotovnik Kozjek (SVN)</i> <i>Tajda Košir Božič (SVN)</i>
10:30–10:50	<b>Beyond the Gut: Practical Psychiatric Toolkit for the IBD-ologists</b> <i>Gregor Novak (SVN)</i> <i>Tina Šubic Metlikovič (SVN)</i>
10:50–11:00	<b>Q&amp;A Panel</b>
11:00–11:30	<b>Satellite Symposium – Eli Lilly</b> (20 min + 10 min Q&A)
11:30–12:00	<b>Coffee break</b>

<b>Session 7:</b>	<b>Workshops &amp; Nurses' Session</b> 12:00–12:30 / 12:30–13:00 / 13:00–13:30 Workshops rotating 3 times
	<b>A Guide to Reading Scientific Papers</b> <i>Jurij Hanžel (SVN)</i> <hr/>
	<b>IUS</b> <i>Tina Kurent Francky (SVN)</i> <i>David Drobne (SVN)</i> <hr/>
	<b>Endoscopy - tips and tricks</b> <i>Samo Plut (SVN)</i> <hr/>
12:00–13:30	<b>Nurses' Session:</b> <b>What Makes a Well-Oiled IBD Team - the role of IBD nurse</b> <i>Carmen Bobnar Sekulić (SVN)</i> <i>Tadeja Polanc (SVN)</i> <i>Andreja Planinšek (SVN)</i> <hr/>
<b>Session 8:</b>	<b>Awards for Best Posters</b>
13:30–14:15	<b>Poster Evaluation</b> <i>David Drobne (SVN)</i> <i>Andreja Ocepek (SVN)</i> <i>Nataša Smrekar (SVN)</i> <hr/>
14:15–14:30	<b>Final Thoughts &amp; Closing Remarks</b> <hr/>
14:30–15:30	<b>Lunch break</b> <hr/>

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# The Global Burden of IBD: Trends and Future Projections

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**Keywords:** inflammatory bowel diseases, biologics, oral small molecules, innovative approaches, obesity, individualized treatment

## INTRODUCTION

Inflammatory bowel diseases (IBD), comprising Crohn's disease and ulcerative colitis, are chronic disorders marked by alternating phases of activity and remission. The prevalence of IBD is becoming a significant problem in developed part of the world. Additional issue is obesity in IBD and need for effective approach and active treatment including incretins use. Comprehensive care for patients with inflammatory bowel diseases, which includes advanced therapies, generates substantial costs. Although current treatments have improved patient care considerably, a significant proportion of individuals still face inadequate disease control, loss of response over time, or treatment-related complications. These limitations continue to drive the search for new therapeutic strategies.

## BIOLOGICS BEYOND ANTI-TNF THERAPIES

The introduction of monoclonal antibodies against tumor necrosis factor (TNF) was a milestone in IBD therapy. Nevertheless, many patients either fail to respond initially or experience secondary loss of efficacy. This gap has prompted the development of biologics targeting alternative immune pathways. Vedolizumab, an antibody directed against the  $\alpha 4\beta 7$  integrin, restricts the migration

of lymphocytes into the intestinal mucosa and provides organ-selective immunosuppression with a favorable safety profile. Another option, ustekinumab, blocks interleukin-12 and interleukin-23 signaling and has shown lasting benefits in both ulcerative colitis and Crohn's disease, even among patients who did not respond to other biologics.

## ORAL SMALL MOLECULES AS EMERGING THERAPIES

In recent years, small oral agents have gained attention for their ease of administration and rapid onset of action. Janus kinase (JAK) inhibitors such as tofacitinib, filgotinib and upadacitinib act at the level of intracellular signaling, offering effective control of inflammation, particularly in ulcerative colitis. Selective sphingosine-1-phosphate (S1P) receptor modulators, including ozanimod and etrasimod, work by preventing lymphocyte circulation into inflamed tissues, thereby reducing immune activity within the gut. These agents expand the treatment landscape and provide alternatives for patients who prefer oral over injectable medications.

## INNOVATIVE APPROACHES

Research is increasingly shifting toward more precise and targeted interventions. New monoclonal antibodies that selectively inhibit interleukin-23

(mirikizumab, guselkumab, rizankizumab) are showing results which put them into the clinical praxis, particularly in Crohn's disease. Strategies aimed at modifying the intestinal microbiome, such as fecal microbiota transplantation and live microbial therapies, seek to restore microbial balance and reduce inflammation. There is a bunch new molecules under the studies investigations.

## **OBESITY**

Over the past few decades, the situation has changed dramatically with a significant increase in the number of IBD patients who are overweight and suffer from obesity-related problems. Crohn's disease, which was previously almost synonymous with malnutrition, is now characterised by overweight and obesity as well as sarcopenic obesity as a sign of malnutrition and loss of muscle mass. Along with all of its well-known consequences, obesity in IBD patients significantly compromises the application of most of new treatment modalities. The combined use of advanced therapies and GLP-1 or GLP-1/GIP agonists is opening new horizons.

## **TOWARD INDIVIDUALIZED TREATMENT**

A major focus in IBD care is the move toward personalized medicine. Advances in biomarker discovery, therapeutic drug monitoring, and integration of genetic and microbial profiling are helping clinicians tailor treatment decisions to individual patient characteristics.

## **CONCLUSION**

The therapeutic landscape in IBD is rapidly expanding, with biologics, oral small molecules, microbiome-based treatments, and cell therapies all contributing new possibilities. While challenges such as cost, access, and long-term safety remain, the future points toward a more individualized and strategic use of these agents. The high prevalence of IBD in the coming decades will require additional attention.

## **References:**

1. Yuan Z, Chen L, Ng CS, et al. Analysis of global burden of inflammatory bowel disease among adolescents and young adults from 1990 to 2021 and projections to 2040. *BMC Public Health*. 2025 Sep 24;25(1):3087.
2. Burisch J, Vardi H, Schwartz D, et al. Epi-IBD group. Health-care costs of inflammatory bowel disease in a pan-European, community-based, inception cohort during 5 years of follow-up: a population-based study. *Lancet Gastroenterol Hepatol*. 2020 May;5(5):454-64.
3. Krznaric Z. Burden of obesity in gastrointestinal and liver diseases. *United European Gastroenterol J*. 2022 Sep;10(7):629-30.
4. Wewer MD, Lophaven S, Lakatos PL, et al. Long-term disease course of ulcerative colitis in a prospective European population-based inception cohort-an Epi-IBD cohort study. *J Crohns Colitis*. 2025 Jun 4;19(6):jjaf089.
5. Burisch J, Zhao M, Odes S, et al. P. The cost of inflammatory bowel disease in high-income settings: a Lancet Gastroenterology & Hepatology Commission. *Lancet Gastroenterol Hepatol*. 2023 May;8(5):458-92.



# Is STRIDE II achievable in everyday clinical practice?

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**Keywords:** Crohn's disease, ulcerative colitis, STRIDE II, treat-to-target

## INTRODUCTION

In 2015, the Selecting Therapeutic Targets in Inflammatory Bowel Disease (STRIDE) initiative proposed evidence- and consensus-based treatment targets to support treat-to-target strategies in clinical practice. The updated STRIDE-II recommendations, published in 2021, comprise 13 recommendations that incorporate time-dependent treatment goals and drug-specific time points (1). STRIDE-II reflects advances in therapeutic approaches and growing evidence that achieving more ambitious targets—such as endoscopic healing, absence of IBD-related disability, and normalization of quality of life—improves long-term outcomes (2). Nonetheless, concerns have been raised regarding the validity, applicability, and daily clinical impact of these recommendations (1).

## DISCUSSION

The framework of STRIDE II defines short-, intermediate-, and long-term treatment goals, with scheduled reassessment of disease activity against pre-defined targets serving as the basis for therapeutic decisions. The consensus targets combine clinical and patient-reported remission, biomarker normalization, and endoscopic healing. While endoscopic healing is endorsed, it may not be appropriate or achievable for all patients (3). Despite its aim to

harmonize standards of care, adherence to STRIDE-II in real-world practice remains suboptimal (1). Ambitious targets such as mucosal or histological healing are often difficult to achieve with current therapeutic options, and some proposed measurement tools (clinical assessments, patient reported outcomes (PROs), biomarkers, imaging, histology) lack validation, are resource-intensive, or are not widely accessible. In addition, the generalization of treatment goals across the heterogeneous IBD population may not be appropriate, particularly in elderly patients or those with multiple therapeutic failures. Further obstacles include limited access to trained specialists, advanced imaging, and innovative therapies, as well as financial and time constraints in daily practice (1).

Real-world studies indicate that objective data for IBD evaluation, as required by STRIDE-II, are frequently unavailable, limiting guideline application and reducing the likelihood of achieving recommended endpoints such as mucosal healing. This has led to suggestions that some STRIDE-II targets may be overly stringent or insufficiently evidence-based, supporting calls for the definition of less stringent or alternative goals in selected patient subgroups (1). Improved patient stratification and identification of predictors of therapeutic response are considered essential to enhance the effectiveness of treat-to-target strategies (2).

Key challenges for implementation include:

- establishing a uniform definition of mucosal healing,
- demonstrating the long-term benefits and risk-benefit ratio of treat-to-target strategies in randomized controlled trials (particularly in ulcerative colitis),
- developing cost- and time-efficient monitoring tools (e.g. intestinal ultrasound, with potential targets such as transmural healing),
- refining patient stratification strategies (e.g. asymptomatic, geriatric, paediatric, comorbid populations),
- identifying predictors of response to guide first-line therapy selection,
- updating recommendations with emerging therapies and new treatment targets,
- improving early diagnosis and intervention, and
- ensuring feasibility of implementation in low-resource healthcare settings (2).

Currently, the most important long-term achievable targets remain clinical remission, endoscopic healing, restoration of quality of life, and absence of disability. Symptom control is regarded as the immediate goal, while serum and fecal biomarkers are considered feasible medium-term targets. Deep remission, defined as the combination of clinical, endoscopic, histological, and transmural healing, remains aspirational for most patients with currently available therapies. Transmural healing in Crohn's disease and histological healing in ulcerative colitis are increasingly recognized as adjunctive measures of treatment response. However, individualized decision-making remains necessary, and clinical choices may diverge from the suggested algorithm depending on patient-specific circumstances (4).

## CONCLUSION

STRIDE-II provides a structured framework for treat-to-target management in IBD, but its integration into daily clinical practice faces significant challenges. These include limited resources, variable uptake, and insufficient validation of some endpoints. To enhance applicability, models of care that are cost-effective, scalable, and adaptable to both high- and low-resource settings are needed. Incorporating non-invasive monitoring tools, such as point-of-care intestinal ultrasound, may improve feasibility. Patient engagement and clinician education are critical for successful adoption. Addressing these barriers is essential to realize the full potential of the treat-to-target approach in IBD care (3).

## References:

1. Ricart E, Bastida G, Carpio D, et al. Clinical Approach to STRIDE-II in Real-Life Settings: Analysis and Practical Recommendations. *Crohns Colitis* 360. 2024 Oct 1;6(4).
2. Dignass A, Rath S, Kleindienst T, et al. Review article: Translating STRIDE-II into clinical reality – Opportunities and challenges. Vol. 58, *Alimentary Pharmacology and Therapeutics*. John Wiley and Sons Inc; 2023. p. 492–502.
3. Srinivasan AR. Treat to target in Crohn's disease: A practical guide for clinicians. Vol. 30, *World Journal of Gastroenterology*. Baishideng Publishing Group Inc; 2024. p. 50–69.
4. Turner D, Ricciuto A, Lewis A, et al. STRIDE-II: An Update on the Selecting Therapeutic Targets in Inflammatory Bowel Disease (STRIDE) Initiative of the International Organization for the Study of IBD (IOIBD): Determining Therapeutic Goals for Treat-to-Target strategies in IBD. *Gastroenterology*. 2021 Apr 1;160(5):1570–83.



# UC-CARE - How is it useful in Slovenian clinical practice?

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**Keywords:** UR-CARE, inflammatory bowel disease, registry

The global burden of inflammatory bowel disease (IBD) continues to rise, and Slovenia is no exception. Nevertheless, reliable epidemiological information in Slovenia remains scarce. To improve data collection, Slovenia joined the European Registry of Inflammatory Bowel Disease (UR-CARE) in 2019 (1). Since then, the majority of national IBD centers have been actively contributing to the registry.

Although clinicians are highly engaged in entering patient data, current estimates suggest that the registry covers only around 75% of all IBD cases. By December 2024, about 4,588 patients had been registered: 48% with Crohn's disease (CD), 49% with ulcerative colitis (UC), and 3% with unclassified colitis.

Data from UR-CARE have already served as the basis for several significant publications (2,3). One nationwide analysis compared the use of biologics in two academic versus four non-academic centers. The disease phenotype was consistent across both settings, and no meaningful differences were found in the distribution of treatment episodes with TNF-alpha inhibitors (60% vs. 61%), vedolizumab (24% vs. 23%), or ustekinumab (17% vs. 16%) ( $P=0.949$ ). The interval from diagnosis to the first biologic initiation was also comparable (11.3 vs. 10.4 months,  $P=0.2$ ). These findings support the conclusion that biologic treatment strategies do not differ between

academic and non-academic centers, reinforcing the feasibility of decentralized IBD care (2). Another study used registry data to examine persistence of first-line biologics, comparing anti-TNF agents, the anti-integrin vedolizumab, and the IL-12/23 inhibitor ustekinumab. In Crohn's disease, persistence was broadly similar across the three drug classes. In ulcerative colitis, however, vedolizumab showed higher treatment persistence than anti-TNF agents (3).

The UR-CARE registry provides opportunities for real-time data analysis, making it a valuable instrument for evaluating and optimizing IBD care at the national level.

## References:

1. Burisch J, Gisbert JP, Siegmund B, et al. Validation of the 'United Registries for Clinical Assessment and Research' (UR-CARE), a European Online Registry for Clinical Care and Research in Inflammatory Bowel Disease. *J Crohns Colitis*. 2018;12:532-7.
2. Tepeš K, Hanžel J, Štubljar D, et al. Biological treatment approach to inflammatory bowel disease is similar in academic and nonacademic centres - prime time for decentralisation of inflammatory bowel disease care? *Eur J Gastroenterol Hepatol*. 2024;36(6):728-34.
1. Supovec E, Hanžel J, Novak G, et al. First-line anti-TNF agents, ustekinumab and vedolizumab perform similarly in Crohn' disease, but not in ulcerative colitis. *Eur J Gastroenterol Hepatol*. 2025;37(5):557-64.



# Endoscopic Advances in IBD: Where Are We Now?

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## INTRODUCTION

Inflammatory bowel disease (IBD), comprising Crohn's disease (CD) and ulcerative colitis (UC), is a chronic relapsing disorder of the gastrointestinal tract characterized by mucosal inflammation. Endoscopy plays a pivotal role in the diagnosis, monitoring, and management of IBD. Recent years have seen a paradigm shift from symptom-based treatment goals toward objective targets such as endoscopic and histological remission. Furthermore, technological advances, including artificial intelligence (AI), high-definition imaging, and enhanced resection techniques, are transforming clinical practice. This abstract reviews current advances in endoscopy for IBD, focusing on mucosal healing, advanced visualization, AI-assisted evaluation, surveillance strategies, and therapeutic endoscopy.

## MUCOSAL AND HISTOLOGICAL HEALING

The concept of mucosal healing (MH) has become a central therapeutic target in IBD management. Achieving MH is associated with reduced hospitalization, lower surgery rates, and improved long-term outcomes. However, complete histological remission, defined as the absence of microscopic inflammation, has emerged as an even stronger predictor of favorable prognosis. Despite the widespread adop-

tion of MH in randomized controlled trials, definitions remain inconsistent. Standardization of MH assessment across trials is urgently required to ensure comparability and reproducibility.

## ADVANCED ENDOSCOPIC IMAGING

High-definition endoscopy and advanced imaging modalities significantly enhance lesion detection. Dye-based chromoendoscopy remains the gold standard for dysplasia detection, but virtual chromoendoscopy (e.g., narrow-band imaging, i-scan, Fuji intelligent chromoendoscopy) is increasingly validated. Confocal laser endomicroscopy (CLE) and endocytoscopy allow for real-time histologic assessment, reducing reliance on random biopsies. These techniques provide superior visualization of mucosal architecture and vascular patterns, enabling early detection of neoplastic transformation.

## ARTIFICIAL INTELLIGENCE IN ENDOSCOPY

AI-assisted endoscopy is a rapidly evolving field. Deep learning algorithms have demonstrated high accuracy in assessing disease activity, detecting dysplasia, and differentiating IBD phenotypes. Importantly, AI reduces inter-observer variability, which is a major limitation in traditional endoscopic scoring. Early trials suggest that AI models can pre-

dict endoscopic remission with non-invasive markers, potentially decreasing the need for frequent invasive procedures. Despite promising results, integration into routine practice requires robust validation in multicenter settings.

## ENDOSCOPIC SURVEILLANCE AND DYSPLASIA MANAGEMENT

Patients with long-standing IBD are at increased risk for colorectal cancer. Surveillance protocols emphasize targeted biopsies with chromoendoscopy rather than random sampling. Endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD) have expanded therapeutic options, allowing curative resection of visible lesions in IBD patients. Determining optimal surveillance intervals and balancing cancer prevention with procedure burden remain key challenges.

## THERAPEUTIC ENDOSCOPY FOR COMPLICATIONS

Interventional endoscopy is increasingly applied in IBD complications. Endoscopic balloon dilation (EBD) is effective for Crohn's-related strictures, delaying or preventing surgery in selected patients. Endoscopic approaches for fistulas, such as over-the-scope clips and stent placement, are under eva-

luation. These minimally invasive techniques offer an alternative to surgery, although long-term efficacy and safety data are still limited.

## MOLECULAR ENDOSCOPY AND FUTURE PERSPECTIVES

Emerging molecular endoscopy techniques allow visualization of mucosal biomarkers, immune activation, and microbiota-related changes in vivo. These novel approaches may guide personalized therapy by predicting therapeutic response at the mucosal level. Integration of molecular imaging, AI, and histologic assessment may define the future of precision endoscopy in IBD.

## CONCLUSION

Endoscopy in IBD has evolved from a purely diagnostic tool into a central component of disease monitoring, cancer prevention, and therapeutic intervention. The shift toward mucosal and histological healing, combined with innovations in imaging, AI, and therapeutic techniques, is reshaping clinical practice. Future integration of molecular endoscopy and digital technologies will further personalize IBD care. The key message is that endoscopy remains indispensable in IBD, with ongoing innovations offering safer, more accurate, and more patient-centered approaches.

Table 1. Overview of Current Advances in Endoscopy for IBD

Domain	Key Advances	Clinical Relevance
Mucosal & Histological Healing	Standardization of definitions; integration in RCTs	Target for improved outcomes
Imaging Techniques	HD scopes, chromoendoscopy, CLE, endocytoscopy	Enhanced dysplasia detection
Artificial Intelligence	Automated scoring, dysplasia detection, prediction	Reduced variability, efficiency
Surveillance	Targeted biopsies, EMR, ESD	Cancer prevention
Therapeutic Endoscopy	EBD for strictures, fistula closure techniques	Minimally invasive management

Abbreviations: CLE = confocal laser endomicroscopy; EMR = endoscopic mucosal resection; ESD = endoscopic submucosal dissection; EBD = endoscopic balloon dilation; RCT = randomized controlled trial.

## References:

1. Huang CW, Yen HH, Chen YY. Endoscopic Techniques for Colorectal Neoplasia Surveillance in Inflammatory Bowel Disease: A Systematic Review and Network Meta-Analysis. *United European Gastroenterol J*. 2025 Mar 27.
2. Parigi TL, Solitano V, Armuzzi A, et al. Defining mucosal healing in randomized controlled trials of inflammatory bowel disease: A systematic review and future perspective. *United European Gastroenterol J*. 2024;12(6):710–21.
3. Maeda Y. Automated endoscopic diagnosis in IBD: The emerging role of artificial intelligence. *Gastrointest Endosc Clin N Am*. 2024;34(4):623–35.
4. Iacucci M, Nardone OM, Ditunno I, et al. Advancing Inflammatory Bowel Disease-Driven Colorectal Cancer Management: Molecular Insights and Endoscopic Breakthroughs Towards Precision Medicine. *Clin Gastroenterol Hepatol*. 2025 Jul 22:S1542-3565(25)00616-0.
5. Geyl S, Jacques J, Anneraud A, et al. Endoscopic submucosal dissection for visible dysplasia in inflammatory bowel disease: a nationwide multicenter cohort from the GETAID and the SFED. *J Crohns Colitis*. 2025 May 8;19(5):jjaf057.
6. Akiyama S, Hamdeh S, Sakamoto T, et al. The Feasibility, Safety, and Long-term Outcomes of Endoscopic Submucosal Dissection for Colorectal Neoplasia in Patients With Inflammatory Bowel Disease: A Systematic Review and Meta-analysis. *J Clin Gastroenterol*. 2023 Aug 1;57(7):721-730.
7. Maselli R, de Sire R, Barbaro F, et al. Endoscopic Resection Italian Network (ERIN) Group. Outcomes of endoscopic submucosal dissection for high-risk colorectal colitis-associated neoplasia in inflammatory bowel disease. *Endoscopy*. 2025 Jun;57(6):658-66.
8. Atreya R, Rath T, Neurath MF. Molecular Imaging: The New Frontier for Endoscopic Diagnosis and Personalization in Inflammatory Bowel Disease. *Gastrointest Endosc Clin N Am*. 2025 Jan;35(1):255-63.



# Imaging in Crohn's disease and ulcerative colitis: intestinal ultrasound – “a new kid on the block”

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**Keywords:** *intestinal ultrasound, Crohn's disease, ulcerative colitis, imaging, inflammatory bowel disease*

Imaging of the gut in inflammatory bowel disease (IBD) patients is crucial in the process of establishing diagnosis. Ileocolonoscopy is the gold standard in initial part of diagnostic process but endoscopy is invasive procedure which can visualize only mucosal part of the bowel wall. Imaging techniques traditionally used for the assessment of IBD patients include magnetic resonance enterography (MRE) and computed tomography enterography (CTE). In spite of the fact that MRE is radiation-free, it is not practical for the regular monitoring of IBD patients because of the long waiting time for an appointment and high cost. At the other hand, CTE is widely available but limited due to its high radiation exposure. In spite of the fact that first record on the idea about the measuring bowel thickness by ultrasound machine dates back to fifties of the last century, only in the last decade, intestinal ultrasound (IUS) is becoming a popular diagnostic tool in the area of IBD diagnostics and treatment. The main advantage of intestinal ultrasonography over the other imaging methods is that is available without any preparation of the patient or cleansing of the bowel. It is transabdominal, non-invasive, radiation-free, real-time, and inexpensive method. Also, this method can be conducted by specialist during the regular outpatient appointment which allows assessment of peristalsis and differentiation of fixed intestinal stenosis from functional changes. Intestinal ultrasound has to be performed with a high-frequency (usually linear)

probe and low-frequency sector array transducer to gain a better visualization and not overlook any deeper-lying structures and collections. The position of the patient should be supine. A systematic approach should be used by scanning the bowel both longitudinally and cross-sectionally.

The colon and the small intestine may be distinguished by ultrasound from each other based on the presence of haustration and the Kerckring's folds. There are frequently visible and useful as landmarks. Terminal ileum and colon are easier to assess than lesions in the proximal small-bowel where assessment can be very challenging. Also, the rectum is not routinely assessed using a high-frequency probe but sometimes can be reached by convex probe. There is no need for routine application of oral contrast during the classic protocol of IUS but if it is applied polyethylene glycol solution as the contrast agent it can enhance small-bowel visualization and measure the accurate diameter of the lumen in the stenotic part of the gut and additionally confirm prestenotic dilatation above the gut stricture. If oral contrast is used, the method is referred to as Small Intestinal Contrast Ultrasound (SICUS) and has a long tradition in Italy. The most important ultrasound features in IBD patients are bowel wall thickness (BWT), bowel wall stratification (BWS) and Colour Doppler Signal (CDS). The measurement of wall thickness is crucial. Thickness of the normal intestinal wall does not exceed 3

mm with slight probe compression. The typical layers are: hypoechoic mucosa, hyperechoic submucosa, hypoechoic muscularis propria and hyperechoic serosa. In the non-inflamed bowel wall, stratification is preserved, intramural vascularization is weak and peristalsis is normal. IUS parameters, especially BWT and CDS, has a potential for close monitoring of treatment, especially for the assessment of early response on therapy in UC and CD patients. Mesenteric proliferation, lymph nodes and free fluid are also important parts of bowel ultrasonography report.

Imaging of the bowel by ultrasound became very useful for the early diagnosis, monitoring and assessment of complications of Crohn's disease and ulcerative colitis because IUS has high sensitivity and specificity. The technical advances of ultrasound machines and modern probes allow an accurate imaging of the gut.

Patient during the IUS procedure can be educated by attending physician which ultimately influence better patient' understanding of the disease, compliance and motivation for therapy.

Some cons of IUS include limitations of the scan quality due to intestinal gas which can make visualization difficult. Quality of the scan depends also on the examiner's skill which ultimately depends directly on specialized training and the experience of performer. The method can be challenging and demanding in obese patients and in patients with previous multiple surgeries, especially in the case of small bowel resections.

However, as with other methods, a dedicated training is required to learn how to perform adequately bowel ultrasonography. IUS has been traditional part of gastroenterology training curriculum in Germany and Italy. A lot of efforts were made recently to popularize IUS worldwide, especially with initiative done by International Bowel Ultrasound (IBUS) Group established in 2016. Theoretical knowledge is the basis of the learning process of IUS but there is no skill acquisition without long practice, patience

and passion for learning which are prerequisites for effective learning. One of the options to achieve bowel ultrasonography education nowadays it to participate in the IBUS 3-step training curriculum, details of the education programme could be reached visiting the website of the IBUS Group (<https://www.ibus-group.org>).

## CONCLUSION

Current data confirm that IUS has important role in the non-invasive assessment of patients with Crohn's disease and ulcerative colitis. It is a fascinating, simple, no-prep, no-radiation and fast technique which deserves the implementation as a standard tool for IBD patients in everyday clinical practice focused on "treat-to-target" approach but also as an objective non-invasive measure of transmural inflammation and treatment response in clinical studies.

## References:

1. De Voogd FA, Bors SJ, van Wassenae EA, et al. Early intestinal ultrasound predicts clinical and endoscopic treatment response and demonstrates drug-specific kinetics in moderate-to-severe ulcerative colitis. *Inflamm Bowel Dis* 2024;30(11):1992-2003.
2. Kucharzik T, Taylor S, Allocca M, et al. ECCO-ESGAR-ESP-IBUS Guideline on Diagnostics and Monitoring of Patients with Inflammatory Bowel Disease: Part 1. *J Crohns Colitis* 2025;19(7):jjaf106.
3. Maaser C, Maconi G, Kucharzik T, Allocca M. Ultrasonography in inflammatory bowel disease – So far we are? *United European Gastroenterol J* 2022;10(2):225-32.
4. Maconi G, et al. EFSUMB Recommendations and Clinical Guidelines for Intestinal Ultrasound (GIUS) in Inflammatory Bowel Diseases. *Ultraschall Med* 2018;39(3):304-17.
5. Panes J, Bouhnik Y, Reinisch W, et al. Imaging techniques for assessment of inflammatory bowel disease: joint ECCO and ESGAR evidence-based consensus guidelines. *J Crohns Colitis* 2013;7(7):556-85.
6. Smith RL, Taylor KM, Friedman AB, et al. Systematic Review: Clinical Utility of Gastrointestinal Ultrasound in the Diagnosis, Assessment and Management of Patients with Ulcerative colitis. *J Crohns Colitis* 2020;14(4):465-79.
7. Yanai H, Feakinson R, Allocca M, et al. ECCO-ESGAR-ESP-IBUS Guideline on Diagnostics and Monitoring of Patients with Inflammatory Bowel Disease: Part 2: IBD scores and general principles and technical aspects. *J Crohns Colitis* 2025;19(7):jjaf107.



# Dysplasia in IBD; what to do?

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**Keywords:** *Inflammatory bowel disease, dysplasia, cancer, endoscopic surveillance, colectomy*

Patients with inflammatory bowel disease have an increased risk of colorectal cancer (CRC). The overall risk relative risk is only twice that of the general population but is much higher in IBD patients with additional risk factors. CRC risk increases with time from diagnosis, with CRC rarely encountered within the first 8 years after disease onset. Extensive colitis is a major risk factor for CRC in UC, whereas left-sided disease has a lower risk. There is no increased risk of CRC in ulcerative colitis (UC) limited to the rectum. There is a strong correlation between location of diseased colon segment and location of colon cancer. An increased risk of CRC is only present in Crohn's disease (CD) patients with colonic involvement. High inflammatory activity with a high cumulative inflammatory burden and a structuring disease are an important risk factor. Further factors are young age at diagnosis, male sex and presence of first-degree relatives with CRC before 50 years of age. Primary sclerosing cholangitis [PSC] is a major risk factor for CRC in IBD patients, particularly those with UC. The chance of CRC development increases with colonoscopy dysplasia detection, especially for high grade dysplasia, multifocal invisible dysplasia and CRC.

Guidelines recommend surveillance colonoscopies, starting 8 years after disease symptoms onset. Dysplasia detection rate depends on the colonoscopy technique. Virtual chromoendoscopy and dye

based chromoendoscopy DCE techniques are recommended as they have a demonstrated increase in sensitivity. Targeted biopsies of suspicious sites should be taken. Random biopsies of normal looking mucosa have a very low diagnostic yield and increase the procedure time. Dysplasia is more frequently undetected in colon segments with active inflammation, so performing colonoscopy during remission is recommended when feasible.

The timing next CRC surveillance colonoscopy should take into account the chance of dysplasia development considering the mentioned factors. The recommendations differ slightly between the AGA, ECCO and British guidelines (BG) in the stratification of risk categories.

Very low risk patients, such as UC proctitis and CD without colonic involvement should follow bowel-cancer screening programmes recommended for the general population. Low risk patients (colitis affecting <50% of colon or extensive colitis with minimal inflammation) should have a surveillance endoscopy every 5 years (3 years in the BG). Intermediate risk patients (extensive colitis with mild to moderate activity or CRC in 1<sup>st</sup> degree relative >50 years) should have a surveillance endoscopy every 2–3 years. High risk patients (extensive colitis with severe activity, CRC in 1<sup>st</sup> degree relative <50 years, PSC, history of strictures and dysplasia)

should have a surveillance endoscopy every year. Random biopsies can be performed in PSC patients. The British guidelines recommend consideration of colectomy in very high-risk patients.

Any dysplasia detected should be classified according to site, size, shape (Paris classification), surface pattern (Kudo, Facile) and the surrounding mucosa (inflammation, other lesions, fibrosis). HGD and LGD are classified histologically based on differences in the distribution of cell nuclei. Inflammatory reactive atypia can mimic neoplastic dysplasia. Any invisible lesions (dysplasia in random biopsies) should prompt a repeat endoscopy in an expert centre.

A dysplastic lesion should be endoscopically resected if possible. En block resection is preferable. Random biopsies of the surrounding mucosa are not routinely necessary. Surveillance intervals should be decreased to 6–12 months in case of LGD and 3–6 months in case of HGD for 1 year and then annually.

Sporadic adenomas are dysplastic lesions outside of the area of colon affected by colitis and should be managed as in patients without colitis.

Surgery should be considered in a multidisciplinary meeting in cases of high risk of progression to CRC: multifocal visible or invisible high-risk dysplasia, poor mucosal visualisation on endoscopy (strictures, inflammation, pseudopolyps), coexistent neoplasia risk factors. Online calculators for risk estimation are available.

The proportion of incidental synchronous cancers identified at colectomy was 14% for those with visible HGD, 11% with invisible HGD versus 2.7% for visible LGD and 2.4% for invisible LGD. An extensive resection, a proctocolectomy has traditionally been recommended, however the extent of surgery in practice is often more limited (e.g. segmental, subtotal, total colectomy). More patients undergo

segmental colectomy for CRC or dysplasia than total proctocolectomy (with ileo-anal-pouch) in England. Also, it has not been established that 'limited resection' for IBD-CRCs is associated with reduced survival in comparison with more extensive surgical procedures. The recent BG have therefore advocated a 'pragmatic' approach to the extent of surgical resection (which can include segmental, subtotal, total and proctocolectomy with the distribution and grade of dysplasia, the extent and severity of bowel inflammation, patient comorbidity, as well as informed preferences towards surgery (and stoma) influencing the extent of resection required. Patients after a limited resection should be considered high risk and have surveillance at 3–6 months and then annually (1–3).

#### References:

1. Murthy SK, Feuerstein JD, Nguyen GC, Velayos FS. AGA Clinical Practice Update on Endoscopic Surveillance and Management of Colorectal Dysplasia in Inflammatory Bowel Diseases: Expert Review. *Gastroenterology*. Elsevier; 2021 Sept 1;161(3):1043-1051.e4.
2. Gordon H, Biancone L, Fiorino G, et al. ECCO Guidelines on Inflammatory Bowel Disease and Malignancies. *J Crohns Colitis*. 2023 June 1;17(6):827–54.
3. East JE, Gordon M, Nigam GB, et al. British Society of Gastroenterology guidelines on colorectal surveillance in inflammatory bowel disease. *Gut* [Internet]. BMJ Publishing Group; 2025 Apr 30 [cited 2025 Sept 29]; Available from: <https://gut.bmj.com/content/early/2025/04/29/gutjnl-2025-335023>



# First line Anti-TNFs or other advanced therapy first followed by anti-TNFs?

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**Keywords:** *sequencing biological therapy, mucosal healing, surgery, cost-effectiveness.*

During the last decade inflammatory bowel disease (IBD) became a highly treatable disease. After two decades of anti-TNFs as the only treatment option finally new molecules were developed. These molecules were costly treatment. Finally, biosimilars dramatically changed access to biological treatment. Biosimilars of anti-TNFs reduced the cost, therefore most countries were able to pay for the new drugs for the patients who had contraindications or inappropriate response to anti-TNFs. Nowadays, there is an important clinical dilemma on the choice of first line treatment. Below we discuss two different approaches.

## ARGUMENTS FOR FIRST LINE ANTI-TNFS

The development of anti-TNFs, followed by other advanced therapies, has revolutionized the management of inflammatory bowel disease. Despite the expanding therapeutic armamentarium, treatment goals are still not achieved in more than 50% of patients. In Crohn's disease, available evidence consistently demonstrates that favorable outcomes are more likely when effective therapy is introduced early after diagnosis, compared with the conventional "step-up" approach. To date, early intervention strategies have been evaluated exclusively with the combination of infliximab and azathioprine, showing superior rates of endoscopic remission and improved long-term outcomes (1,2). It is reasonable

to assume that similar results could be achieved with other advanced therapies in the same patient population, but robust evidence is lacking. Moreover, all currently available advanced therapies are subject to secondary loss of response over time. With anti-TNFs, therapeutic drug monitoring (TDM) has become an established and widely accepted strategy, enabling optimization based on drug concentration and the presence of anti-drug antibodies. In contrast, with other therapies, loss of response is often managed empirically, which risks unnecessary delays at a time when achieving disease control is most critical. Safety concerns are often cited against the use of anti-TNFs, particularly the risk of infections and lymphoma. However, it is important to emphasize that active disease itself carries a significant risk of infections, which is effectively reduced through the use of appropriate therapy (3). Furthermore, the infection risk associated with treatment can be minimized to acceptable levels through adequate pre-treatment screening and careful monitoring during therapy. It should also be noted that the increase in safety risks is substantially higher when anti-TNFs are used in combination with immunomodulators. In this regard, the development of subcutaneous infliximab has shown comparable efficacy as monotherapy compared with parallel use of immunomodulators, with positive implications for treatment safety (4). In summary, initiating anti-TNF treatment first

offers the best evidence-based approach to maximize mucosal healing and achieve sustained remission with acceptable safety profile.

## ARGUMENTS FOR OTHER ADVANCED THERAPY FIRST FOLLOWED BY ANTI-TNFS

Positioning of advanced therapies in inflammatory bowel disease should consider efficacy, safety and cost. A consistent finding across pivotal trials is the higher efficacy of non- anti-TNFs in bio-naïve patients compared with those previously exposed to anti-TNFs. For instance, the GEMINI vedolizumab program demonstrated that endpoints such as clinical remission and response were more frequently achieved in bio-naïve patients than in those who had failed anti-TNF therapy (5,6). Furthermore, the head-to-head VARSITY trial confirmed that vedolizumab was superior to adalimumab in achieving endoscopic improvement and mucosal healing in ulcerative colitis, with greater effect sizes in anti-TNF-naïve patients (7). From a safety perspective, newer agents such as vedolizumab and ustekinumab appear to be associated with lower risks of serious infections compared to anti-TNFs, as also supported by registry data from PSOLAR (8). The SEAVUE study reported similar efficacy of adalimumab and ustekinumab in Crohn's disease, confirming that both agents can induce and maintain remission (9). Another important consideration is immunogenicity: anti-TNFs often require concomitant use of thiopurines, which has been linked to increased risks of lymphoma and non-melanoma skin cancer (10,11). These long-term safety concerns, combined with the need for combination therapy, further support earlier use of newer biologics. Cost-effectiveness analyses in IBD remain limited, but future models should account not only for direct drug acquisition costs but also for indirect costs of disease complications and management of infections. Overall, available evidence supports consideration of vedolizumab, ustekinumab, or JAK inhibitors as appropriate first-line advanced therapies in IBD, reserving anti-TNFs for subsequent treatment lines.

## References:

1. D'Haens G, Baert F, van Assche G, et al. Early combined immunosuppression or conventional management in patients with newly diagnosed Crohn's disease: an open randomised trial. *Lancet Lond Engl.* 2008;371:660–7.
2. Noor NM, Lee JC, Bond S, et al. A biomarker-stratified comparison of top-down versus accelerated step-up treatment strategies for patients with newly diagnosed Crohn's disease (PROFILE): a multicentre, open-label randomised controlled trial. *Lancet Gastroenterol Hepatol.* 2024;9:415–27.
3. Holmgren J, Fröberg A, Visuri I, et al. The Risk of Serious Infections Before and After Anti-TNF Therapy in Inflammatory Bowel Disease: A Retrospective Cohort Study. *Inflamm Bowel Dis.* 2023;29:339–48.
4. D'Haens G, Reinisch W, Schreiber S, et al. Subcutaneous Infliximab Monotherapy Versus Combination Therapy with Immunosuppressants in Inflammatory Bowel Disease: A Post Hoc Analysis of a Randomised Clinical Trial. *Clin Drug Investig.* 2023;43:277–88.
5. Sandborn WJ, Feagan BG, Rutgeerts P, et al. Vedolizumab as induction and maintenance therapy for Crohn's disease. *N Engl J Med.* 2013;369:711–21.
6. Feagan BG, Rutgeerts P, Sands BE, et al. Vedolizumab as induction and maintenance therapy for ulcerative colitis. *N Engl J Med.* 2013;369:699–710.
7. Sands BE, Peyrin-Biroulet L, Loftus EV, et al. Vedolizumab versus Adalimumab for Moderate-to-Severe Ulcerative Colitis. *N Engl J Med.* 2019;381:1215–26.
8. Kalb RE, Fiorentino DF, Lebwohl MG, et al. Risk of Serious Infection With Biologic and Systemic Treatment of Psoriasis: Results From the Psoriasis Longitudinal Assessment and Registry (PSOLAR). *JAMA Dermatol.* 2015;151:961–9.
9. Sands BE, Irving PM, Hoops T, et al. Ustekinumab versus adalimumab for induction and maintenance therapy in biologic-naive patients with moderately to severely active Crohn's disease: a multicentre, randomised, double-blind, parallel-group, phase 3b trial. *Lancet Lond Engl.* 2022;399:2200–11.
10. Deepak P, Sifuentes H, Sherid M, et al. T-cell non-Hodgkin's lymphomas reported to the FDA AERS with tumor necrosis factor-alpha (TNF- $\alpha$ ) inhibitors: results of the REFURBISH study. *Am J Gastroenterol.* 2013;108:99–105.
11. Peyrin-Biroulet L, Khosrotehrani K, Carrat F, et al. Increased risk for nonmelanoma skin cancers in patients who receive thiopurines for inflammatory bowel disease. *Gastroenterology.* 2011;141:1621-1628.e1-5. doi: 10.1053/j.gastro.2011.06.05



# Asymptomatic Ileal Crohn's Disease - treat or not to treat; PRO

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**Keywords:** Crohn's disease, asymptomatic, ileal, management, diagnosis, inflammatory bowel disease.

Asymptomatic Crohn's disease presents a significant clinical challenge, as it raises critical questions regarding the necessity and timing of treatment interventions. Recent literature emphasizes the importance of early diagnosis, which suggests that Crohn's disease can lead to complications even in the absence of overt symptoms if left unmanaged. A comprehensive overview of epidemiology and potential management strategies has reinforced the notion that a proactive approach can effectively mitigate future risks (1).

Asymptomatic ileal Crohn's disease is often detected incidentally during imaging studies or endoscopy for unrelated conditions. Epidemiological data suggest that its prevalence may be underestimated due to a lack of awareness (2). The underlying pathophysiology involves a complex interplay of genetic, environmental, and immune factors. Despite their asymptomatic status, patients may still experience intestinal inflammation and complications such as strictures or fistulas, emphasizing the importance of regular monitoring (3). The management approach varies; some experts advocate for a 'watchful waiting' strategy, while others recommend initiating treatment to prevent disease progression and complications.

Critical appraisal of treatment necessity indicates that close monitoring could be sufficient in specific

cases, rather than immediate intervention. Furthermore, the relevance of early diagnosis is underscored, illustrating a potential therapeutic window that could alter disease progression (4). The advancement of imaging technologies has greatly contributed to the diagnostic capabilities essential for identifying asymptomatic Crohn's disease, thus guiding management strategies (5). In addition, the benefits of early diagnosis and the management of asymptomatic disease have been demonstrated to improve long-term outcomes. Recent studies indicate that personalized approaches to asymptomatic Crohn's disease can optimize patient care and enhance clinical outcomes, advocating for informed decision-making in the management of this condition.

## CONCLUSION

Asymptomatic ileal Crohn's disease presents a clinical dilemma requiring careful consideration of the risks and benefits of intervention versus observation. Further studies are needed to establish standardized guidelines for managing this condition effectively. Clinicians should remain vigilant in recognizing and monitoring asymptomatic cases to optimize patient outcomes.

**References:**

1. Kalla R, Pardi DS, Rivas MN, et al. Asymptomatic Crohn's disease: a review of epidemiology and management. *Gut*. 2019;68(12):2321-32.
2. Pardi DS, Rivas MN, D'Haens GR, et al. Asymptomatic Crohn's disease: is treatment necessary? *Am J Gastroenterol*. 2021;116(3):523-30.
3. Rivas MN, D'Haens GR, Oliveira J, et al. The role of early diagnosis in asymptomatic inflammatory bowel disease. *Aliment Pharmacol Ther*. 2022;55(8):901-8.
4. D'Haens GR, Oliveira J, Kalla R, et al. The role of imaging in diagnosing Crohn's disease. *Clin Gastroenterol Hepatol*. 2021;19(3):475-88.
5. Oliveira J, Kalla R, Pardi DS, et al. The role of early diagnosis and asymptomatic management in Crohn's disease. *J Crohns Colitis*. 2020;14(6):827-34.



# Asymptomatic ileal Crohn's disease – to treat or not to treat? CONTRA

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**Keywords:** Crohn's disease, asymptomatic, terminal ileitis

The incidental finding of terminal ileitis during colonoscopy is increasingly common, raising questions about its clinical significance and management. Most cases of asymptomatic or pauci-symptomatic ileal Crohn's disease present with a few aphthous ulcers in otherwise normal mucosa, minimal or absent symptoms, and no systemic or biochemical evidence of active disease. Epidemiologic studies report incidental ileitis in 1–3% of screening colonoscopies and long-term follow-up demonstrates that only a small minority progress to symptomatic Crohn's disease, with pooled data showing about 5–10% conversion (1–3). Importantly, benign, nonspecific ileitis must not be misclassified as Crohn's disease, to avoid unnecessary lifelong therapy and exposure to immunosuppressants. The natural history of mild Crohn's disease further supports a conservative approach, with low rates of progression to stricturing or penetrating complications over 5 years (4).

Management goals in asymptomatic or mild disease are focused on symptom control, monitoring, and lifestyle interventions, rather than immediate use of advanced therapies. Biomarkers (CRP, fecal calprotectin), transmural imaging and endoscopy should be used for follow-up (5). Nutritional strategies such as the Crohn's Disease Exclusion Diet with partial enteral nutrition have shown efficacy in inducing steroid-free remission in pediatric disea-

se. Click or tap here to enter text., while dietary patterns such as the Mediterranean diet are effective, well-tolerated, and easier to sustain than restrictive diets (6, 7). Budesonide may be considered for intermittent symptom control (5).

## CONCLUSION

Asymptomatic or mildly symptomatic ileal Crohn's disease rarely progresses and should not routinely be treated with advanced therapy. A tight follow up approach—emphasizing observation, diet, smoking cessation, and selective use of budesonide—is evidence-based and safer for patients, with escalation reserved for those who demonstrate clinical or endoscopic progression.

## References:

1. Watanabe T, Fujiwara Y, Chan FKL. Current knowledge on non-steroidal anti-inflammatory drug-induced small-bowel damage: a comprehensive review. *J Gastroenterol* 2020;55:481–95.
2. Agrawal M, Miranda MB, Walsh S, et al. Prevalence and Progression of Incidental Terminal Ileitis on Non-diagnostic Colonoscopy: A Systematic Review and Meta-analysis. *J Crohns Colitis* 2021;15:1455–63.
3. Chang HS, Lee D, Kim JC, et al. Isolated terminal ileal ulcerations in asymptomatic individuals: natural course and clinical significance. *Gastrointest Endosc* 2010;72:1226–32.
4. Burisch J, Kiudelis G, Kupcinskas L, et al. Natural disease course of Crohn's disease during the first 5 years after diagnosis in a European population-based inception cohort: an Epi-IBD study. *Gut* 2019;68:423–33.
5. Elmasry S, Ha C. Evidence-Based Approach to the Management of Mild Crohn's Disease. *Clinical Gastroenterology and Hepatology* 2024;22:480–3.
6. Levine A, Wine E, Assa A, et al. Crohn's Disease Exclusion Diet Plus Partial Enteral Nutrition Induces Sustained Remission in a Randomized Controlled Trial. *Gastroenterology* 2019;157:440-450.e8.
7. Lewis JD, Sandler RS, Brotherton C, et al. A Randomized Trial Comparing the Specific Carbohydrate Diet to a Mediterranean Diet in Adults With Crohn's Disease. *Gastroenterology* 2021;161:837-852.e9.



# JAK after JAK – nonsense or reality

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**Keywords:** *filgotinib, tofacitinib, upadacitinib, ulcerative colitis*

Janus kinase (JAK) inhibitors are an attractive oral drug class, which is highly efficacious for the treatment of ulcerative colitis (UC). Three agents, filgotinib, tofacitinib, and upadacitinib are available with variable affinities for different JAK receptor types and arguably different efficacy and safety profiles. Since the days of the tumour necrosis factor antagonist monopoly, clinicians have not faced the dilemma whether to cycle or switch – should loss of response or an adverse event prompt switching to an entirely different drug class or is choosing a different JAK inhibitor equally effective?

Rheumatologists have a longer history of using JAK inhibitors and have meticulously curated registry data. Seventeen national registries were pooled to perform a cohort study of 2000 patients who discontinued a JAK inhibitor (1). Roughly 20% (365/2000) cycled to a different JAK inhibitor, whereas the remainder (1635/2000) switched to a different drug class. In this study, both strategies were similarly effective, with a slightly higher retention rate when cycling JAK inhibitors. When the first JAK inhibitor was discontinued due to an adverse event, it was more likely that the second treatment would also be stopped due to an adverse event among cyclers, but not among switchers. (2, 3)

These data in conjunction with clinical need have prompted similar practices in UC (2–4). The three available cohort studies demonstrated a consistent rate of symptomatic remission after induction of approximately 50% (Table 1). These findings are also corroborated by biochemical and endoscopic outcomes, albeit with a higher percentage of missing data, given the real-world setting of these studies. Numerous interesting observations have emerged from these studies, although they all merit further exploration in prospective studies, as the retrospective non-randomized design potentially undermines the robustness of findings from these cohort studies. Overall, upadacitinib could perhaps be more effective than filgotinib as the second JAK inhibitor (2, 4). Higher symptomatic burden and the use of corticosteroids upon initiation of the second JAK inhibitor were both associated with a lower likelihood of symptomatic remission after induction (2, 4). Primary non-response to a JAK inhibitor was associated with lower persistence in one of the studies (4). Reassuringly, no new or particularly concerning safety signals emerged.

In summary, cycling to a second JAK inhibitor after failure of the first JAK inhibitor appears to be an effective and safe therapeutic option. Future prospective studies will help shape evidence-based sequencing of JAK inhibitors in UC.

Table 1. An overview of dedicated cohort studies evaluating the effectiveness and safety of a second Janus kinase inhibitor in ulcerative colitis. Results shown using non-responder imputation, survival estimates using the Kaplan-Meier method. Abbreviations: FILGO – filgotinib, TOFA – tofacitinib, UPA – upadacitinib.

Study	Population	Main results	Notes
Osty et al. 2025 (2)	169 (UPA 105, FILGO 54, TOFA 10)	Steroid-free clinical remission at weeks 8-14: 47.9% (81/169) Treatment persistence at 6 months: 64%	Steroids at baseline decreased the likelihood of success. Upadacitinib possibly most effective as second drug (imbalance!)
Radia et al. 2025 (3)	131 (UPA 111, FILGO 20)	Clinical remission at week 8: 48.9% (64/131) Clinical remission at week 24: 31.3% (41/131) Biochemical remission at week 8: 35.9% (47/131) Biochemical remission at week 24: 26.0% (24/131) Treatment persistence at week 24: 84%	No statistically significant differences observed between UPA and FILGO.
Innocenti et al. 2025 (4)	243 (UPA 212, FILGO 24, 7)	Steroid-free clinical remission at week 12: 48% (116/243) Steroid-free clinical remission at week 26: 49% (120/243) Steroid-free clinical remission at week 52: 28% (69/243) Biochemical remission at week 12: 37% (89/243) Endoscopic improvement by week 26: 22% (53/243)	Higher likelihood of treatment failure in patients using baseline steroids and those with higher symptomatic burden. On univariate analysis, primary non-response to the first drug was also associated with a lower likelihood of success. Lower treatment persistence observed with FILGO than with UPA (imbalanced groups!).

## References:

1. Pombo-Suarez M, Sanchez-Piedra C, Gomez-Reino J, et al. After JAK inhibitor failure: to cycle or to switch, that is the question - data from the JAK-pot collaboration of registries. *Ann Rheum Dis* 2023;82(2):175-81.
2. Osty M, Altwegg R, Serrero M, et al. Effectiveness and Safety of a Second JAK Inhibitor in Ulcerative Colitis: The J2J Multicentre Study. *Aliment Pharmacol Ther* 2025;62(4):430-39.
3. Radia C, Danso Y, Ritchie S, et al. Is 2nd JAKi treatment for UC worth the effort? A retrospective, multi-Centre UK study. *J Crohn's Colitis* 2025 [Epub ahead of print]
4. Innocenti T, Hanzel J, Truyens M, et al. Sequencing JAK-inhibitors in ulcerative colitis: effectiveness and safety of switching within treatment class. *UEG Journal* 2025 [Congress abstract]



# Intravenous iron and hypophosphatemia: why it deserves attention

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**Keywords:** bone, fatigue, FGF 23, hypophosphatemia, intravenous iron, iron deficiency

Iron deficiency (ID) and iron deficiency anaemia (IDA) are major global health problems. Synthesis of haemoglobin is prioritised and before anaemia occurs, all other iron dependent processes related to energy-metabolism are already down-regulated. Thus, we need to consider that ID per se is an indication for diagnostic investigations and treatment, even in the absence of IDA.

The diagnosis of ID is straight-forward in the absence of systemic inflammation. Transferrin saturation (TSAT) below 16% and ferritin below 30 µg/L always means ID. In the context of systemic inflammation (CRP elevation), ferritin up to 300 may still be consistent with absolute ID if TSAT is below 20. Analysis of soluble transferrin receptor and reticulocyte haemoglobin equivalent (Ret-He) may be of further assistance when the interpretation is difficult.

The first-line treatment of ID and IDA is oral iron. However, oral iron is not absorbed in the setting of systemic inflammation due to increased hepcidin synthesis from the liver, resulting in blocking of absorption from the intestine. Also, oral iron is associated with many mainly gastrointestinal side effects resulting in lack of treatment compliance. Since treatment must continue up to 6 months to reach the goals of normalising haemoglobin levels and refilling iron stores, follow up is essential.

For these reasons, we often must rely on intravenous iron treatment to reach our treatment goals. The two drugs mainly used, ferric carboxymaltose (FCM) and ferric derisomaltose (FDI) are equally efficient and both are safe. They differ however in the amount that can be administered on each occasion and in the risk of causing hypophosphatemia.

## Iron preparations differ

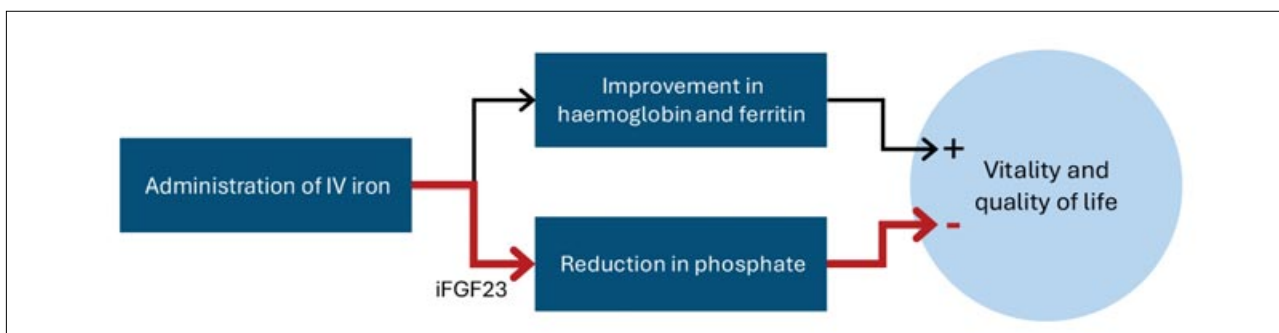


Figure 1. Iron preparations differ regarding the risk of developing hypophosphatemia and subsequent consequences

Phosphate growth factor 23 (FGF 23), synthesised by osteoblasts, is the main regulator of phosphate in the body. During repeated treatment with FCM, the levels of intact FGF 23 increases, with urinary loss of phosphate, hypocalcemia, increased levels of parathyroid hormone, lack of active vitamin D and increased activity of enzymes involved in bone metabolism as consequences. Fatigue is an early clinical symptom of hypophosphatemia, while osteomalacia and kidney stones may follow later. Since hypophosphatemia is difficult to treat due to rapid urinary losses, the best treatment is prevention through choice of treatment drug.

Controlled studies in females and patients with Inflammatory Bowel Disease have demonstrated a significantly higher degree of hypophosphatemia after treatment with FCM compared to FDI. The lowest phosphate levels occur 2 weeks after treatment, but hypophosphatemia persists in some patients even after one month. Elevation of enzymes involved in bone metabolism persist even longer. Hypophosphatemia counteracts the positive effect of iron on fatigue, and it also has negative impact on patient vitality. In addition, long term effects on bone such as osteomalacia and fractures have been demonstrated, together with an increased risk of kidney stones. Furthermore, long-standing high levels of FGF 23 might damage the myocardium.

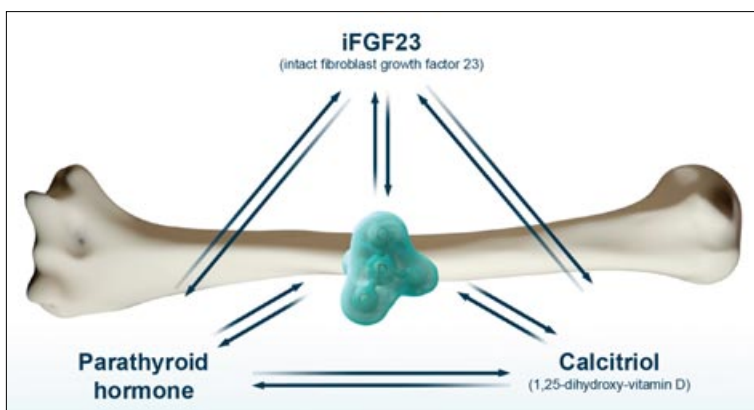


Figure 2. Persistent high levels of intact FGF 23 leads to urinary loss of phosphate and consequently negative effects on bone

The need to measure phosphate and the higher number of infusions required to meet iron deficits when FCM is used also has health economic consequences. When modelling this in different scenarios, FDI comes out as the most cost-effective treatment.

## CONCLUSIONS

- Iron deficiency is a global health problem.
- Intravenous iron is often needed to treat anaemia and refill iron stores.
- Ferric carboxymaltose and ferric derisomaltose are both highly effective and safe.
- Ferric carboxymaltose carries a risk of hypophosphatemia with fatigue, reduced vitality and negative effects on bone metabolism as consequences.
- These negative effects of ferric carboxymaltose and the need for more infusions to meet iron requirements leads to higher treatment costs compared to ferric derisomaltose.

## References:

1. Pasricha SR, Tye-Din J, Muckenthaler MU, Swinkels DW. Iron deficiency. *Lancet* 2021; 397: 233 - 48
2. Wolf M, Rubin J, Achebe M, et al. Effect of iron isomaltoside versus ferric carboxymaltose on hypophosphatemia in iron-deficiency anemia: two randomized clinical trials. *JAMA* 2020; 323: 432 - 43
3. Zoller H, Wolf M, Blumenstein I, et al. Hypophosphatemia following ferric derisomaltose and ferric carboxymaltose in patients with iron deficiency anaemia due to inflammatory bowel disease (Phosphare-IBD): a randomised clinical trial. *Gut* 2023; 72:644 - 53
4. Lindgren S, Strid H, Hjortswang H, et al. A Swedish cost-utility analysis of ferric derisomaltose versus ferric carboxymaltose in the treatment of iron deficiency anaemia in patients with inflammatory bowel disease. *J Med Econ* 2025; 28:567-75



# Nutrition in IBD: Diets, Supplements, and Malnutrition

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**Keywords:** inflammatory bowel disease, malnutrition, clinical nutrition, dietary therapy, Crohn's disease, supplements

Inflammatory bowel disease (IBD), encompassing Crohn's disease (CD) and ulcerative colitis (UC), is strongly associated with nutritional challenges ranging from malnutrition to micronutrient deficiencies. The multifactorial etiology of malnutrition in IBD includes reduced oral intake, increased metabolic demands, altered absorption, and the impact of chronic inflammation (1). Recent guidelines from the European Society for Clinical Nutrition and Metabolism (ESPEN) and the American Gastroenterological Association (AGA) emphasize nutrition as an integral component of comprehensive IBD management, complementing pharmacological therapy and addressing long-term complications such as sarcopenia and bone disease (1, 2).

## DIETS IN IBD

Exclusive enteral nutrition (EEN) remains the most evidence-based intervention for pediatric CD, yet adherence in adults is limited (1, 3). The Crohn's Disease Exclusion Diet (CDED) and the CD-TREAT diet have emerged as pragmatic alternatives; while CD-TREAT mimics the EEN thus improving patient acceptance and long-term feasibility, CDED is a model of an exclusion diet combined with partial enteral nutrition (PEN) (4, 5). The low-FODMAP diet may benefit functional symptoms such as bloating and diarrhoea, though evidence for anti-inflammatory effects is limited. The specific

carbohydrate diet and Mediterranean diet have shown some promising results, but current evidence remains insufficient for formal recommendations (6). Overall, guidelines emphasize avoiding overly restrictive diets and prioritizing individualized dietary counselling (1).

## SUPPLEMENTS AND MICRONUTRIENT MANAGEMENT

Patients with IBD often develop deficiencies in iron, vitamin D, vitamin B12, folate, and zinc (1,2). ESPEN recommends systematic screening and targeted supplementation, particularly in active disease and after intestinal resections (1). Intravenous iron is preferred for moderate-to-severe anemia, while vitamin D deficiency correction supports bone health and potentially modulates immune activity (1). Omega-3 fatty acids and probiotics remain controversial, with inconsistent evidence across clinical trials (2).

## MALNUTRITION AND BODY COMPOSITION

Malnutrition, present in up to 65% of hospitalized IBD patients, is an independent predictor of morbidity, postoperative complications, and reduced quality of life (1). Body composition assessment, including lean body mass, is increasingly recognized

as superior to body mass index (BMI) alone (1). ESPEN recommends routine use of validated tools such as the Nutritional Risk Screening 2002 (NRS-2002), Malnutrition Universal Screening Tool (MUST) or Subjective Global Assessment. Screening should be repeated regularly during the disease course and around surgical interventions. Multidisciplinary management, including dietitians, gastroenterologists, and psychologists, is essential to optimize outcomes (1, 2).

## CONCLUSION

Nutrition is not an adjunct but a cornerstone of IBD management. Evidence-based dietary strategies, timely supplementation, and systematic malnutrition screening are essential to improve disease outcomes, patient quality of life, and long-term prognosis. Personalized nutrition, guided by emerging evidence and patient preferences, will likely shape the future of IBD care.

## References:

1. Bischoff SC, Bager P, Escher J, et al. ESPEN guideline on clinical nutrition in inflammatory bowel disease. *Clin Nutr.* 2023;42:352–79.
2. Hashash JG, Elkins J, Lewis JD, et al. AGA Clinical Practice Update on Diet and Nutritional Therapies in Patients With Inflammatory Bowel Disease: Expert Review. *Gastroenterology.* 2024;166:521–32.
3. Gordon H, Biancone L, Fiorino G, et al. ECCO Guidelines on Inflammatory Bowel Disease and Malignancies. *J Crohns Colitis.* 2023;17:827–54.
4. Levine A, Wine E, Assa A, et al. Crohn’s disease exclusion diet plus partial enteral nutrition induces sustained remission in a randomized controlled trial. *Gastroenterology.* 2019 Aug;157(2):440-50.e8.
5. Svolos V, Hansen R, Nichols B, et al. Treatment of Active Crohn’s Disease With an Ordinary Food-based Diet That Replicates Exclusive Enteral Nutrition. *Gastroenterology.* 2019 Apr;156(5):1354-67.e6.
6. Ghosh S, Mitchell R. Impact of nutrition on IBD: Practical considerations. *Nat Rev Gastroenterol Hepatol.* 2022;19(4):243–57.



# Inflammatory Bowel Disease as the Leading Cause of Intestinal Failure

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**Keywords:** *inflammatory bowel disease, intestinal failure, Crohn's disease, ulcerative colitis, parenteral nutrition, intestinal rehabilitation*

Intestinal failure is defined as the reduction of gut function below the minimum necessary for the absorption of nutrients, water, and electrolytes, such that intravenous supplementation is required to maintain health and/or growth. While a wide range of conditions can result in intestinal failure, inflammatory bowel disease (IBD), particularly Crohn's disease, has emerged as the leading cause in adults across Europe and North America. This development reflects not only the chronic, relapsing nature of IBD but also the cumulative burden of complications, surgical resections, and malnutrition over the disease course. With the rising global prevalence of IBD, the recognition and management of intestinal failure in this population has become a critical clinical challenge.

Recent epidemiological studies demonstrate that Crohn's disease accounts for up to 40–50% of all benign causes of chronic intestinal failure requiring long-term parenteral nutrition in specialized European centers. Ulcerative colitis contributes to a much smaller proportion, typically through surgical complications following colectomy and pouch failure. Advances in surgical and medical management of other causes of intestinal failure, such as mesenteric ischemia, have further shifted the distribution towards IBD as the predominant etiology. The increasing incidence of IBD in newly industrialized

regions suggests that this burden is likely to expand globally in coming decades.

The mechanisms by which IBD leads to intestinal failure are multifactorial. Extensive small bowel resection due to stenotic or penetrating Crohn's disease remains the dominant cause, resulting in short bowel syndrome and severe malabsorption. Repeated resections further increase the risk of progressive intestinal insufficiency. In addition, active mucosal inflammation, chronic diarrhea, strictures, and fistulas contribute to nutrients loss and impaired absorption. Intestinal failure may also occur in the absence of major resections, particularly in patients with refractory small bowel disease or complications such as enteric fistulas and abscesses. The cumulative impact of chronic inflammation, surgical burden, and malnutrition explains why IBD stands out compared to other intestinal diseases.

The clinical manifestations of intestinal failure in IBD extend beyond malnutrition. Patients frequently experience dehydration, electrolyte disturbances, renal failure, vitamin and trace element deficiencies, and metabolic bone disease. Dependence on long-term parenteral nutrition (PN) carries risks of central venous catheter infections, intestinal failure liver disease, and reduced quality of life.

The psychosocial burden of intestinal failure is significant, with patients reporting limitations in daily activities, employment, and social participation. For many, intestinal failure represents the most disabling complication of IBD.

Nutritional therapy remains the cornerstone of management. Parenteral nutrition is life-sustaining in patients with short bowel syndrome or severe malabsorption. Optimization of PN protocols, catheter care, and monitoring strategies has significantly improved outcomes, with 5-year survival rates now exceeding 80% in specialized centers. In parallel, innovative medical therapies aimed at reducing intestinal inflammation and preserving bowel length, such as biologics and small molecules, play a critical preventive role. Early initiation of enteral nutrition when feasible supports intestinal adaptation and reduces PN dependency. Multidisciplinary care involving gastroenterologists, surgeons, dietitians, and specialized nursing staff is essential to optimize long-term outcomes.

Ongoing research is directed towards strategies to reduce the risk of intestinal failure in IBD. These include earlier diagnosis and aggressive disease control to minimize surgical resections, regenerative medicine approaches to enhance intestinal adaptation, and development of novel pharmacological therapies that target fibrotic pathways. The integration of patient-reported outcomes and quality-of-life measures into clinical care highlights the need to address not only survival but also the lived experience of patients with intestinal failure.

In Slovenia, the Department of Clinical Nutrition is currently managing 15 patients (age 27–83 years) with Crohn's disease who require Home Parenteral Nutrition (HPN) due to intestinal failure. The cohort includes 5 females and 10 males. The duration of HPN therapy ranges from 1 to 18 years, with 4 patients receiving HPN for more than 10 years. Three patients are being treated with teduglutide, a GLP-2 analogue, which has contributed to a reduction in their HPN volume requirements.

## CONCLUSION

IBD, particularly Crohn's disease, has become the leading cause of intestinal failure in adults, surpassing other benign gastrointestinal conditions. This complication is driven by the cumulative effects of chronic inflammation, repeated surgical resections, and malnutrition, all of which significantly impact quality of life and survival. Although advances in parenteral nutrition, multidisciplinary care, and emerging therapies have improved prognosis, prevention through effective disease control and bowel preservation remains critical. In Slovenia, the recognition of IBD as the predominant benign cause of intestinal failure underscores the importance of treatment within specialized intestinal failure units and the ongoing need for targeted research to improve outcomes in this high-risk population.

## References:

1. Pironi L, Arends J, Baxter J, et al. ESPEN endorsed recommendations: Definition and classification of intestinal failure in adults. *Clin Nutr.* 2015;34(2):171–80.
2. Jeppesen PB. Spectrum of short bowel syndrome in adults: Intestinal insufficiency to intestinal failure. *JPEN J Parenter Enteral Nutr.* 2014;38(1 Suppl):8S–13S.
3. Nightingale J, Woodward JM. Guidelines for management of patients with a short bowel. *Gut.* 2006;55 Suppl 4:iv1–iv12.
4. Wanten G, Calder PC, Forbes A. Managing adult patients who need home parenteral nutrition. *BMJ.* 2011;342:d1447.
5. Selvaggi G, Tzakis AG. Intestinal transplantation: current status and future directions. *Transplant Proc.* 2008;40(4):1063–66.



# Patients with inflammatory bowel disease and anxiety and depression

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**Keywords:** inflammatory bowel disease, anxiety, depression, integrated care

Patients with inflammatory bowel disease (IBD) are more likely to develop anxiety and depressive symptoms compared to the general population (1). Around 30% of patients with IBD experience such symptoms, with the prevalence being even higher during disease flare-ups (2). Psychiatrists and gastroenterologists have observed that care for these patients could be better integrated, starting already during gastroenterological management. Our presentation presents possible approaches to the recognition and management of anxiety and depressive symptoms in the gastroenterology outpatient setting. At the same time, the authors aim to strengthen and deepen collaboration between the two specialties in order to provide more comprehensive care for patients with IBD. IBD significantly affects many aspects of patients' lives. It often strikes young, working-age individuals, who may withdraw socially due to the course of the disease and who frequently find it difficult to speak about their psychological distress when coping with illness. The high prevalence of anxiety and depressive disorders in these patients may also have biological underpinnings, in particular serotonin deficiency (3). Tryptophan synthesis in the gut (the precursor of serotonin production in the brain) can be disrupted due to impaired intestinal metabolism, where tryptophan is normally generated (4). Psychiatrists note that patients often seek help late in the disease course, when anxiety and depressive

symptoms are already severe and markedly impair functioning, which makes treatment more difficult. Gastroenterologists, on the other hand, are often unaware of patients' psychological difficulties or delegate treatment to family physicians and psychiatrists—specialists whom patients frequently do not approach for help at all.

## References:

1. Massironi S, Pignoni A, Vegni EAM, et al. The Burden of Psychiatric Manifestations in Inflammatory Bowel Diseases: A Systematic Review With Meta-analysis. *Inflamm Bowel Dis* 2025;31:1441–59.
2. Barberio B, Zamani M, Black CJ, et al. Prevalence of symptoms of anxiety and depression in patients with inflammatory bowel disease: a systematic review and meta-analysis. *Lancet Gastroenterol Hepatol* 2021;6:359–70.
3. Chen L-M, Bao C-H, Wu Y, et al. Tryptophan-kynurenine metabolism: a link between the gut and brain for depression in inflammatory bowel disease. *J Neuroinflammation* 2021;18:135.
4. Peppas S, Pansieri C, Piovani D, et al. The Brain-Gut Axis: Psychological Functioning and Inflammatory Bowel Diseases. *J Clin Med* 2021;10:377.



# Claudin-4 expression in lamina propria mononuclear cells of patients with ulcerative colitis

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**Keywords:** Claudin-4; Ulcerative colitis; LPMCs; Flow cytometry

## BACKGROUND

Disruption of the intestinal barrier is associated with the development of inflammatory bowel disease (IBD), and recent studies suggest that claudins, tight junction proteins, may play a key role in its pathogenesis. Given the multifactorial nature of the disease and evidence that claudins have diverse functions beyond their role as transmembrane proteins, their involvement in IBD development has become an important research topic. Čužić et al. investigated claudin expression in mucosal biopsies from the rectum and sigmoid colon of a small cohort of ulcerative colitis (UC) patients, revealing their presence in cells derived from the mesoderm.

## AIM

To investigate claudin-4 expression across different cells population within lamina propria mononuclear cells (LPMCs) of patients with UC and healthy controls.

## MATERIALS AND METHODS

Mucosal samples from four colonic segments of 20 UC patients and 20 healthy controls were collected.

In UC patients, biopsies were taken from inflamed mucosa of the rectum and sigmoid colon, the border region (1 cm from the inflamed segment toward healthy mucosa), and non-inflamed intestinal areas. In patients without IBD, biopsies were collected from the rectum, sigmoid colon, transverse colon, and ascending colon.

LPMCs were isolated, stained with LIVE/DEAD dye to distinguish live from dead cells, and labeled with an antibody cocktail for immunophenotyping and claudin-4 expression analysis. Subsequently, the cells were analyzed by flow cytometry (Attune NxT) using FlowJo v10.10 software. Statistical analyses were performed using the Mann–Whitney and ANOVA test followed by Tukey's multiple comparisons test, with GraphPad Prism software (San Diego, CA, USA). Statistical significance was determined at level  $p < 0.05$ .

## RESULTS

Claudin-4 was detected in all samples from UC patients and healthy controls. Specific cell subpopulations, including macrophages, plasma cells, and lymphocytes (CD4<sup>+</sup>, CD8<sup>+</sup> and B cells), showed differential Claudin-4 expression not only between corresponding tissue segments of UC patients and healthy individuals, but also between some colon segments of UC patients, as well as healthy controls. For example, plasma cells showed consistently higher claudin-4 expression across all segments in UC patients compared with healthy controls, while within the UC cohort, significant differences were observed between transverse colon and border region compared to the ascending colon (Figure 1).

A similar trend was observed in other cell populations; however, the number of segments showing significant changes varied. In resident macrophages, claudin-4 expression was higher in the transverse and ascending colon of patients with UC,

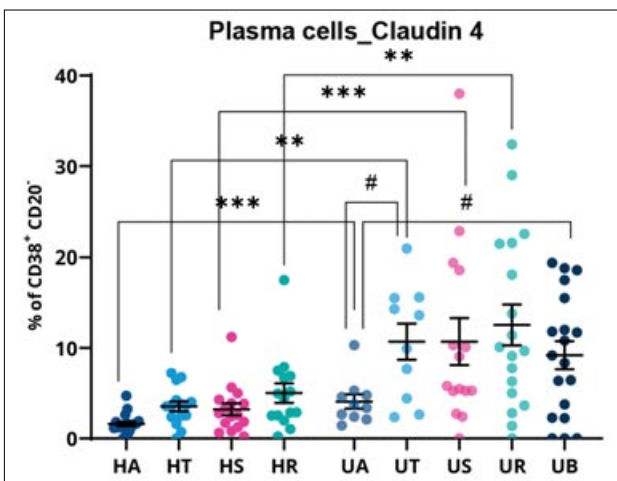


Figure 1. Claudin-4 expression in plasma cells in UC and healthy controls across regions:

HA (healthy ascending colon), HT (healthy transverse colon), HS (healthy sigmoid colon), HR (healthy rectum), UA (UC ascending colon), UT (UC transverse colon), US (UC sigmoid colon), UR (UC rectum), UB (UC Border region).

Data are expressed as mean  $\pm$  SEM,  $p < 0.05$ .

\*indicate statistical significance when comparing UC colon segment with the corresponding segment in the control group,

#indicate statistical significance when comparing within colon segments of the UC group.

while in inflammatory macrophages increased expression was observed only in the transverse colon. CD4<sup>+</sup> lymphocytes have higher expression in the transverse and ascending colon of patients with UC and CD8<sup>+</sup> lymphocytes have higher expression in transverse colon in UC. B lymphocytes showed higher claudin-4 expression across all segments (rectum, sigmoid colon, ascending colon, border region) in UC compared with healthy controls.

Regarding differential claudin-4 expression among colon segments within the UC cohort, CD4<sup>+</sup> lymphocytes exhibited higher expression of claudin-4 in transverse colon and rectum compared with ascending colon of UC patient. Similarly, CD8<sup>+</sup> lymphocytes showed higher expression in the rectum, sigmoid, transverse colon and border region compared with the ascending colon.

## CONCLUSIONS

Claudin-4 is expressed in LPMCs isolated from all mucosal segments of both UC patients and healthy controls. Its expression varies among specific mononuclear cell populations and colonic regions in both, healthy individuals and UC patients. Increased expression in macrophages, plasma cells, T and B lymphocytes in UC patients compared to healthy controls in certain segments may indicate a localized immune cell response. These results suggest that claudin-4 might play a role in regulating immune responses and contribute to mucosal pathophysiology in ulcerative colitis.

## References:

1. Kong C, Yang M, Yue N, Zhang Y, Tian C, Wei D, et al. Restore intestinal barrier integrity: an approach for inflammatory bowel disease therapy. *J Inflamm Res* 2024;17:5389–413. doi:10.2147/JIR.S470520
2. Horowitz A, Chanez-Paredes SD, Haest X, Turner JR. Paracellular permeability and tight junction regulation in gut health and disease. *Nat Rev Gastroenterol Hepatol* 2023;20(7):417–32. doi:10.1038/s41575-023-00766-3
3. Čužić S, Antolić M, Ognjenović A, Stupin-Polančec D, Petrinić Grba A, Hrvačić B, et al. Claudins: beyond tight junctions in human IBD and murine models. *Front Pharmacol* 2021;12:682614. doi:10.3389/fphar.2021.682614



# Efficacy and consumption of golimumab is similar with European and American dosing regimens in Ulcerative Colitis: Results of a prospective study

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**Keywords:** golimumab, dosing regimens, ulcerative colitis

## BACKGROUND

Golimumab is a subcutaneous TNF-alpha inhibitor approved for ulcerative colitis in European Union (EU) and United States of America (US). Interestingly, maintenance dose for patients weighing  $\leq 80$  kg is different in EU and US. In EU, golimumab maintenance dose is 50 mg every 4 weeks with an option of reactive dose escalation to 100 mg every 4 weeks in case of inappropriate response. In US, maintenance dose is 100 mg every 4 weeks for all patients, irrespective of body weight and response to induction. Here we compared efficacy, safety and drug consumption of EU and US maintenance dosing of golimumab in patients weighing  $\leq 80$  kg.

## METHODS

In this investigator initiated prospective study (ClinicalTrials.gov ID: NCT04156984) we recruited 29 patients with active ulcerative colitis. After common induction (golimumab 200 mg at baseline and 100 mg at week 2) all patients received 1 year of maintenance treatment. First 15 patients received US maintenance regimen with 100 mg golimumab monthly and next

14 patients received EU maintenance regimen with 50 mg golimumab monthly. Those in EU regimen with inadequate response to induction or loss of response during maintenance phase (rectal bleeding score (RBS)  $> 0$  or endoscopic Mayo score (eMayo)  $\geq 2$ ) increased dose of golimumab from 50 mg to 100 mg. Co-primary endpoints were endoscopic improvement (eMayo  $\leq 1$ ) at weeks 14 and 50 and clinical remission (RBS = 0 and stool frequency score (SFS)  $< 2$ ) at weeks 14, 26, 38, and 50. Statistical analysis included Chi-square and Mann-Whitney tests.

## RESULTS

Endoscopic improvement and clinical remission rates were similar with EU and US maintenance regimens. 8/14 (57%) of patients in EU regimen needed dose escalation to 100 mg due to inadequate response after a median of 8.6 weeks (interquartile range 6 to 14 weeks). Drug persistence and drug consumption was similar in both maintenance regimens. In the US regimen 3 potentially drug-related side effects occurred (one case each: one-dermatome herpes zoster, labial herpes, skin small vessel vasculitis), but none in the EU regimen.

## CONCLUSION

In this prospective study, EU and US golimumab maintenance regimens resulted in similar endoscopic improvement and clinical remission rates during the first year of treatment with golimumab in patients with ulcerative colitis weighing  $\leq 80$  kg. Due to high dose escalation rates in EU regimen dose consumption was similar in both maintenance regimens.

## References:

1. Hanzel J, Drobne D. Editorial: Golimumab dosing intensification effective in ulcerative colitis with no need for therapeutic drug monitoring. *Aliment Pharmacol Ther.* 2023 Jun;57(12):1469–70.
2. Stefanovic S, Detrez I, Compernelle G, et al. Endoscopic remission can be predicted by golimumab concentrations in patients with ulcerative colitis treated with the changed label. *Eur J Gastroenterol Hepatol.* 2021 Jan;33(1):54–61.
3. Fumery M, Nancey S, Filippi J, et al. Effectiveness of golimumab intensification in ulcerative colitis: A multicentric prospective study. *Aliment Pharmacol Ther.* 2023 Jun;57(11):1290–8.
4. Dreesen E, Kantasiripitak W, Detrez I, et al. A Population Pharmacokinetic and Exposure-Response Model of Golimumab for Targeting Endoscopic Remission in Patients With Ulcerative Colitis. *Inflamm Bowel Dis.* 2020 Mar 4;26(4):570–80.



# Drug-induced autoimmune hepatitis triggered by infliximab

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Keywords: *infliximab, drug-induced liver injury, drug-induced autoimmune hepatitis*

## BACKGROUND

Infliximab, a tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ) inhibitor, is frequently used in the treatment of inflammatory bowel disease (IBD). A rare but important adverse effect of infliximab therapy is drug-induced liver injury (DILI), including drug-induced autoimmune hepatitis (DIAIH). Although more than 40 drugs are known to cause DIAIH, infliximab appears to carry a particularly high risk, with an estimated incidence of approximately 1 in 120 to 1 in 160 patients. DIAIH typically develops after multiple infusions, with an average time of onset of 14 to 18 weeks after initiation of infliximab treatment. Diagnosing DIAIH is challenging as patients are often asymptomatic. The condition mimics idiopathic autoimmune hepatitis (AIH) in its biochemical features (elevated transaminases), serological features (positive antinuclear antibodies (ANA), anti-smooth muscle antibodies (ASMA), and elevated immunoglobulin (Ig) G levels) and histological features (infiltration with lymphocytes and plasma cells, interface hepatitis, rosette formation). Liver biopsy is required to exclude other potential causes of hepatopathy in IBD (e.g., primary sclerosing cholangitis). Furthermore, beside DIAIH, infliximab has been associated with three additional forms of hepatic injury: (1) transient, asymptomatic elevations of aminotransferase levels that usually resolve with drug cessation; (2) a cholestatic form of liver

injury that is usually self-limiting; and (3) a reactivation of chronic hepatitis B in HBsAg carriers, which can be severe or even deadly but preventable with antivirals. Each type of liver injury has different timing and clinical features. The prognosis of DIAIH is generally favourable. It most often resolves spontaneously within six months after discontinuing infliximab. Some patients may benefit from a short course (1 to 2 months) of corticosteroids, but generally do not require long-term immunosuppression, unlike in idiopathic AIH. Nevertheless, long-term follow-up is recommended as DIAIH can progress to chronic liver injury. We present a case of a female patient with ulcerative colitis who developed DIAIH after the initiation of infliximab.

## CASE REPORT

A 26-year-old female presented to our outpatient clinic with a relapse of ulcerative colitis, experiencing frequent bloody stools over the past two weeks. She was diagnosed with left-sided ulcerative colitis four years ago and had been receiving vedolizumab for the past 3.5 years. Her most recent colonoscopy, performed 8 months ago, showed endoscopic and histologic remission.

At the time of examination, no significant discrepancies were found in the clinical status. However, her blood work revealed elevated CRP levels (24 mg/L).

With negative stool cultures an infectious cause was excluded. A rectoscopy was performed and showed active disease with a Mayo score of 2. Mesalazine enemas were initiated, and after a multidisciplinary board review, vedolizumab was discontinued and replaced with an infliximab regimen. At the five-month follow-up, the patient initially experienced a positive clinical response, but this gradually diminished towards the end of the dosing interval, with persistent bloody stools. As a result, the dosing interval of infliximab was shortened from 8 to 4 weeks, but this adjustment did not lead to any improvement. Further evaluation revealed elevated liver enzymes (aspartate transferase (AST) 4.06  $\mu$ kat/L; alanine transaminase (ALT) 7.88  $\mu$ kat/L). To identify the cause of hepatopathy, serological tests for viral hepatitis, a proteinogram review and liver autoantibodies were conducted. These tests revealed latent EBV and CMV infections, elevated IgG levels, antinuclear antibodies (ANA) and antibodies to liver cytosol (anti-LC1). It was concluded that the liver dysfunction was most likely drug-induced autoimmune hepatitis (DILI-AIH) triggered by infliximab – no liver biopsy was performed as it was unlikely to change management. Treatment with infliximab was consequently discontinued and bridging therapy with mesalazine and locally-acting corticosteroids was introduced. Within two months of discontinuing infliximab, the liver enzymes decreased substantially and remained within normal limits at subsequent follow-up visits as the patient was treated with ustekinumab.

## References:

1. Andrade RJ, Aithal GP, Boer YS de, et al. Nomenclature, diagnosis and management of drug-induced autoimmune-like hepatitis (DI-ALH): An expert opinion meeting report. *J Hepatol*. 2023 Sept 1;79(3):853–66.
2. Worland T, Chin KL, van Langenberg D, et al. Retrospective study of idiosyncratic drug-induced liver injury from infliximab in an inflammatory bowel disease cohort: the IDLE study. *Ann Gastroenterol*. 2020;33(2):162–9.
3. Ghabril M, Bonkovsky HL, Kum C, et al. Liver Injury From Tumor Necrosis Factor- $\alpha$  Antagonists: Analysis of Thirty-four Cases. *Clin Gastroenterol Hepatol*. 2013 May 1;11(5):558-564.e3.
4. Björnsson ES, Gunnarsson BI, Gröndal G, et al. Risk of drug-induced liver injury from tumor necrosis factor antagonists. *Clin Gastroenterol Hepatol Off Clin Pract J Am Gastroenterol Assoc*. 2015 Mar;13(3):602–8.
5. Björnsson HK, Björnsson ES. Hepatotoxicity in inflammatory bowel disease: Immunomodulators, biologics, and beyond. *Clin Liver Dis*. 2024 June;23(1):e0199.



# Correlation Between Ustekinumab Concentrations And Endoscopic Improvement In Patients With Ulcerative Colitis - Results From A Prospective Observational Study

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**Keywords:** ustekinumab, ulcerative colitis, endoscopic improvement

## INTRODUCTION

Biologic therapies are the cornerstone of modern treatment for ulcerative colitis (UC), with the goal of achieving not only clinical remission but also endoscopic remission. Ustekinumab (UST), a fully human monoclonal antibody targeting interleukin 12/23, induces remission in only 30–40% of patients. One possible reason for treatment failure is insufficient drug concentration in serum or intestinal mucosa in some patients.

## AIM

To evaluate the association between UST concentrations in serum and intestinal mucosa and treatment outcomes in UC and to identify threshold concentrations predictive of treatment non-response.

## METHODS

We conducted a prospective study including 35 UC patients treated with UST. Serum and mucosal drug concentrations were measured by enzyme-linked immunosorbent assay (ELISA). Endoscopic disease

activity (endoscopic improvement defined as endoscopic Mayo score  $\leq 1$ ) was assessed at weeks 8 and 24 via endoscopy. Statistical analyses included the Mann–Whitney U test, ROC analysis, and Pearson's correlation. A p-value  $\leq 0.05$  was considered statistically significant.

## RESULTS

Median serum UST concentrations were higher among patients with endoscopic improvement at weeks 8 and 24. Statistically significant differences were observed at week 4 for early endoscopic improvement ( $p = 0.044$ ) and at weeks 8, 10, 20, and 24 for late endoscopic improvement ( $p = 0.035$ ;  $0.007$ ;  $0.038$ ;  $0.001$ , respectively) (Mann–Whitney U test). Predictive thresholds were identified at week 4 ( $\geq 20.90 \mu\text{g/mL}$  for endoscopic improvement (area under the curve (AUC)  $0.754$ ,  $p = 0.019$ , sensitivity  $70.0\%$ , specificity  $83.3\%$ ) and at week 10 for late endoscopic improvement ( $\geq 10.60 \mu\text{g/mL}$  (AUC  $0.869$ ,  $p < 0.001$ , sensitivity  $91.7\%$ , specificity  $85.7\%$ )) (ROC analysis). Serum and mucosal concentrations correlated moderately at week 8 ( $r = 0.571$ ,  $p = 0.042$ ) (Pearson's correlation).

## CONCLUSIONS

Higher serum UST concentrations are associated with an increased likelihood of both early and late endoscopic improvement in UC. Concentrations at weeks 4 and 10 demonstrated the highest predictive value for treatment response. We also demonstrated a positive association between serum and tissue concentrations at week 8 of treatment, showing a moderate positive correlation.

### References:

1. Weber J, Keam SJ. Ustekinumab. *BioDrugs*. 2009; 23 (1): 53-61.
2. Xu Y, Hu C, Chen Y, et al. Population Pharmacokinetics and Exposure-Response Modeling Analyses of Ustekinumab in Adults With Moderately to Severely Active Ulcerative Colitis. *J Clin Pharmacol*. 2020; 60 (7): 889-902.
3. Adedokun OJ, Xu Z, Marano C, et al. Ustekinumab Pharmacokinetics and Exposure Response in a Phase 3 Randomized Trial of Patients With Ulcerative Colitis. *Clin Gastroenterol Hepatol*. 2020; 18 (10): 2244-2255.e9.
4. Chaparro M, Garre A, Iborra M, et al. Effectiveness and Safety of Ustekinumab in Ulcerative Colitis: Real-world Evidence from the ENEIDA Registry. *J Crohns Colitis*. 2021; 15 (11): 1846-51.
5. Alsoud D, De Hertogh G, Compernelle G, et al. Real-world Endoscopic and Histological Outcomes Are Correlated with Ustekinumab Exposure in Patients with Ulcerative Colitis. *J Crohns Colitis*. 2022; 16 (10): 1562-70.



# A rare case of primary true enterolithiasis presenting with large bowel obstruction in a patient with prior bowel resection and newly confirmed Crohn's disease

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**Keywords:** enterolithiasis, large bowel obstruction, Crohn's disease, stenosis

## BACKGROUND

Enterolithiasis refers to hard, dense masses within the bowel that may lead to obstruction. Enteroliths are classified as primary or secondary. Secondary enteroliths originate outside the gastrointestinal tract and migrate into the bowel, most commonly as gallstones. Primary enteroliths are subdivided into true and false types. True primary enteroliths form within the bowel from luminal substances in areas of anatomical alteration and stasis (1). Their composition varies by location: proximal small intestine stones are typically composed of cholic acid, while distal small intestine stones often contain calcium phosphate, calcium oxalate, or calcium carbonate. Enteroliths are most frequently observed in post-surgical patients, particularly at side-to-side or end-to-side anastomoses. Stenosing Crohn's disease is a recognized risk factor, with stones commonly forming in aneurysmal, saccular, or dilated segments. Rarely, enteroliths can cause acute bowel obstruction (2, 3).

## CASE PRESENTATION

A 58-year-old female was admitted to our ward with subacute diarrhea and signs of bowel obstruction. Her history included a partial large bowel resection

with a caeco-sigmoid anastomosis due to acute bowel obstruction caused by multiple intramucosal lipomas. Five years prior, she underwent balloon dilatation of the anastomosis for symptomatic stenosis. On admission, she reported diarrhea lasting nearly four weeks, associated with nausea, and on the day of admission she experienced fever (38.5°C) and chills. Physical examination revealed a febrile patient with a distended, diffusely tender abdomen and hyperactive bowel sounds. A plain abdominal X-ray demonstrated a 6 cm-wide colonic loop in the right lower quadrant, borderline dilated small bowel loops, and a ~40 mm calcified mass in the pelvic cavity. Subsequent abdominal CT revealed obstruction of the cecum and an additional 20 mm calcified lesion in the pelvis, with no signs of perforation (figure 1). Given a presumed diagnosis of anastomotic stenosis, a colonoscopy with possible balloon dilatation was planned. Endoscopic examination revealed a narrowed anastomosis with a lumen of approximately 8 mm; dilatation was performed using a TTS balloon up to 12 mm. Upon passing the anastomosis with a therapeutic gastroscope, a large enterolith was visualized. Ulcerations were observed at the Bauchin valve and in the small bowel, from which biopsies were taken. The large enterolith was considered the likely cause of obstruction, and lithotripsy was attempted. The stone was extremely

hard, and each attempt at partial fragmentation, although successful, resulted in damage to the lithotripter (figure 2). The second calcified lesion was not identified during the procedure. Post-procedure, the patient's symptoms rapidly resolved, and she was discharged four days later. Stone analysis confirmed a calcium phosphate composition, and histology of the ileum revealed features consistent with Crohn's disease. Three weeks later, the patient remained asymptomatic, and a second colonoscopy was performed to fragment the remaining stone.



Figure 1: Enterolith visible in right lower abdominal quadrant on CT scan



Figure 2: endoscopic lithotripsy of the enterolith

## CONCLUSION

Enterolithiasis is a rare but important cause of bowel obstruction, particularly in patients with prior bowel surgery or anatomical alterations. In our case, the obstruction was successfully managed endoscopically, avoiding the need for surgery. However, due to the patient's underlying Crohn's disease and anatomical predisposition, she remains at risk for recurrence. Careful follow-up and monitoring are therefore essential to promptly identify and manage any future episodes. This case highlights that with timely endoscopic intervention, even large and hard enteroliths can be treated non-surgically.

## References:

1. Gurvits GE, Lan G. Enterolithiasis. World journal of gastroenterology. 2014;20(47):17819-29.
2. Martens T, Sas S. Enteroliths in Crohn's disease: a case report. Acta chirurgica Belgica. 2010;110(5):552-4.
3. Tewari A, Weiden J, Johnson JO. Small-bowel obstruction associated with Crohn's enterolith. Emergency radiology. 2013;20(4):341-4.



# Ustekinumab in ulcerative colitis: our experience at UMC Ljubljana

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**Keywords:** ulcerative colitis, ustekinumab, real-world evidence, endoscopy.

## INTRODUCTION

Ustekinumab is a monoclonal antibody against interleukin-12/23, used for treatment of ulcerative colitis and Crohn's disease. Even though the treatment has been approved by both FDA and EMA for more than 6 years, real world data on effectiveness remains relatively sparse.

## METHODS

We conducted a retrospective cohort study of patients who received ustekinumab between December 2019 and February 2023. Laboratory and endoscopy data were collected from electronic charts, images from endoscopic procedures were pooled and assessed using endoscopic Mayo score (eMayo) by blinded central reader. Clinical disease activity was assessed prospectively using stool frequency score (SFS), rectal bleeding score (RBS), physician global assessment (PGA) and 2-item patient reported outcome (PRO-2).

## RESULTS

A total of 79 patients were included in the final analysis. Median follow up time was 10 months (IQR 4-19), 17/79 (21.5%) patients discontinued treatment before the end of follow up, Cox regression failed to identify any predictors for disconti-

uation. We observed improvement of all clinical parameters (SFS<2: 21.52% at induction, 40.51% after induction, 64.56% at the end of follow up; RBS<1: 35% at induction, 53% after induction, 75% at the end of follow up; PGA=0: 24.05% at induction, 42.77% after induction, 64.56% at the end of follow up, PRO-2 remission: 11,39% at induction, 27,85% after induction and 62,03% at the end of follow up). Fecal calprotectin decreased significantly, from 419 mg/kg (IQR: 106,5-500 mg/kg) at induction to 61 mg/kg (IQR 27-232 mg/kg) at the end of follow-up (p=0.001). Endoscopic data was limited, among 20 patients with endoscopy at the end of follow up, 5 had eMayo score 0 and 8 had eMayo score 1.

## CONCLUSION

Results from centre are comparable with previously published real-world data.

## References:

1. Taxonera C, Olivares D, López-García ON, et al. Meta-analysis: Real-world effectiveness and safety of ustekinumab in patients with ulcerative colitis. *Aliment Pharmacol Ther.* 2023;57:610–9.
2. Rowan CR, Boland K, Harewood GC. Ustekinumab as Induction and Maintenance Therapy for Ulcerative Colitis. *N Engl J Med.* 2020;382:91.
3. Sands BE, Sandborn WJ, Panaccione R, et al. Ustekinumab as Induction and Maintenance Therapy for Ulcerative Colitis. *N Engl J Med.* 2019;381:1201–14.



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## A Case of Pleural Effusion in IBD: extraintestinal presentation, treatment complication, or something else?

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### Introduction

Inflammatory bowel disease (IBD) is systemic disease that manifest not only in the gastrointestinal tract but also in the extraintestinal organs ( mostly involving the skin, eyes, joints, hepatobiliary system and rarely the pulmonary, cardiac and nervus system).

### Case presentation

A 58-year-old male is being followed up in our IBD outpatient clinic due to ulcerative colitis.

He was diagnosed with ulcerative proctosigmoiditis at the age of 42 and was treated intermittently with mesalazine.

At the age of 40, he was also diagnosed with sarcoidosis, for which he was treated with systemic corticosteroids and methotrexate.

In 2024, he was hospitalized in our hospital due to an acute flare of ulcerative pancolitis. At the same time, pulmonologists ruled out latent tuberculosis and active sarcoidosis. Treatment with systemic corticosteroids in tapering doses was initiated, followed by biological therapy with infliximab, after which the symptoms of ulcerative colitis subsided.

During follow-up visits, the patient began reporting progressive dyspnea and chest pain. A CT angiography of the pulmonary arteries was performed, which ruled out pulmonary embolism. A small left-sided pleural effusion was seen, along with enlarged lymph nodes and infiltrates in the apical regions of the lungs.

He was re-hospitalized in the pulmonary department, where cytological analysis confirmed a lymphocytic pleural effusion and tuberculosis was excluded.

During further outpatient follow-up, the patient reported additional symptoms: fatigue, dizziness, more frequent bowel movements, pain in small joints, and a facial rash. Laboratory results showed worsening kidney function, mildly elevated CRP, abnormal liver function tests consistent with hepatocellular damage, a marked increase in fecal calprotectin, and low infliximab levels. On follow-up colonoscopy, erythema of the rectal mucosa, scarring from previous inflammation, and pseudopolyps were observed.

The patient was re-discussed at the IBD multidisciplinary team meeting due to ineffective treatment. A switch to a JAK inhibitor was recommended. Due to the newly described symptoms, serological testing for SLE and a rheumatology consultation were also advised. Diagnostics are ongoing...



Figure 1: A CT scan showing left side pleural effusion

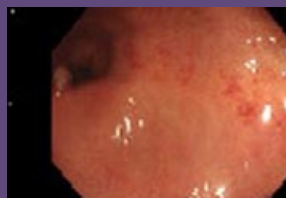


Figure 2: endoscopy showing active proctitis

Figure 3: Laboratory results in last visit

### The literature review

The pulmonary complications include inflammation of small and large airways, pulmonary parenchymal disease, serositis and pulmonary embolism and are usually associated with the ongoing inflammation of the underlying IBD, which is not a prerequisite [1,2].

Lymphocytic pleural effusion is an exudate with predominance of lymphocytes among white blood cells (more than 50%). The main causes of most lymphocytic effusions are malignomas and tuberculosis. The other common causes are virus or mycotic infections, sarcoidosis, autoimmune (reumathoid arthritis, systemic lupus erythematosus... ) and systemic disease (congestive heart failure, renal disease, liver cirrhosis...), drug related (chemotherapeutics, mesalazine...), after trauma or operative procedures [3].

### Conclusion

It is imperative for clinicians to maintain a high index of suspicion for the development of pulmonary disease in the setting of IBD in order to recognise and institute prompt and appropriate treatment early with avoiding further complications and morbidity.

### References

1. Cunejt Tetikkurt., et al. "Pulmonary Inflammation in Ulcerative Colitis". *EC Pulmonology and Respiratory Medicine* 12.2 (2023): 17-22.
2. Weatherhead M, Masson S, Bourke SJ, Gunn MC, Burns GP. Interstitial pneumonitis after infliximab therapy for Crohn's disease. *Inflamm Bowel Dis*. 2006;12:427-428. doi: 10.1097/01.MIB.0000219811.54115.aa.
3. Chang Li, Farah I. Kazzaz, Koanna M. Scoon et. al. Lymphocyte predominant exudative pleural effusions: a narrative review. *Shanghai Chest* 2022;6:5. DOI: 10.21037/shc-21-11.

# A rare case of primary true enterolithiasis presenting with large bowel obstruction in a patient with prior bowel resection and newly confirmed Crohn's disease

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## BACKGROUND

Enterolithiasis refers to hard, dense masses within the bowel that may lead to obstruction. Enteroliths are classified as primary or secondary. Secondary enteroliths originate outside the gastrointestinal tract and migrate into the bowel, most commonly as gallstones. Primary enteroliths are subdivided into true and false types. True primary enteroliths form within the bowel from luminal substances in areas of anatomical alteration and stasis. Their composition varies by location: proximal small intestine stones are typically composed of cholic acid, while distal small intestine stones often contain calcium phosphate, calcium oxalate, or calcium carbonate. Enteroliths are most frequently observed in post-surgical patients, particularly at side-to-side or end-to-side anastomoses. Stenosing Crohn's disease is a recognized risk factor, with stones commonly forming in aneurysmal, saccular, or dilated segments. Rarely, enteroliths can cause acute bowel obstruction.



Figure 1: Abdominal X-ray with a stone in the projection of pelvis



Figure 2-3: Abdominal CT showing two calcified enteroliths



Figure 4: Mucosal inflammation in terminal ileum at endoscopy

## CASE PRESENTATION

A 58-year-old female was admitted to our ward with subacute diarrhea and signs of bowel obstruction. Her history included a partial large bowel resection with a caeco-sigmoid anastomosis due to acute bowel obstruction caused by multiple intramucosal lipomas. Five years prior, she underwent balloon dilatation of the anastomosis for symptomatic stenosis. On admission, she reported diarrhea lasting nearly four weeks, associated with nausea, and on the day of admission she experienced fever (38.5°C) and chills. Physical examination revealed a febrile patient with a distended, diffusely tender abdomen and hyperactive bowel sounds. A plain abdominal X-ray demonstrated a 6 cm-wide colonic loop in the right lower quadrant, borderline dilated small bowel loops, and a ~40 mm calcified mass in the pelvic cavity. Subsequent abdominal CT revealed obstruction of the cecum and an additional 20 mm calcified lesion in the pelvis, with no signs of perforation. Given a presumed diagnosis of anastomotic stenosis, a colonoscopy with possible balloon dilatation was planned. Endoscopic examination revealed a narrowed anastomosis with a lumen of approximately 8 mm; dilation was performed using a TTS balloon up to 12 mm. Upon passing the anastomosis with a therapeutic gastroscope, a large enterolith was visualized. Ulcerations were observed at the Bauchin valve and in the small bowel, from which biopsies were taken. The large enterolith was considered the likely cause of obstruction, and lithotripsy was attempted. The stone was extremely hard, and each attempt at partial fragmentation, although successful, resulted in damage to the lithotripter. The second calcified lesion was not identified during the procedure. Post-procedure, the patient's symptoms rapidly resolved, and she was discharged four days later. Stone analysis confirmed a calcium phosphate composition, and histology of the ileum revealed features consistent with Crohn's disease. Three weeks later, the patient remained asymptomatic, and a second colonoscopy was performed to fragment the remaining stone.



Figure 5: Endoscopic balloon dilatation of postoperative large bowel stenosis



Figures 6-9: Endoscopic lithotripsy of enteroliths in the large bowel

## CONCLUSION

Enterolithiasis is a rare but important cause of bowel obstruction, particularly in patients with prior bowel surgery or anatomical alterations. In our case, the obstruction was successfully managed endoscopically, avoiding the need for surgery. However, due to the patient's underlying Crohn's disease and anatomical predisposition, she remains at risk for recurrence. Careful follow-up and monitoring are therefore essential to promptly identify and manage any future episodes. This case highlights that with timely endoscopic intervention, even large and hard enteroliths can be treated non-surgically.

### References:

1. Gurvits GE, Lan G. Enterolithiasis. World journal of gastroenterology. 2014;20(47):17819-29.
2. Martens T, Sas S. Enteroliths in Crohn's disease: a case report. Acta chirurgica Belgica. 2010;110(5):552-4.
3. Tewari A, Weiden J, Johnson JO. Small-bowel obstruction associated with Crohn's enterolith. Emergency radiology. 2013;20(4):341-4.

## CLINICAL DECISION SUPPORT TOOL FOR VEDOLIZUMAB CAN PREDICT TREATMENT PERSISTENCE IN CROHN'S DISEASE BUT NOT IN ULCERATIVE COLITIS

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### Background:

Vedolizumab (VDZ) has displayed up to 82.9% treatment persistence as a first-line biologic for ulcerative colitis (UC) and ranked third in the second line. It ranked fourth in treatment persistence as the first or second-line biological therapy in Crohn's disease (CD) (1,2). Factors most commonly associated with treatment outcomes have been indicators of more aggressive disease, like refractoriness to corticosteroids and tumour necrosis factor (TNF) alpha inhibitors, elevated baseline patient-related outcomes (PROs), comorbidities in CD and faecal calprotectin (2,3). Pre-treatment prediction of response and long-term persistence could help optimise treatment in an individual patient.

### Methods:

We performed a retrospective single-centre cohort study based on the UR-CARE registry. Data for 129 patients treated with VDZ from July 2016 until April 2023 were analysed. A validated clinical decision support tool (CDST) for CD and UC was used to stratify patients according to the probability of response to VDZ (4,5). We used Kaplan-Meier survival curves to analyse treatment persistence at week 52, depending on the CDST group for CD and UC. The association between the CDST group and the optimisation of VDZ therapy was evaluated using the  $\chi^2$  test.

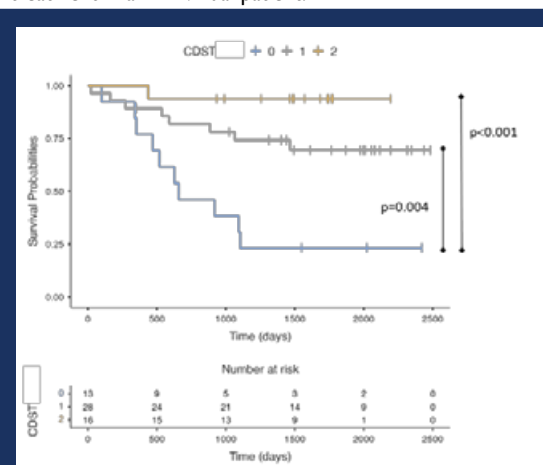


Figure 1: Treatment persistence in Crohn's disease

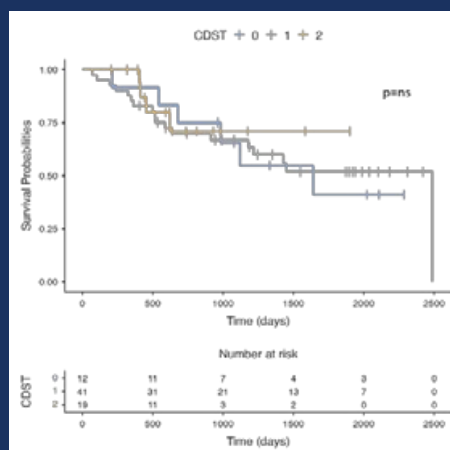


Figure 2: Treatment persistence in ulcerative colitis

### Results:

The study included 57 CD patients (median age 34 years, 38.6% male), and 72 UC patients (median age 32.1 years, 59.7% male). Patients with CD had longer disease duration (4.1 years) than UC patients (2.6 years). 33.3% of CD patients had ileo-colonic disease, 24.6% had upper GI involvement, 33.3% had fistulising disease, and 56.1% had prior surgery. 63.9% of patients with UC had pancolitis, and 34.7% had concomitant corticosteroids at baseline. Before VDZ, more than half of patients were exposed to TNF alpha inhibitors in both CD and UC (57.9% and 52.8%, respectively). We found significantly higher **treatment persistence in CD** patients stratified into groups with intermediate (group 1) and high (group 2) probability of response, according to CDST compared to the group with low (group 0) probability of response. The VDZ therapy was discontinued in 76.9%, 28.6% and 6.3% of patients within CDST groups 0, 1, and 2, respectively. The association was statistically significant ( $p < 0.001$ ) (figure 1).

We could not confirm any significant difference in **treatment persistence in UC** between CDST groups. The VDZ therapy was discontinued in 50.0%, 34.9%, and 21.9% in groups 0, 1, and 2, respectively. While the trend between discontinuation of VDZ and CDST groups can be observed, the association was not statistically significant ( $p = 0.165$ ) (figure 2).

### Conclusions:

In our study, treatment persistence for VDZ could be predicted using CDST for CD, but not for UC.

#### Literature:

1. Koo HM, Jun YK, Choi Y, Shin CM, Park YS, Kim N, et al. 10 years of biologic use patterns in patients with inflammatory bowel disease: treatment persistence, switching and dose intensification – a nationwide population-based study. *Therap Adv Gastroenterol*. 2023;16:1–16.
2. Barmas G, Kokkosis G, Giazis M, Kapizonis C, Karmiris K, Kouretas E, et al. Predictors of Response to Vedolizumab in Patients with Ulcerative Colitis: Results from the Greek VEDO-HBD Cohort. *Dig Dis Sci*. 2022;67(7):1007–17.
3. Tursi A, Mucci G, Faggiari R, Allegretta L, Della Valle N, de Medici A, et al. Vedolizumab is effective and safe in real-life treatment of inflammatory bowel diseases outpatients: A multicenter, observational study in primary inflammatory bowel disease centers. *Eur J Intern Med*. 2019;66(8):85–91.
4. Dulai PS, Singh S, Casteele NV, de Meester J, Winters A, Chablányi S, et al. Development and Validation of Clinical Scoring Tool to Predict Outcomes of Treatment With Vedolizumab in Patients With Ulcerative Colitis. *Clin Gastroenterol Hepatol*. 2020;18(13):2952–61.
5. Dulai PS, Boland BS, Singh S, Chaudrey K, Kollani-Pace JL, Kochhar G, et al. Development and Validation of a Scoring System to Predict Outcomes of Vedolizumab Treatment in Patients with Crohn's Disease. *Gastroenterology*. 2018;153(3):687–95.

## CLINICAL DECISION SUPPORT TOOL FOR VEDOLIZUMAB COULD NOT PREDICT OUTCOME IN ULCERATIVE COLITIS PATIENTS – A RETROSPECTIVE REAL-LIFE SINGLE-CENTRE COHORT STUDY

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### Background:

Early intervention with biologics can slow the progression of ulcerative colitis (UC), thus improving long-term outcomes (1). As treatment options in UC expand, the positioning of advanced therapies is becoming more important. The ability to identify patients with UC who are more likely to respond well to a specific drug before initiation of treatment could help physicians navigate within the proposed treatment algorithm. Dulai *et al.* derived and validated a clinical decision support tool (CDST) for the prediction of response to vedolizumab (VDZ) in UC (2).

### Methods:

We performed a retrospective single-centre cohort study based on UR-CARE registry data. Data for 72 UC patients treated with VDZ from July 2016 until April 2023 were analysed. CDST for UC was calculated using four variables: absence of exposure to a tumour necrosis factor (TNF) alpha inhibitor, disease duration of  $\geq 2$  years, moderate baseline endoscopic activity and baseline albumin concentration. Patients were then stratified into three probability groups: group 0 with low ( $\leq 26$  points), group 1 with intermediate (27 to  $\leq 32$  points) and group 2 with high ( $> 32$  points) probability of response (2). To test the association between CDST, clinical remission (CR) (defined as PRO2  $\leq 1$  with rectal bleeding score 0), corticosteroid-free remission (CSFR) and endoscopic activity (defined as no change in endoscopic activity, endoscopic improvement (EI) (change of endoscopic Mayo of  $\geq 1$ ), or endoscopic remission (ER) (endoscopic Mayo  $\leq 1$ ))  $\chi^2$  test was used. The difference in fecal calprotectin (FC) depending on whether VDZ was continued or not was tested by the Mann-Whitney U test.

Table 1: Demographic data and disease characteristics

	UC (n=72)
Gender	
• male; n (%)	43 (59.7%)
• female; n (%)	29 (40.3%)
Age at diagnosis (years)	median=32.1 (34.8 $\pm$ 16.0)
Disease duration (years)	median=2.6 (2.9 $\pm$ 1.9)
Disease location (Montreal classification)	E1: n=0 (0%) E2: n=26 (36.1%) E3: n=46 (63.9%)
Prior surgery	2 (2.8%)
Concomitant CS therapy (n, %)	25 (34.7%)
Previous exposure to anti-TNF therapy (n, %)	38 (52.8%)
Baseline CRP (mg/L)	median=5 (10.3 $\pm$ 12.9)
Baseline albumin (g/L)	median=38.2 (38.0 $\pm$ 4.62)
Probability of response to vedolizumab	
Low (n, %) (CDST group = 0)	n=12; 16.7%
Medium (n, %) (CDST group = 1)	n=41; 56.9%
High (n, %) (CDST group = 2)	n=19; 26.4%
Duration of follow-up (months)	median=9.9 (11.5 $\pm$ 8.7)

UC = ulcerative colitis, CS = corticosteroid, CRP = C-reactive protein, CDST = clinical decision support tool

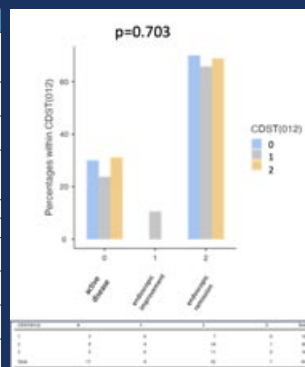


Figure 1: CDST groups according to endoscopic activity

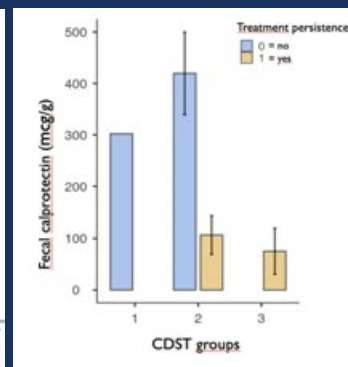


Figure 2: Fecal calprotectin according to CDST groups

### Results:

We found no statistically significant association between the CDST group and CR or CSFR at weeks 14 and 52 nor endoscopic activity at follow-up endoscopy. All patients in group 2 responded with lowering of FC 3-6 months after initiating VDZ and continued treatment. Also, patients in CDST group 1 who experienced lowering of FC continued VDZ therapy. In contrast, all patients in CDST group 0 and patients in group 1 who had persistently elevated FC eventually failed VDZ regardless of optimisation. The difference in FC between those who discontinued VDZ and those who did not was statistically significant ( $p=0.004$ ).

### Conclusions:

Our results did not confirm the predictive value of existing CDST for VDZ in UC patients. Novel prediction tools in UC are needed.

### Literature:

1. V. D'Amico F, Zacharopoulou E, Peyrin-Biroulet L, Danese S. Early Intervention in Ulcerative Colitis: Ready for Prime Time? J Clin Med. 2020;9(8):2646.
2. Dulai PS, Singh S, Castelele N, Vande, Meserve J, Winters A, Chablany S, et al. Development and Validation of Clinical Scoring Tool to Predict Outcomes of Treatment With Vedolizumab in Patients With Ulcerative Colitis. Clin Gastroenterol Hepatol. 2020;18(13):295

# CLINICAL DECISION SUPPORT TOOL FOR VEDOLIZUMAB IS USEFUL IN PREDICTING ENDOSCOPIC REMISSION IN CROHN'S DISEASE – A RETROSPECTIVE REAL-LIFE SINGLE-CENTRE COHORT STUDY

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## Background:

Early control of inflammation could modify the disease course and improve outcomes in patients with Crohn's disease (CD). Positioning of advanced therapies is becoming more important as treatment options expand (1). Dulai *et al.* derived and externally validated a clinical decision support tool (CDST) for predicting response to vedolizumab (VDZ). They noticed that the high probability group, according to CDST, has the highest probability of achieving clinical remission (CR), corticosteroid-free remission (CSFR) and mucosal healing. In contrast, low and intermediate-probability groups are more likely to need surgery (2,3).

## Methods:

We performed a retrospective single-centre cohort study based on the UR-CARE registry. Data for 57 CD patients treated with VDZ from July 2016 until April 2023 were analysed. We stratified patients according to CDST for CD into three response probability groups: group 0 with low ( $\leq 13$  points), group 1 with intermediate (14-19 points) and group 2 with high ( $> 19$  points) probability of response to VDZ. CDST was calculated using five variables: no prior bowel surgery, no prior tumour necrosis factor (TNF) alpha antagonist exposure, no prior fistulising disease, baseline albumin and baseline C-reactive protein (CRP) (2). For analysis of the association between CDST, CR (defined as PRO2  $\leq 4$  (abdominal pain  $\leq 1$  and stool frequency  $\leq 3$ )), CSFR and endoscopic activity (defined as no change in endoscopic activity, endoscopic improvement (EI) (improvement of at least 50%), or endoscopic remission (ER) (no ulcers))  $\chi^2$  test was used.

## Results:

We found a significant association between the CDST group and endoscopic activity at follow-up endoscopy but no statistically significant association between the CDST group and CR nor CSFR at weeks 14 and 52. The majority (69.2%) of patients stratified into CDST group 0 had endoscopically active disease, while in contrast, 68.8% of patients in CDST group 2 achieved ER. In group 1, EI was found in 45.8% and ER in 41.7% of patients.

## Conclusions:

In our retrospective study, CDST for VDZ predicted ER and EI in our cohort of patients with CD. We could not confirm the association between CDST and CR or CSFR, probably due to the definition used in a retrospective design, namely PRO2, which does not correlate well with endoscopic activity in CD (4).

Table 1: Demographic data and disease characteristics

	CD (n=57)
Gender	22 (38.6%)
• male; n (%)	35 (61.4%)
• female; n (%)	
Age at diagnosis (years)	median=34 (36.0 $\pm$ 15.8)
Disease duration (years)	median=4.1 (3.7 $\pm$ 1.9)
Disease location (Montreal)	L1; n=11 (19.3%) L2; n=13 (22.8%) L3; n=19 (33.3%) +L4; n=14 (24.6%)
Fistulizing disease (n, %)	19 (33.3%)
Prior surgery	32 (56.1%)
Concomitant CS therapy (n, %)	8 (14%)
Previous exposure to anti-TNF therapy (n, %)	33 (57.9%)
Baseline CRP (mg/L)	median=6 (12.8 $\pm$ 15.8)
Baseline albumin (g/L)	36.8 $\pm$ 4.66 (median=37.0)
Probability of response to vedolizumab	
Low (n, %) (CDST group = 0)	n=13; 22.8%
Medium (n, %) (CDST group = 1)	n=28; 49.1%
High (n, %) (CDST group = 2)	n=16; 28.1%
Duration of follow-up (months)	27.4 $\pm$ 19.5 (median=24.2)

CD = Crohn's disease, CS = corticosteroid, CRP = C-reactive protein, CDST = clinical decision support tool

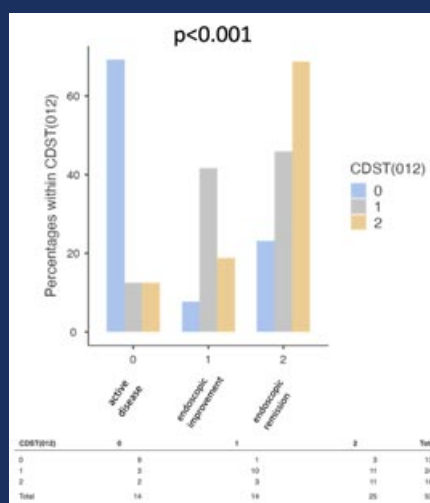


Figure 1: CDST groups according to endoscopic activity

## Literature:

1. Hashash JG, Mourad FH. Positioning biologics in the management of moderate to severe Crohn's disease. *Curr Opin Gastroenterol.* 2021;37:351-6.
2. Dulai PS, Boland BS, Singh S, Chaudrey K, Kollani-Pace JL, Kochhar G, et al. Development and Validation of a Scoring System to Predict Outcomes of Vedolizumab Treatment in Patients with Crohn's Disease. *Gastroenterology.* 2018;155(3):687-95.
3. Dulai PS, Amir A, Poyrin-Broulet L, Jairath V, Serrero M, Filippi J, et al. A clinical decision support tool may help to optimise vedolizumab therapy in Crohn's disease. *Aliment Pharmacol Ther.* 2020;51:553-64.
4. Dragasevic S, Sokic-Milutinovic A, Stojkovic Lalosevic M, Milovanovic T, Djuranovic S, Jovanovic I, et al. Correlation of Patient-Reported Outcome (PRO-2) with Endoscopic and Histological Features in Ulcerative Colitis and Crohn's Disease Patients. *Gastroenterol Res Pr.* 2020;2065383.

# COMPARISON OF PATIENTS IN ROUTINE CLINICAL PRACTICE AND PATIENTS INCLUDED IN RANDOMIZED TRIALS OF DRUGS FOR INFLAMMATORY BOWEL DISEASE: DISEASE COURSE AND TREATMENT OUTCOMES

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**BACKGROUND:** New advanced drugs for the treatment of chronic inflammatory bowel disease (IBD) are being tested in randomized clinical trials. Previous Slovenian studies have shown that only one-third of IBD patients in everyday clinical practice are eligible for inclusion in randomized clinical trials. This calls into question the transferability of clinical trial results to clinical practice.

**AIM:** Determine differences between trial eligible and ineligible patients.

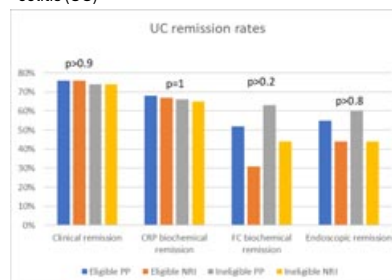
**METHODS:** The clinical study is retrospective and comparative. The sample consisted of adult patients who were treated at the chronic inflammatory bowel disease consortium in Ljubljana in 2022. We obtained data on demographic and clinical characteristics, target therapy replacement, surgeries, hospitalizations, glucocorticoid initiation, and deaths within one year after the consortium, as well as data on remission of different types one year after the council. We compared the data of patients suitable for inclusion with the data of those unsuitable.

**RESULTS:** We analyzed data from 111 patients with ulcerative colitis (UC) and 142 patients with Crohn's disease (CD). No significant demographic or clinical differences were found. Analysis of treatment outcomes is shown in graphs 1 and 2, for UC and CD respectively.

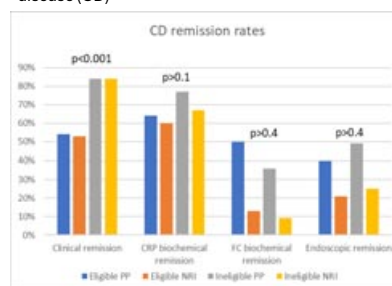
Similar analysis was performed for disease course and is shown in graphs 3 and 4.

**CONCLUSIONS:** Trial eligible and trial ineligible patients with IBD don't differ in clinical and demographic characteristics. Real world use of biologics does not show inferior efficacy, with only minor differences in safety between trial eligible and ineligible.

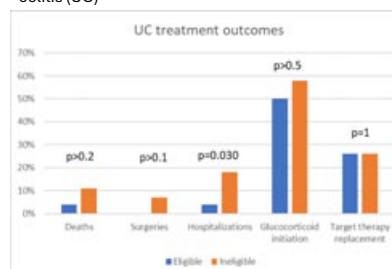
Graph 1: Comparison of remission rates in ulcerative colitis (UC)



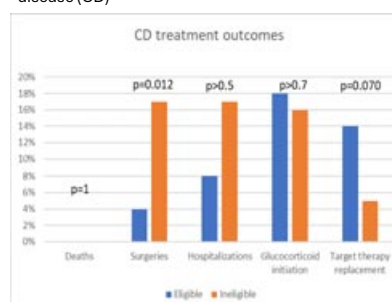
Graph 2: Comparison of remission rates in Crohn's disease (CD)



Graph 3: Comparison of outcomes in ulcerative colitis (UC)



Graph 4: Comparison of outcomes in Crohn's disease (CD)



# Determining the Success of the Treatment of Inflammatory Bowel Disease with Ustekinumab as a First-Line Advanced Therapy

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## Background

In recent years, there have been several new treatment options for inflammatory bowel disease (IBD). Tumour necrosis factor  $\alpha$  (TNF- $\alpha$ ) inhibitors have been joined by novel advanced therapies, including ustekinumab (UST). These drugs are mostly used as second-line treatment after TNF- $\alpha$  inhibitors, with subsequent lower efficacy. There are few data available on the efficacy of treatment with UST in biologically naïve patients. We aimed to assess the efficacy of UST in biologically naïve patients in a retrospective cross-sectional study at a tertiary referral IBD centre (University Medical Centre Ljubljana, Slovenia).

## Methods

- Retrospective cross-sectional study
- 71 biologically naïve patients who started first-line treatment with UST were included (60 patients with Crohn's disease (CD), 11 patients with ulcerative colitis (UC))
- Determining treatment persistence
- Determining treatment efficacy based on clinical, biochemical and endoscopic parameters (three timelines)
- Determining the correlation between serum concentration of UST and remission

## Results

- One-year treatment persistence: 88% (92% for CD, 82% for UC)
- Two-year treatment persistence: 72% (74% for CD, 68.5% for UC)

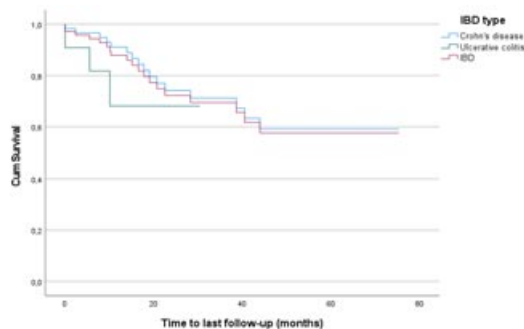


Figure 1. Kaplan-Meier curve of UST treatment persistence.

Table 1. Percentage of patients who achieved remission. All data refer to the last follow-up. IBD – inflammatory bowel disease, CD – Crohn's disease, UC – ulcerative colitis, CRP – C-reactive protein, FC – faecal calprotectin.

Clinical remission for CD: absence of abdominal pain and liquid stools

Clinical remission for UC: pMayo score  $\leq 1$

Biochemical remission: CRP  $\leq 5$  mg/l or FC  $< 100$  mg/kg

Endoscopic remission for CD: absence of ulcers at endoscopy

Endoscopic remission for UC: Mayo score  $\leq 1$

Type of remission	IBD (%)	CD (%)	UC (%)
Clinical	44.3	41.2	90.9
Biochemical (CRP)	77.6	75.4	90.0
Biochemical (FC)	71.1	71.4	70.0
Endoscopic	58.3	58.1	60.0

- No significant difference between the median serum concentrations of UST in the group of patients who achieved remission and who did not achieve remission

Table 2. Comparison of median UST serum concentration in the group of patients who achieved remission and who did not achieve remission. Me – median, UST – ustekinumab, CRP – C-reactive protein, FC – faecal calprotectin.

Type of remission	Me UST serum concentration in group of patients who achieved remission ( $\mu\text{g/ml}$ )	Me UST serum concentration in group of patients who did not achieve remission ( $\mu\text{g/ml}$ )	p-value
Clinical	5.86	5.31	0.689
Biochemical (CRP)	5.93	3.25	0.476
Biochemical (FC)	5.63	4.47	0.412
Endoscopic	7.14	4.64	0.439

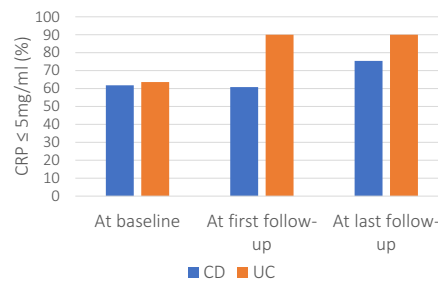


Figure 2. Percentage of patients who achieved biochemical remission according to C-reactive protein (CRP) levels at baseline, at first and last follow-up. CD – Crohn's disease, UC – ulcerative colitis.

First follow-up: median 3.7 months (IQR 3.5–3.9 months).

Last follow-up: median 16.8 months (IQR 7.8–38.0 months).

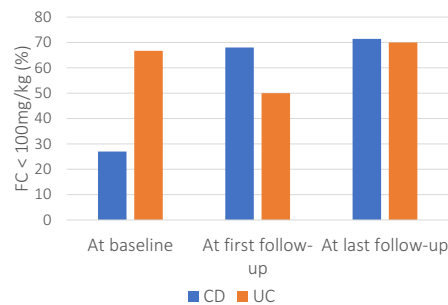


Figure 3. Percentage of patients who achieved biochemical remission according to faecal calprotectin (FC) levels at baseline, at first and last follow-up. CD – Crohn's disease, UC – ulcerative colitis.

First follow-up: median 3.7 months (IQR 3.7–3.8 months).

Last follow-up: median 17.0 months (IQR 6.2–29.6 months).

## Conclusions

- The persistence of UST treatment in biologically naïve patients is high. Compared to the data in literature, it's higher than the persistence in second- or third-line treatment.
- With the use of UST as the first-line treatment, high rates of clinical, biochemical and endoscopic remission are achieved.

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The authors have no potential conflict of interest to disclose.

SLOVENSKO ZDRUŽENJE  
ZA GASTROENTEROLOGIJO  
IN HEPATOLOGIJO

# EFFICACY AND CONSUMPTION OF GOLIMUMAB IS SIMILAR WITH EUROPEAN AND AMERICAN DOSING REGIMENS IN ULCERATIVE COLITIS: RESULTS OF A PROSPECTIVE STUDY

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## BACKGROUND AND AIM:

- ▶ Golimumab maintenance dose for patients weighing  $\leq 80$  kg differs in European Union (EU) (= 50 mg every 4 weeks) and United states of America (US) (= 100 mg every 4 weeks).
- ▶ But is efficacy, safety and drug consumption **the same after 1 year of treatment?**

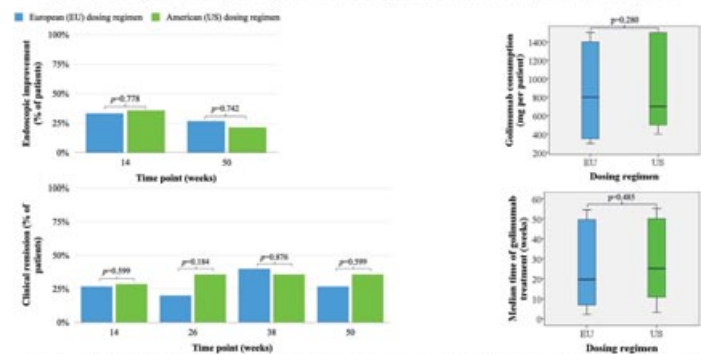
## MATERIAL AND METHODS:

- ▶ Prospective multicenter study of 29 patients  $\leq 80$  kg with ulcerative colitis.
- ▶ The same induction of golimumab and different 1 year maintenance regimen:
  - ▶ US (52 %): 100 mg every 4 weeks,
  - ▶ EU (48 %): 50 mg every 4 weeks:
    - ▶ Inadequate or loss of response in EU patients increase to 100 mg every 4 weeks.
- ▶ Co-primary endpoints: **endoscopic improvement and clinical remission.**

	European (EU) dosing regimen*	American (US) dosing regimen**	All patients	p-value
Number of patients	14	15	29	/
Sex, patient number (%)				
Male	4 (28.6)	5 (33.3)	9 (31.0)	/
Female	10 (71.4)	10 (66.7)	20 (67)	/
Age at diagnosis (years, median with range)	25 (14 – 53)	36 (17 – 66)	31 (14 – 66)	0.012
Mauro disease extent, number of patients (% per group)				
E1 (proctitis)	2 (13.3)	6 (40)	8 (27.6)	/
E2 (left-sided)	10 (66.6)	4 (26.7)	14 (48.3)	/
E3 (extensive)	2 (13.3)	5 (33.3)	7 (24.1)	/
Age at the start of golimumab treatment, median in years (range)	34 (18 – 58)	47 (19 – 71)	40 (19 – 71)	0.007
Treatment at the start of golimumab, number of patients (% per group)				
Aminosalicylates	11 (78.6)	10 (66.6)	21 (72.4)	0.474
Systemic steroids	6 (42.9)	4 (26.7)	10 (34.4)	0.359
Local steroids	1 (7.1)	2 (13.3)	3 (10.3)	0.584
Azathioprine	0 (0)	3 (20)	3 (10.3)	0.077

\* EU: 50 mg of golimumab every 4 weeks with option of reactive dose escalation to 100 mg in case of inappropriate response  
 \*\*US: 100 mg of golimumab every 4 weeks

Figure 1: Efficacy and consumption of golimumab in European vs. American dosing maintenance regimens



## RESULTS:

- ▶ Patient demographic data (Table 1).
- ▶ Endoscopic improvement and clinical remission rates were similar in EU and USA maintenance regimens (Figure 1).
- ▶ 8/14 (57%) of patients in EU regimen needed dose escalation to 100 mg due to inadequate response.
- ▶ Drug persistence and drug consumption were similar in both maintenance regimens (Figure 1).
- ▶ In the US regimen 3 potentially drug-related side effects occurred, none in the EU regimen.

## CONCLUSIONS:

- ▶ EU and US golimumab maintenance regimens resulted in **similar endoscopic improvement and clinical remission rates** in UC with body weight  $\leq 80$  kg
- ▶ Due to high dose escalation rates in EU regimen **dose consumption was similar** in both maintenance regimens.

## REFERENCES:

- Hanzel J, Drobne D. Editorial: golimumab dosing intensification effective in ulcerative colitis with no need for therapeutic drug monitoring. *Aliment Pharmacol Ther.* 2023 Jun;57(12):1469–70.
- Stefanovic S, Detrez I, Compenolle G, Brouwers E, Sever N, Stabic B, et al. Endoscopic remission can be predicted by golimumab concentrations in patients with ulcerative colitis treated with the changed label. *Eur J Gastroenterol Hepatol.* 2021 Jan;33(1):54–61.
- Furney M, Nancey S, Filippi J, Altwegg R, Hébuterne X, Boshetti G, et al. Effectiveness of golimumab intensification in ulcerative colitis: A multicenter prospective study. *Aliment Pharmacol Ther.* 2023 Jun;57(11):1290–8.
- Dreesen E, Kantasiripitak W, Detrez I, Stefanovic S, Vermeire S, Ferrante M, et al. A Population Pharmacokinetic and Exposure-Response Model of Golimumab for Targeting Endoscopic Remission in Patients With Ulcerative Colitis. *Inflamm Bowel Dis.* 2020 Mar 4;26(4):570–80.

# Experiences in the Management of Pregnancy and Pregnancy Outcomes of Women with IBD on Biologic Therapies

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## 1 Introduction

The diagnosis of IBD raises many questions; these include concerns about sexuality, disease heritability, and the impact of medications and disease activity on fertility, pregnancy outcomes, and lactation. Uncertainty about the health of the offspring may influence patients' choices in family planning. Therefore, the management of patients who wish to conceive or who are pregnant requires specialized counseling and appropriate management. (1) In our center, we currently manage 399 patients undergoing advanced therapies. This study provides an overview of the management of pregnant women with IBD in our center, with a focus on pregnancy outcomes.

## 2 Objectives

The objective of this study was to collect and analyze data on women with IBD who conceived while receiving biologic therapy or were treated with it during pregnancy. We aimed to evaluate:

- pregnancy outcomes, including mode of conception,
- disease activity during pregnancy,
- treatment strategies,
- mode of delivery,
- neonatal outcomes and breastfeeding practices.

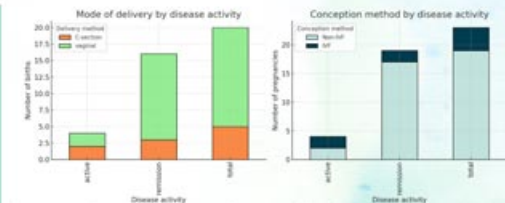
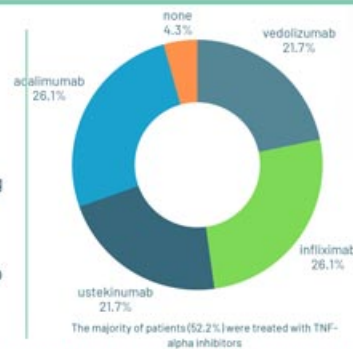
## 3 Methodology

We performed a retrospective, single-center study, including women with IBD who conceived while receiving biologic therapies or were treated with them from 2017 to 2025.

Clinical data were collected from patient records or additional interviews and included maternal age, disease activity at conception and during pregnancy, and type of biologic therapy. Pregnancy-related variables comprised mode of conception, type of delivery, gestational age at delivery, and pregnancy complications. Neonatal outcomes included sex, birth weight, and complications after birth. Breastfeeding practices after delivery were also recorded. Data were analyzed using appropriate statistical tests.

## 3 Results

- 7 women conceived and carried their pregnancies.
- A total of 20 children have been born to date, and one pregnancy was electively terminated following the prenatal diagnosis of a genetic abnormality.
- 11 women had one child, one woman gave birth to twins, and two women have three children.
- 3 women are currently pregnant.



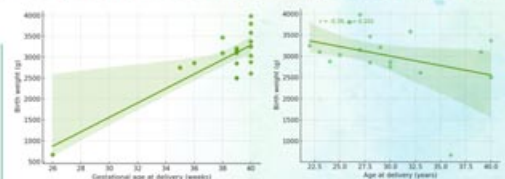
Cesarean section was more frequent in women with active disease compared to those in remission (50% vs. 19%), although the difference did not reach statistical significance ( $p = 0.25$ ). Regarding conception, 4 pregnancies occurred after IVF and 19 were spontaneous or natural.

Women with active disease were more likely to require IVF compared to those in remission (50% vs. 11%), but again, this difference was not statistically significant ( $p = 0.12$ ).

The majority of patients (15/23, 65%) were during pregnancy followed in a specialized high-risk pregnancy clinic, while 26% were not, and data were unavailable for 9%. Breastfeeding was reported in 75% of women, while 25% did not breastfeed (data available for 20 out of 23 pregnancies).

Biologic therapy was discontinued following established protocols, except for two patients who independently discontinued treatment during the second trimester, deviating from the recommended regimen.

- The mean gestational age at the time of the last biologic administration was  $31.9 \pm 7.5$  weeks (median 36, IQR 32–36; range 15–38;  $n = 17$ ).
- The mean gestational age at delivery was  $38.3 \pm 3.3$  weeks (median 39, IQR 38.5–40; range 26–40;  $n = 19$ ).
- The mean birth weight was  $2982 \pm 693$  g (range 670–3980 g). The median was 3100 g (IQR 2800–3310 g). After exclusion of one extreme outlier (670 g), the mean birth weight was  $3111 \pm 420$  g, with a median of 3100 g (IQR 2853–3340 g; range 2500–3980 g).



The mean maternal age at delivery was  $30.4 \pm 5.6$  years (range 22–40). Maternal age showed a non-significant negative correlation with birth weight ( $r = -0.39$ ,  $p = 0.10$ ) and gestational age at delivery ( $r = -0.25$ ,  $p = 0.30$ ).

These findings suggest a trend towards lower birth weight and slightly earlier delivery in older mothers, although not statistically significant in this cohort.

### THE MAIN EVENTS RECORDED:

- 1 patient, aged 36 years, on VDZ, conceived twins via IVF. Prenatal testing revealed trisomy 21 in one fetus, and the pregnancy was electively terminated. Two weeks after the procedure, spontaneous preterm delivery occurred at 26 weeks of gestation.
- In addition, 1 newborn was diagnosed with a patent foramen ovale; the mother had been treated with VDZ during pregnancy, while her disease remained in remission.
- Biologic therapy was initiated due to disease flare during 1 pregnancy, while 2 additional pregnancies occurred during active disease. 1 patient required methylprednisolone.

## 4 Conclusion

In this retrospective single-center analysis, women with IBD who conceived while on advanced therapy were overall well managed, with the majority maintaining disease remission throughout pregnancy. Most patients adhered to treatment recommendations. Pregnancy and neonatal outcomes were comparable to those reported in the general population, with no clinically significant deviations observed. However, the relatively small cohort size represents a limitation and introduces potential bias; larger studies will be required to confirm these findings.

### Related literature

1 Torres J, et al. European Crohn's and Colitis Guidelines on Sexuality, Fertility, Pregnancy, and Lactation. *J Crohns Colitis*. 2023;17:1-27

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# IMPACT OF FREE CHOICE OF IBD CENTER ON THE WORKLOAD OF NURSES IN A TERTIARY CARE CENTER

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## BACKGROUND:

Inflammatory bowel disease (IBD) is on the rise worldwide, including Slovenia, where approximately 9,000 patients live with the condition and about 100 new cases are diagnosed each year (1). Twelve IBD centers operate in Slovenia, with the tertiary center at the University Medical Centre Ljubljana (UMC Ljubljana) managing the largest patient load. Due to patients' free choice of treatment center, the workload of nurses at the tertiary center exceeds recommended standards, raising concerns about quality and sustainability of care.

## METHODS:

A cross-sectional survey was conducted between June and August 2025 among 356 patients from other regions who sought care at UMC Ljubljana. Data were collected on patients' experiences with regional centers, motives for choosing the tertiary center, and values they prioritize in healthcare.

## RESULTS:

Nearly 40% of patients treated at UMC Ljubljana come from outside the central Slovenian region (Figure 1). Among them, 74% had never visited their regional center. Of those who had, two-thirds rated the regional center as worse, one-third as equivalent, and none as better than the tertiary center. The main reasons for choosing the tertiary center were belief in broader and better treatment (33%) and higher trust (30%) (Table 1). Patients identified professionalism, communication, timeliness, empathy, and continuity of staff as the most important aspects of care (Table 2).

## CONCLUSION:

The voluntary influx of patients into the tertiary center exceeds the international staffing standard (1 nurse per 500 patients)(2), increasing the risk of reduced quality of care and nurse burnout. This highlights a key challenge for the Slovenian healthcare system: strengthening visibility, accessibility, and professional standards of regional centers to ensure high-quality care closer to patients' homes. Adjustments to staffing policies and enhancing the reputation of regional centers could help balance workloads and support sustainable care delivery.

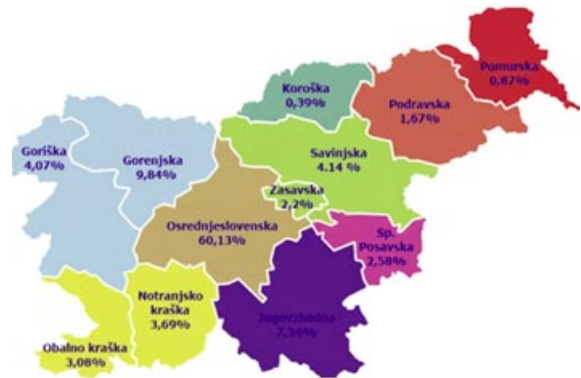


Figure 1: Regional Origin of Patients Treated at the IBD Outpatient Clinic, University Medical Centre Ljubljana (as of 31 August 2025)

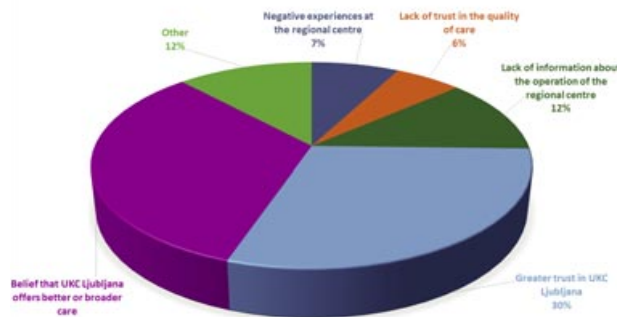


Table 1: Reasons for Choosing a Tertiary IBD Centre Over a Regional Centre

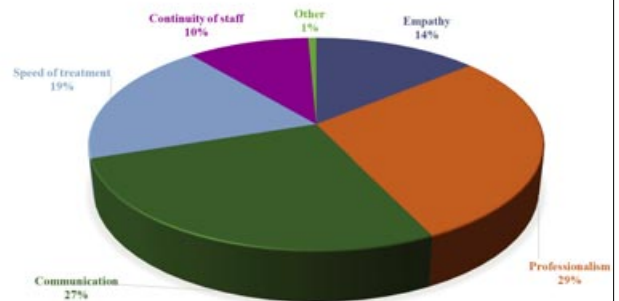


Table 2: What is most important in healthcare?

## REFERENCE:

1. Žurnal24. 9,000 people in Slovenia live with this serious disease, mostly affecting younger individuals. 23 May 2024. Available from: <https://www.zurnal24.si/zdravje/zivljenjski-stil/s-to-hudo-bolezniyo-pri-nas-zivi-9000-ljudi-prizadene-predvsem-mlaje-424256> [cited 2025 Sep 12].
2. Leary A, Punshon G. Modelling Caseload Standards for IBD Specialist Nurses in the UK. Crohn's & Colitis UK; 2017. Available from: <https://ibregistry.org.uk/wp-content/uploads/2021/11/Modelling-Caseload-for-IBD-CNS-CCUK-report-2017.pdf>

# Maintenance of IBD remission after switching from IV to SC administration of infliximab



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**Introduction:** Infliximab (IFX) was the first TNF alpha inhibitor approved for treatment of inflammatory bowel disease (IBD). Despite new advanced therapies IFX is still mainstay of treatment in perianal Crohn's disease (CD), acute severe ulcerative colitis (UC) and extraintestinal manifestations. Since 2013 biosimilars of IFX and since 2023 sc formulation of IFX have been available which contributed to cost reduction and potential relief of infusion centers.

**Methods:** We performed a prospective, observational, single center, cohort study in IBD patients treated with IFX. Serum IFX levels were measured with fluorescence immunoassay; ez-Trecker, TheraDiag, France.

**Results:** We included 40 patients, demographic data are presented in table 1, disease characteristics in table 2 and prior and baseline treatment in table 3. Persistence of clinical remission at week 24, target serum IFX levels are presented in figures 1-3 and patients' satisfaction and QoL in figure 4.

**Objective:** To switch patients from maintenance IV to SC infliximab at fixed time interval of 4 weeks between last IV and first SC injection.

Approach to switching in patients on maintenance iv IFX:

IBD patients in remission, including stable perianal disease

Time interval between i.v. and s.c. = 4 weeks

- Independent of IFX type (originator or biosimilar)
- Independent of iv dosing regime (switch to 120 mg or 240 mg sc)

Observed outcomes:

- Clinical disease activity (HBI, p-Mayo)
- Serum IFX levels
- Patient's satisfaction (TSQM-9)
- QoL (Short-IBDQ)

Table 1: Demographic data

	CD [n=28]	UC [n=12]
Gender, female, n [%]	9 [32.14%]	3 [25%]
Age, mean [SD]	42.5 [11.9]	42.5 [18.3]
Age at diagnosis, mean [SD]	27.04 [10.9]	27.58 [12.4]
Disease duration, years, median [Q1-Q3]	13.5 [0-28]	14.5 [2-28]

Table 2: Disease characteristics

	CD [n=28]	UC [n=12]
Disease localization in CD, n [%]:		
- Ileal [L1]	4 [14.29]	
- Colonic [L2]	5 [17.86]	
- Ileo-colonic [L3]	19 [67.86]	
- Upper GI [L4]	3 [10.71]	
Behaviour classification in CD, n [%]:		
- nonstricturing, nonpenetrating [B1]	4 [14.29]	
- stricturing [B2]	10 [35.71]	
- penetrating [B3]	14 [50]	
Disease extent in UC, n [%]:		
- Proctitis [E1]		0 [0]
- Left-sided [E2]		2 [16.67]
- Pancolitis [E3]		10 [83.33]
Perianal disease, n [%]:	14 [50]	1 [8.33]

Table 3: Prior and baseline treatment

	CD [n=28]	UC [n=12]
Surgery, n [%]	16 [57.14]	0 [0]
Concomitant immunomodulator, n [%]	25 [89.29]	7 [58.33]
Line of therapy, n [%]		
- first	20 [71.43]	11 [91.67]
- second	6 [21.43]	1 [8.33]
- ≥ 3	2 [7.14]	0 [0]
Prior TNF-α therapy, n [%]	7 [25]	0 [0]
Optimized iv IFX therapy, n [%]	10 [35.71]	6 [50]
Time till starting IFX, months, median [IQR]	83.5 [2-316]	53.5 [2-220]
IFX therapy duration, months, median [IQR]	60 [4-228]	71 [14-179]

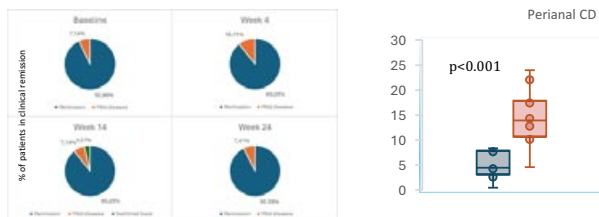


Figure 1: Persistence of clinical remission (HBI) in CD

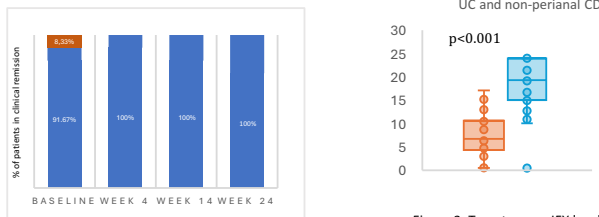


Figure 2: Persistence of clinical remission (pMayo) in UC

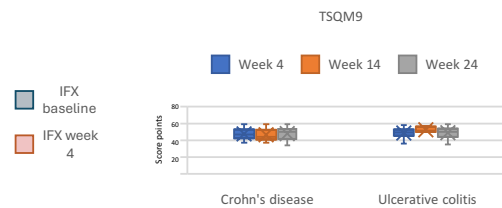


Figure 4: Patients' satisfaction and QoL

References: Balison A, Nachury M, Raymond M, et al. Effectiveness of Switching From Intravenous to Subcutaneous Infliximab in Patients With Inflammatory Bowel Disease: the REMSWITCH Study. Clin Gastroenterol Hepatol. 2023 Aug;21(8):2338-2346.e3. Smith RJ, Crocchiola L, Storey D, et al. Efficacy and Safety of Effective Switching From Intravenous to Subcutaneous Infliximab (CT-P13) A Multicentre Cohort Study. J Crohn's Colitis. 2022 Sep 8;16(9):1436-1446. Verma AM, Patel A, Subramanian S, et al. From intravenous to subcutaneous infliximab in patients with inflammatory bowel disease: a pandemic-driven initiative. Lancet Gastroenterol Hepatol. 2021 Feb;6(2):88-89. Altan R, An Y, Kim DH, et al. Re-Routing Infliximab Therapy: Subcutaneous Infliximab Opens a Path Towards Greater Convenience and Clinical Benefit. Clin Drug Investig. 2022 Jun;42(6):477-489.

**Conclusions:** Time interval 4 weeks between iv and sc IFX administration was appropriate. Target IFX conc. were reached in high number of patients at week 24. In perianal CD treatment persistence after switch to sc IFX was high at week 24. QoL and patients' satisfaction on sc was not inferior to iv administration at week 24.

# Safe Use of Biologic Therapy in IBD - The Nurse's Perspective



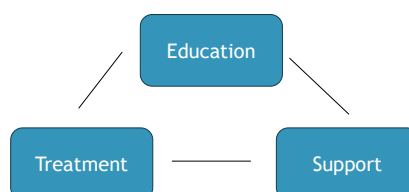
Tamara Zečevič dipl.m.s.

## Role of the Nurse



- Patient education on medication and its effects.
- Teaching proper administration technique (intravenous, subcutaneous).
- Monitoring adherence and potential issues.

## Patient Monitoring



- Baselines tests (tuberculosis, hepatitis).
- Monitoring during treatment: regular blood count, skin, lipids.
- Recognizing signs of infection and act promptly.

## Medication Administration



- IV administration: safe preparation and monitoring during infusion.
- SC administration: Correct injection/pen technique, site rotation.
- Emphasize aseptic technique and safe handling.

## Lifestyle and Self-Care



- Avoid risk foods in individualized diet.
- Moderate regular physical activity.
- Plan rest and relaxation techniques.
- Avoid smoking, alcohol and sun exposure.

## Medication Storage (Cold Chain)



- Storage at 2-8 °C. Always in original packaging, protected from light.
- Transport in cooler bag.

## Nurse's Role in Patient Support

Plays a key role in the safe use of biologic therapies, in monitoring and supporting patients and their families, and in promoting a healthy lifestyle, thereby significantly contributing to a better quality of life for patients with IBD.

# Tracing Transmural Healing in Crohn's Disease with MRI: correlation between MR enterography, laboratory findings and endoscopy

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## Introduction

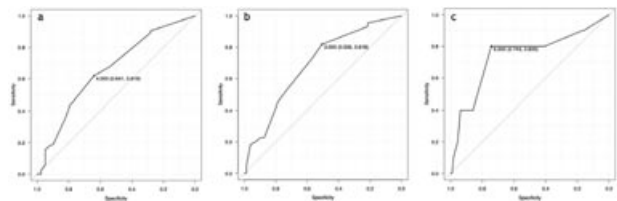
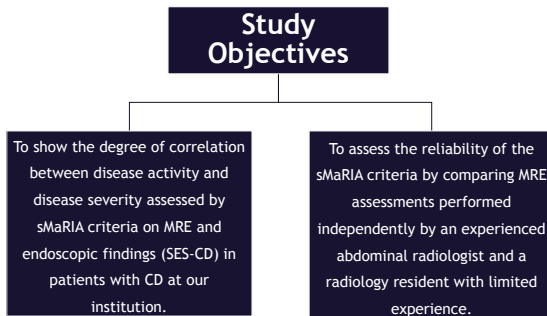
- Crohn's disease (CD) is a chronic inflammatory condition of the gastrointestinal tract, characterized by a relapsing and remitting course. It is a progressive disorder that leads to cumulative bowel damage and long-term disability.
- Magnetic resonance enterography (MRE) is an important tool for diagnosis and management of patients with CD. Several radiological scoring systems are used to assess CD on MRE, primarily to quantify inflammation, guide treatment and monitor disease. Magnetic Resonance Index of Activity (MaRIA) and its simplified form sMaRIA being the most widely used and validated systems.

## Results

SES-CD and sMaRIA score	Spearman's ρ value	Interpretation
Total	ρ=0.344	Moderate, statistically significant positive correlation
Terminal ileum	ρ=0.476	Moderate, statistically significant positive correlation
Ascending colon	ρ=0.180	No statistically significant correlation
Transverse colon	ρ=0.435	Moderate, statistically significant positive correlation
Left colon and sigmoid	ρ=0.479	Moderate, statistically significant positive correlation
Rectum	ρ=0.234	Weak, statistically significant positive correlation

### Correlation of endoscopic SES-CD score with radiological MRE sMaRIA score

- Strongest segmental correlations in
  - Terminal ileum
  - Transverse colon
  - Left colon/sigmoid colon
- Rectal segment
  - Weak but significant
- Ascending colon
  - Weak, non-significant



### sMaRIA score prediction of the activity/severity of disease based on the global SES-CD score - sMaRIA showed:

- substantial discriminative ability to distinguish between active and inactive endoscopic activity
- substantial discriminative ability to distinguish between mild and moderate-to-severe endoscopic activity
- moderate discriminative ability to distinguish between severe and non-severe endoscopic activity

## Methods

- We retrospectively evaluated 121 patients with a confirmed diagnosis of CD who underwent both MRE and endoscopy at our institution less than six months apart.
- Patients were selected from our institutional database based on the availability of complete clinical, endoscopic, and radiologic records.
- MREs were independently scored by an abdominal radiologist and a radiology resident using the sMaRIA score for each intestinal segment, while endoscopic findings were reviewed and evaluated using the SES-CD.

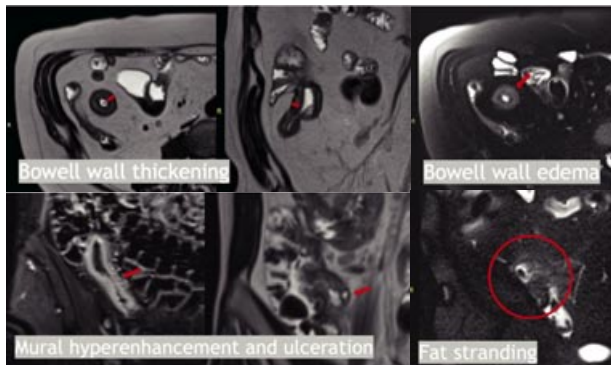
### Interobserver variability of the sMaRIA between a radiology specialist and resident

sMaRIA	Kappa statistics, p<0.001		ICC, p<0.001	
	Kappa value	Interpretation	ICC value, 95% CI	Interpretation
Total	κ=0.738	Statistically significant; almost perfect agreement	0.881-0.921	Strong interobserver correlation

Interobserver variability revealed consistently strong agreement between the radiology specialist and the resident across all intestinal segments.

## Signs of disease activity on MRE

Simplified MaRIA (sMaRIA)			
Bowel wall thickness	Bowel wall edema	Fat stranding	Ulcerations



## Conclusion

- With transmural healing being an emerging treatment target in Crohn's disease → greater importance of cross-sectional imaging
- Endoscopy only assesses mucosal healing; MRE and intestinal ultrasound capture full bowel wall and complications
- Non-invasive imaging is gaining importance for monitoring deep disease activity
- There's a need for simple, reliable MRE scoring systems like sMaRIA for routine clinical use

Our study demonstrated moderate to substantial sMaRIA ability to accurately predict CD activity using SES-CD as a reference. The interrater reliability between a radiology resident and an expert was excellent, supporting sMaRIA as a suitable clinical practice instrument.

# Ustekinumab biosimilar for Crohn's disease – patients' perspective



Grilič Urška<sup>1</sup>, Klobasa Karolina<sup>1</sup>, Kramberger Alenka<sup>1</sup>, Nikolić Sara<sup>1</sup>, Bukovnik Nejc<sup>1</sup>, Velkovski Cvetanka<sup>1</sup>, Pernek Robert<sup>1</sup>, Ocepek Andreja<sup>1,2</sup> for IBD Team, <sup>1</sup>Dept. for Gastroenterology, University Division for Internal Medicine, University Medical Centre Maribor, Slovenia; <sup>2</sup>Medical Faculty, University of Maribor, Slovenia

**Introduction:** Since august 2024 ustekinumab (UST) biosimilars have become available for treatment of Crohn's disease (CD) in Slovenia. We performed a prospective single centre cohort study on patient's willingness to switch from originator to biosimilar UST and factors influencing the choice of sc applicator type.

**Results:** 43 CD patients treated with UST were included. 22 (51.2%) were female, median age 52 (range 23-79) years, median duration of CD was 16 (range 2-40) years. Lines of therapy with UST are shown in figure 1. 11 (25.6%) patients were anti-TNF naïve. In 26 (60.5%) patients UST dosing was optimised, and 18 (39,5%) patients were treated with standard UST dose.

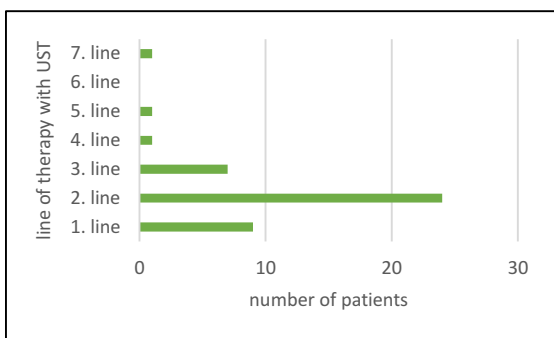


Figure 1: Line of therapy with UST

When offered biosimilar 15 (34.9%) patients agreed to switch and 28 (65.1%) wanted to continue treatment with originator drug. Regarding payment, only 12 (27.9%) patients were willing to pay a possible surcharge to continue treatment with originator UST. Patients were asked which aspects of sc application were most important to them when deciding on sc applicator form, answers are shown in table 1.

31 (73.8%) patients found application with the pen more suitable, 8 (19.1%) preferred the syringe, 3 (7.1%) had no preference (figure 2).

When asked which applicator would they wish to use in the future, 29 (67.4%) patients opted for the pen, 2 (4.7%) for the syringe and 12 (27.9%) did not mind either way (figure 3).

**Methods:** All patients with CD treated with originator UST were offered a switch to biosimilar for subcutaneous (sc) application. Data on comparable effectiveness and safety of biosimilars was explained to patients in written form in accordance with EMA statement and opinion of The Health Insurance Institute of Slovenia. Patients completed a survey questionnaire regarding sc application, factors influencing the choice of sc applicator type and their decision regarding switching to biosimilar.

Table 1: Factors influencing the choice of applicator type (multiple answers were possible)

Factor	n (%)
Needle is not visible	12 (27.9%)
Easy preparation	22 (51.2%)
Drug solution is clearly visible during application	6 (13.9%)
Easy handling	30 (69.8%)
Sound signal	14 (32.6%)
Safe disposal	14 (32.6%)
Less painful application	20 (46.5%)
Price	1 (2.3%)
Other factors: Effectiveness	2 (4.6%)
Smaller volume of solution	1 (2.3%)

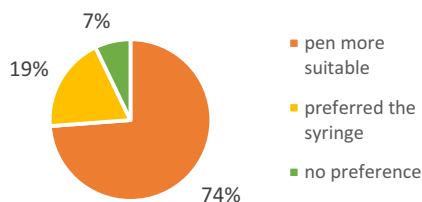


Figure 2: Patients' preferences regarding applicator type

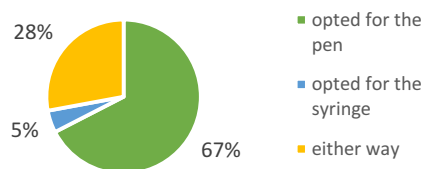


Figure 3: Patients' decision on future applicator use

**Conclusions:** Almost 2/3 of our CD patients treated with UST did not agree to switch from originator to biosimilar, despite the recommendations of healthcare agencies and expected financial savings. Most patients chose the pen, the lack of which is the leading drawback of currently available biosimilars. Top three factors influencing patients' choice of applicator type were easy handling, easy preparation and less painful application. Additional efforts must be invested in informing patients of the efficacy, safety and expected benefits of biosimilars.

**References:** D'Amico F, Peyrin-Biroulet L, Danese S. Benefits of Biosimilars in the Management of Patients with Inflammatory Bowel Disease: An International Survey. *J Clin Med.* 2024 May 24;13(11):3069. Aljabri A, Soliman GM, Ramadan YN, et al. Biosimilars versus biological therapy in inflammatory bowel disease: challenges and targeting strategies using drug delivery systems. *Clin Exp Med.* 2025 Apr 5;25(1):107. Bhat S, Kane SV. Clinical Guide to Navigating the Landscape of Biosimilars for Inflammatory Bowel Disease. *Gastroenterol Hepatol (N Y).* 2024 Jul;20(7):376-82. Angyal A, Bhat S. Biosimilars in IBD: What Every Clinician Needs to Know. *Curr Gastroenterol Rep.* 2024 Mar;26(3):77-85.

## INSTRUCTIONS TO AUTHORS FOR THE PREPARATION OF PAPERS

Slovenian Journal of Gastroenterology / Gastroenterolog is an externally peer-reviewed professional journal that is published three to four times a year. The journal publishes research articles, case reports, and professional articles in the field of gastrointestinal diseases and internal medicine, as well as national guidelines.

### 1.0 General principles

The editors accept contributions that have not yet been published and will not be published elsewhere. Exceptionally, the editors may accept for publication an already published article for which it is useful to reach the target readership (e. g. clinical guidelines and recommendations), whereby the authors must inform the editors of this when submitting the article and ensure the agreement of the editor-in-chief of the journal where the article has already been published.

**Research articles and case reports** should be written in **English** and must be accompanied by a translation of the title of the article, Abstract and Keywords (such as Izleček and Ključne besede) in Slovenian. For foreign writers, the Abstract and Keywords will be translated into Slovenian by the editorial office of the magazine.

**Professional and overview articles and national guidelines** should be written in **Slovenian**, as they are intended for domestic readers. Only the Abstract and Keywords should be translated into English (as Abstract and Keywords).

### 2.0 Designing the contribution

#### 2.1. Structure of the contribution

General guidelines for writing should follow the guidelines of the British Medical Association (BMJ Journal). Instructions can be found on the BMJ Journals website at <https://authors.bmj.com/>. The font in the paper should be Times New Roman, font size of 12 pt, line spacing of 1.5 and margin width of 2.5 cm. Avoid abbreviations. If they are necessary, they should be listed when they first appear. [Example: Chronic Inflammatory Bowel Disease (IBD)]. We recommend that you use the document 'Gastroenterolog - Article template.docx' to write the paper, which already contains all the settings mentioned above and the basic recommended styles for creating the document, as well as all the required elements of the paper's structure. The template is available on the website with the [Instruction to Authors](#) or you can request a template from the editors via email at [editor@slojgastroenterology.com](mailto:editor@slojgastroenterology.com).

#### 2.2. Prepare and submit contributions with the following items:

- a. Accompanying letter,
- b. Cover, home page,
- c. Extract,
- d. The main text,
- e. Tables and figures,
- f. References,
- g. Authors' statement.

##### a. Accompanying letter

Briefly explain the **topic** of your paper in the cover letter. You also write here if the work has already been published in partial form at a professional meeting. In the case of contributions dealing with research on humans or animals, the appropriate consent of the competent committee or institution must be stated in the chapter Methods, that the research is ethically acceptable by the principles of the Declaration of Helsinki or other important documents dealing with the ethics of biomedical research.

##### b. Cover/The Title page

The Cover/Title page should contain a **Slovenian and English title**. The main message of the article should be evident from the title. List all **authors** with their academic and professional titles and the full address of the institution where each author comes from and where the work was created. The **leading author** is placed last and is separated by the word 'and'. As a rule, the **first author** is one, but if there are two, the names of

both first authors should be underlined. In this case, the note 'both authors equally contributed' should also be added to the title page. As a rule, **correspondence** is bound to the lead author. Exceptionally, it can be linked to the first author. The title page should clearly state to which author the correspondence will be attached (i. e. who will be the corresponding author). In addition to the academic and professional title and the full address of the institution from which the corresponding author comes, also indicate his e-mail address, to which the authors can contact, if necessary, regarding additional questions related to the contribution.

##### c. Extract

Write the **main message of the article** in the abstract. It should be written simply, in well-understood language. It should be written in such a way that it can be understood by a wide range of readers. Research articles should have a structured abstract. Other articles (case reports, national guidelines) should have an unstructured abstract.

##### - Instructions for structured extract:

It can contain up to 250 words. Abbreviations are undesirable and prohibited in the Conclusions subsection. In the subsection Abstract, mention only the new findings. The Abstract has the following chapters: Background, Aim, Material and Methods, Results, Conclusions, and Keywords. The Abstract and Keywords must be translated into Slovenian. The translation should be accurate.

##### Structured extract chapters:

###### Background:

Describe the problem the work addresses. Explain what is unknown in the field of work. You list the dilemmas your work tackles.

###### Aim:

Describe the purpose of the work, i. e. what you are trying to clarify or examine in your article and it is directly linked to the Background chapter.

###### Material and Methods:

Describe the methods you used in your article. This chapter should be kept short, as the careful reader can read them later in the article.

###### Results:

Give this chapter the most space. Give results that are relevant to understanding the main message of the article. Write the results exactly (average value with standard deviation or confidence interval, median value with interquartile range ...). Add statistical significance or confidence interval values.

###### Conclusions:

Briefly state the main message and conclusion of your article. You write only those conclusions that come from your results. Abbreviations are prohibited in this section.

###### Keywords:

Enter 4-7 keywords (do not use words that are in the title, as search engines already automatically recognize them).

##### - Instructions for unstructured extract:

The unstructured abstract should contain up to 250 words. Do not divide the unstructured extract into subsections; write it as a unified text. In this short text, try to describe your main findings or the message of your article. The abstract must be translated into Slovenian. In the end, you list keywords in English and Slovenian.

##### d. Main text:

The main text of **research articles** should **have the following chapters**: Introduction, Materials and Methods, Results, and Discussion. The authors can create subchapters within these chapters at their judgement if this achieves greater transparency.

**The structure of other articles** (case studies, national guidelines, etc.) is **not prescribed** and the writer can adapt it according to their needs in the way that is most suitable for a specific article.

## Research paper chapters:

### Introduction:

Explain the problem the article is addressing. Note that this is for readers with a lot of prior knowledge, so there is no need to explain what we expect our readers to know well. Present the latest findings from the literature and any shortcomings. At the end of the introduction, in a separate paragraph, explain the purpose of your work.

### Materials and Methods:

You describe in detail the methods and the patients studied. We recommend dividing the article into sub-chapters, as this makes the article much easier to read. Describe statistical methods. You describe and properly cite the permissions of the ethics committee. Describe the characteristics of the research design, the sample you are studying (e. g. randomization, double-blind trial, cross-over testing, placebo testing, etc.), standard values for tests, and temporal relationship (prospective, retrospective study).

### Results:

Describe accurately and analyse with appropriate statistical tests. It is desirable to display as many results as possible in the form of tables and figures. Tables and figures should, if possible, not contain abbreviations. They can be in colour, as they will be so easily visible in electronic form. Also, note that the printed version will be black and white. Insert tables and figures in the text of the paper in a meaningful way – number them separately in order, each table and figure must be referred to in the text. Each table and figure should have a title in Slovenian and English.

### Discussion:

Contains comments on all your results. Compare your results with the literature and try to explain any differences between your results and those of others. In the last paragraph, you summarize the main message and indicate further ways of exploring your research problem.

## e. Tables and figures

Tables and figures should be made in such a way that the reader can understand them without reading the entire article. If possible, they should be without abbreviations. If abbreviations are really necessary, they should be explained at the foot of the table or figure.

### Tables:

Each table should have its title, which you write above the table. If the table needs notes, write them at the foot of the table. Tables are inserted into the text of the article and are marked by type, according to the order of appearance in the text (Slovene articles: Tabela 1, Tabela 2, ...; English articles: Table 1, Table 2, Table 3 ...). Tables should be formatted as tables in a text editor (e. g. via the Insert Table option). You can also download them from Excel as a table. It is important that you DO NOT download them as an image, as in this case, we cannot format them. In addition to the Slovenian table title, Slovenian articles should also have an English translation of the table title (so that foreigners can understand it). English articles do not need a translation of the title of the table into Slovenian.

### Figures:

Attach images as separate files. Images should be in high resolution format (e. g. .jpg or .tif in 300 dpi resolution). In the text, indicate where a particular image should appear. You do this by stating the serial number of the image in parentheses at the desired place in the text (Slovene articles: Slika 1, Slika 2 ...; English articles: Figure 1, Figure 2 ...). Each image needs a caption (title and brief description). Write the text for each picture in this chapter for each picture separately. In addition to the Slovenian text accompanying the picture, Slovenian articles should also have an English translation of the text accompanying the picture (so that foreigners can understand it). English articles do not need a translation of the text accompanying the picture into Slovenian.

## f. References:

Any citation of the claim or findings of others must be supported by a reference, which is referred to in the text by a sequential Arabic number in parentheses. For citations, use the BMJ reference style. Detailed instructions and citation examples can be found on their 'BMJ Author Hub' website at the following link: <https://authors.bmj.com/writing-and-formatting/formatting-your-paper/>. We recommend using a literature citation tool (e.g.: Zotero, Mendeley, EndNote ...), as this way the possibility of error is smaller. Use the BMJ style in the citation tool. Before submitting the paper, please check manually if the citations are by the BMJ instructions. When citing, please cite the first three authors. Add 'et al.' at the end if there are more authors.

Some examples of correct citations (more on the BMJ website):

### Article published in a printed magazine:

1. Koziol-Mclain J, Brand D, Morgan D, et al. Measuring injury risk factors: question reliability in a statewide sample. *Inj Prev* 2000; 6:148-50.

### Article published in the online version of the magazine (which has not yet been published in print):

2. Dark P, Dunn G, Chadwick P, et al. The clinical diagnostic accuracy of rapid detection of healthcare-associated bloodstream infection in intensive care using multi-pathogen real-time PCR technology. *BMJ Open* 2011; 1:e000181. doi: 10.1136/bmjopen-2011-000181.

### Article in the supplement:

3. Mugosa A, Cizmovic M, Lakovic T, et al. Accelerating progress on effective tobacco tax policies in Montenegro. *Tobacco Control* 2020; 29:s293-s299.

### Extract:

4. Bricca A, Swithenbank Z, Scott N, et al. 21 Predictors of recruitment in randomized controlled trials of smoking cessation: meta-regression analysis from the ICSMOKE systematic review project. Abstract competing for the 'Doug Altman scholarship'. *BMJ Evidence-Based Medicine* 2019; 24: A52-A53.

### Book:

5. Howland J. Preventing Automobile Injury: New Findings from Evaluative Research. Dover, MA: Auburn House Publishing Company 1988:163-96.

### Book Chapter:

6. Nagin D. General deterrence: a review of the empirical evidence. In: Blumstein A, Cohen J, Nagin D, eds. Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates. Washington, DC: National Academy of Sciences 1978:95-139.

### Electronic resource:

7. Extraintestinal Complications of IBD. Crohn's Colitis Found. <https://www.crohnscolitisfoundation.org/what-is-ibd/extraintestinal-complications-ibd> (accessed 7 Dec 2022).

## g. Authors' statement

The contribution intended for publication must be accompanied by the 'Statement of the authors of the contribution', which can be found on the website Declaration of Authors or you can ask the editors for a template via email [editor@slojgastroenterology.com](mailto:editor@slojgastroenterology.com). The statement should be signed by all authors (by hand or digitally), and the completed and signed statement should be attached to the article when you send it to the editors for review. Instructions for completing and sending the declaration can be found in the declaration template and on the website.

## 3.0 Submission of contributions

Send contributions by e-mail to:

[editor@slojgastroenterology.com](mailto:editor@slojgastroenterology.com)

or to the address:

Slovenian Journal of Gastroenterology / Gastroenterology editorial office, Japljeva ulica 2, 1000 Ljubljana, Slovenia.

**Attach all the necessary attachments listed in the instructions to the authors of the paper.**

## 4.0 Editorial work

The editor-in-chief reviews each submitted contribution and decides on inclusion in the editorial process. Contributions included in the editorial process are forwarded to other members of the editorial board, who take care of technical and stylistic corrections. The revised paper is then returned to the authors for review. The content of the paper is evaluated by two expert reviewers who are unknown to the authors, and the expert reviewers are also not aware of the identity of the authors. The contribution is also reviewed by proofreaders for the Slovenian and English languages. After finishing the editorial work, the author gets his work reviewed, approved and corrections taken into account. Before publication, the author also receives a working pdf file with a break of the designed article (brush print) by e-mail, but at this stage, we only take into account corrections of typographical errors and warnings about possible missing or inappropriately placed images or tables or inappropriate references to elements contained in the paper. The final version of the article may deviate slightly due to possible additional adjustments to the fold. The answer with any comments must be returned within two days, otherwise, it will be understood that the author agrees with the corrections and breaks in the paper.

## NAVODILA AVTORJEM ZA PRIPRAVO PRISPEVKOV

**Slovenian Journal of Gastroenterology/Gastroenterolog** je zunanje recenzirana strokovna revija, ki izhaja tri do štirikrat letno. V reviji so objavljeni raziskovalni članki, prikazi primerov, strokovni članki s področja bolezni prebavil in interne medicine ter nacionalne smernice.

### 1.0 Splošna načela

Uredništvo sprejema prispevke, ki še niso bili objavljeni in ne bodo objavljeni kje drugje. Izjemoma lahko uredništvo sprejme v objavo že objavljen prispevek, za katerega je koristno, da doseže ciljni krog bralstva (npr. klinične smernice in priporočila), pri čemer morajo avtorji to uredništvu sporočiti ob oddaji prispevka ter zagotoviti pristanek odgovornega urednika revije, kjer je prispevek že bil objavljen.

**Raziskovalni članki in prikazi primerov** naj bodo napisani v **angleškem jeziku**, pri čemer jih mora obvezno spremljati prevod naslova ter Abstracta in Keywords (kot Izvleček in Ključne besede) v slovenščini. Tujim piscem bomo Abstract in Keywords prevedli v slovenski jezik v uredništvu revije.

**Strokovni in pregledni članki in nacionalne smernice** naj bodo napisani v **slovenščini**, saj so namenjeni domačim bralcem. V angleščino naj bodo prevedeni samo Izvleček in Ključne besede (kot Abstract in Keywords).

### 2.0 Oblikovanje prispevka

#### 2.1. Struktura prispevka

Splošna navodila za pisanje naj sledijo navodilom Britanskega medicinskega združenja (BMJ Journal). Navodila najdete na spletnem mestu BMJ Journals na povezavi <https://authors.bmj.com/>.

Pisava v prispevku naj bo Times New Roman, velikost črk 12 pt, razmik med vrsticami 1,5 in širina robov 2,5 cm. Kraticam se izogibajte. Če so nujne, naj bodo izpisane, ko se prvič pojavijo. [Primer: Kronična vnetna črevesna bolezen (KVČB)].

Priporočamo, da za pisanje prispevka uporabite Wordov dokument **Gastroenterolog–Predloga za prispevek.docx**, ki že vsebuje vse zgoraj navedene nastavitve in hkrati tudi osnovne priporočene stile ter elemente za oblikovanje strukture prispevka. Predloga je dosegljiva tudi na članski spletni strani **Navodila avtorjem** lahko pa za predlogo zaprosite uredništvo revije preko elektronske pošte [editor@slojgastroenterology.com](mailto:editor@slojgastroenterology.com).

#### 2.2. Prispevke pripravite in oddajte z naslednjimi elementi:

- a. Spremni dopis,
- b. Naslovna stran,
- c. Izvleček,
- d. Glavno besedilo,
- e. Tabele in slike,
- f. Reference,
- g. Izjava avtorjev.

##### a. Spremni dopis

V spremnem dopisu na kratko razložite **temo** vašega prispevka. Tukaj tudi zapišete, če je bilo delo že objavljeno v delni obliki na kakšnem strokovnem srečanju. Pri prispevkih, ki obravnavajo raziskave na ljudeh ali živalih mora biti v poglavju Metode navedeno ustrezno soglasje pristojne komisije oziroma ustanove, da je raziskava etično sprejemljiva v skladu z načeli Helsinške deklaracije oziroma ostalimi pomembnimi dokumenti, ki obravnavajo etičnost biomedicinskih raziskav.

##### b. Naslovna stran:

Naslovna stran naj vsebuje **slovenski in angleški naslov**. Iz naslova mora biti razvidno glavno sporočilo članka.

Navedite vse **avtorje** s svojimi akademskimi in strokovnimi naslovi ter popoln naslov ustanove od koder posamezen avtor prihaja in kjer je delo nastalo.

**Vodilni avtor** je postavljen na zadnje mesto in je ločen z besedico "in" oz. "and".

**Prvi avtor** je praviloma eden, če pa sta dva, naj bosta imeni obeh prvih avtorjev podčrtana. V tem primeru naj bo na naslovni strani tudi dodana opomba 'prva avtorja sta prispevala enakovredno' ('both authors equally contributed').

**Korespondenca** je praviloma vezana na vodilnega avtorja. Izjemoma je lahko vezana na prvega avtorja. Na naslovni strani naj bo jasno zapisano, na katerega avtorja bo vezana korespondenca (torej kdo bo korespondenčni avtor). Poleg akademskega in strokovnega naslova ter popolnega naslova ustanove od koder korespondenčni avtor prihaja, navedite tudi njegov e-mail naslov, na katerega se lahko avtorji po potrebi obrnejo glede dodatnih vprašanj v zvezi s prispevkom.

#### c. Izvleček

V izvlečku napišite **glavno sporočilo članka**. Napisano naj bo preprosto, v dobro razumljivem jeziku. Napisano naj bo tako, da ga razume širok krog bralcev.

**Raziskovalni članki** naj imajo **strukturiran** izvleček.

Ostali članki (prikazi primerov, nacionalne smernice) pa naj imajo **nestrukturiran** izvleček.

#### – Navodila za strukturiran izvleček:

Obsega lahko do 250 besed. Kratice so nezaželeni, v podpoglavju Zaključki pa prepovedane. V izvlečku navedite predvsem nove ugotovitve. Izvleček ima naslednja poglavja: Izhodišče (Background), Namen (Aim), Material in metode (Material and Methods), Rezultati (Results), Zaključek (Conclusions), Ključne besede (Keywords).

Izvleček (Abstract) in Ključne besede (Keywords) je potrebno prevesti v slovenščino. Prevod naj bo natančen.

#### Poglavja strukturiranega izvlečka:

##### Izhodišče (Background):

Opišite problem, ki ga naslavlja delo. Razložite, kaj je neznan na področju dela. Navedete dileme, ki se jih loti vaše delo.

##### Namen (Aim):

Opišite namen dela, torej kaj poskušate v svojem članku razjasniti oziroma proučiti in se navezuje neposredno na poglavje Izhodišče.

##### Material in metode (Material and Methods):

Opišite metode, ki ste jih uporabili v svojem članku. To poglavje naj bo kratko, saj jih natančen bralec lahko prebere kasneje v članku.

##### Rezultati (Results):

Temu poglavju namenite največ prostora. Podajte rezultate, ki so pomembni za razumevanje glavnega sporočila članka. Rezultate napišite natančno (povprečna vrednost s standardnim odklonom ali intervalom zaupanja, mediana vrednost z interkvartilnim razponom ...). Dodajte vrednosti statistične signifikance oziroma intervala zaupanja.

##### Zaključek (Conclusions):

Na kratko navedite glavno sporočilo in ugotovitev svojega članka. Napišete samo tiste zaključke, ki izvirajo iz vaših rezultatov. Kratice so v tem delu prepovedane.

##### Ključne besede (Keywords):

Navedite 4-7 ključnih besed (besed, ki so v naslovu ne uporabite, saj te iskalniki že avtomatsko prepoznajo).

#### – Navodila za nestrukturiran izvleček:

Nestrukturiran izvleček naj vsebuje do 250 besed. Nestrukturiranega izvlečka ne delite na podpoglavja, ampak ga zapišete kot enotno besedilo. V tem kratkem besedilu poskušajte opisati svoje glavne najdbe oz. sporočilo vašega članka.

Izvleček je potrebno prevesti v angleščino.

Na koncu navedete Ključne besede v slovenskem in angleškem jeziku (Keywords).

#### d. Glavno besedilo:

Glavno besedilo **raziskovalnih člankov** naj ima naslednja poglavja: *Uvod (Introduction)*, *Material in metode (Materials and Methods)*, *Rezultati (Results)*, *Razprava (Discussion)*.

Znotraj teh poglavij lahko avtorji po svoji presoji naredijo podpoglavja, če s tem dosežejo večjo preglednost.

**Struktura ostalih člankov** (prikazi primerov, nacionalne smernice, ...) **ni predpisana** in jo lahko pisec prilagodi po svoji potrebi na način, ki je najbolj primeren za določen članek.

### **Poglavja raziskovalnega članka:**

#### *Uvod (Introduction):*

Razložite problem, ki se ga članek loteva. Upoštevajte, da gre za bralce z veliko predhodnega znanja, zato ni potrebno razlagati tistega kar pričakujemo, da naši bralci dobro poznajo. Predstavite zadnja dognanja iz literature in morebitne pomanjkljivosti. Na koncu uvoda v ločenem odstavku razložite kakšen je namen vašega dela.

#### *Material in metode (Materials and Methods):*

Natančno opišete metode in proučevane bolnike. Priporočamo delitev v podpoglavja, saj tako močno olajšate branje članka. Opišete statistične metode. Opišete in ustrezno citirate dovoljenja etične komisije. Opišete značilnosti izvedbe raziskave, vzorec ki ga proučujete (npr. randomizacijo, dvojno slepi poskus, navzkrižno testiranje, testiranje s placebom, itd.), standardne vrednosti za teste, časovni odnos (prospektivna, retrospektivna študija).

#### *Rezultati (Results):*

Opišete natančno in analizirajte z ustreznimi statističnimi testi. Zaželeno je, da čim več rezultatov prikažete v obliki tabel in slik. Tabele in slike naj, če je le mogoče, ne vsebujejo kratic. Lahko so barvne, saj bodo tako dobro vidne v elektronski obliki. Upoštevajte pa tudi, da bo tiskana verzija črno-bela. Tabele in slike smiselno vstavite v besedilo prispevka – oštevilčite jih ločeno po vrstnem redu, na vsako tabelo in sliko se je treba sklicevati v besedilu. Vsaka tabela in slika naj imata naslov v slovenskem in angleškem jeziku.

#### *Razprava (Discussion):*

Vsebuje komentarje vseh vaših rezultatov. Svoje rezultate primerjate z literaturo in poskušajte razložiti morebitne razlike med svojimi rezultati in rezultati drugih. V zadnjem odstavku povzamete glavno sporočilo in nakazete nadaljnje poti raziskovanja svojega raziskovalnega problema.

### **e. Tabele in slike**

Tabele in slike naj bodo narejene na tak način, da jih bo bralec razumel brez branja celotnega članka. Če je le mogoče, naj bodo brez kratic. Če so kratice res nujne, naj bodo razložene ob vznožju tabele ali slike.

#### *Tabele (Tables):*

Vsaka tabela naj ima svoj naslov, ki ga zapišete nad tabelo. V primeru, da tabela potrebuje opombe, jih zapišete v vznožje tabele. Tabele so vstavljene v besedilo članka in so označene po vrsti, glede na vrstni red pojavljanja v besedilu (slovenski članki: Tabela 1, Tabela 2, ...; angleški članki: Table 1, Table 2, Table 3 ...). Tabele naj bodo oblikovane kot tabele v urejevalniku besedila (npr. preko opcije Insert Table). Lahko jih tudi prenesete iz programa Excel kot tabelo. Pri tem je pomembno, da jih NE prenesete kot sliko, saj jih v tem primeru ne moremo oblikovati. Slovenski članki naj imajo poleg slovenskega naslova tabele tudi angleški prevod naslova tabele (da ga lahko razumejo tuji). Angleški članki ne potrebujejo prevoda naslova tabele v slovenščino.

#### *Slike (Figures):*

Slike priložite kot ločene datoteke. Slike naj bodo v formatu visoke resolucije (npr. .jpg ali .tif v resoluciji 300 dpi). V tekstu jasno označite, kje naj se pojavi določena slika. To storite tako, da v oklepaju na zelenem mestu v tekstu, navedete zaporedno številko slike (slovenski članki: Slika 1, Slika 2, ...; angleški članki: Figure 1, Figure 2 ...). Vsaka slika potrebuje besedilo k sliki (naslov in kratko razlago). Besedilo k sliki zapišete v tem poglavju za vsako sliko posebej. Slovenski članki naj imajo poleg slovenskega besedila k sliki tudi angleški prevod besedila k sliki (da ga lahko razumejo tuji). Angleški članki ne potrebujejo prevoda besedila k sliki v slovenščino.

### **f. Reference:**

Vsako navajanje trditve ali dognanj drugih morate podkrepiti z referenco, na katero se v besedilu sklicujete z zaporedno arabsko številko v oklepaju. Za citiranje uporabite stil citiranja Britanskega zdravniškega združenja (ang. BMJ reference style). Natančna navodila in primere citiranja najdete na njihovi spletni strani 'BMJ Author Hub' oz. na naslednji povezavi: <https://authors.bmj.com/writing-and-formatting/formatting-your-paper/>. Priporočamo uporabo orodja za citiranje literature (npr.: Zotero, Mendeley, EndNote ...), saj je tako možnost napake manjša. V orodju za citiranje uporabite slog 'BMJ'. Pred oddajo prispevka prosimo preverite še ročno, če so citati v skladu z navodili 'BMJ'. Pri citiranju navedete prve tri avtorje. Če je avtorjev več dodate na koncu 'et al'.

Nekateri primeri pravilnega citiranja (več na spletni strani 'BMJ'):

#### *Članek objavljen v tiskani reviji:*

1. Koziol-McLain J, Brand D, Morgan D, et al. Measuring injury risk factors: question reliability in a statewide sample. *Inj Prev* 2000; 6:148-50.

#### *Članek objavljen v spletni verziji revije (ki še ni objavljen v tiskani obliki):*

2. Dark P, Dunn G, Chadwick P, et al. The clinical diagnostic accuracy of rapid detection of healthcare-associated bloodstream infection in intensive care using multipathogen real-time PCR technology. *BMJ Open* 2011; 1:e000181. doi: 10.1136/bmjopen-2011-000181.

#### *Članek v suplementu:*

3. Mugosa A, Cizmovic M, Lakovic T, et al. Accelerating progress on effective tobacco tax policies in Montenegro. *Tobacco Control* 2020; 29:s293-s299.

#### *Izvleček:*

4. Bricca A, Swithenbank Z, Scott N, et al. 21 Predictors of recruitment in randomised controlled trials of smoking cessation: meta-regression analyses from the IC-SMOKE systematic review project. Abstract competing for the 'doug altman scholarship'. *BMJ Evidence-Based Medicine* 2019; 24:A52-A53.

#### *Knjiga:*

5. Howland J. Preventing Automobile Injury: New Findings From Evaluative Research. Dover, MA: Auburn House Publishing Company 1988:163-96.

#### *Poglavje v knjigi:*

6. Nagin D. General deterrence: a review of the empirical evidence. In: Blumstein A, Cohen J, Nagin D, eds. Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates. Washington, DC: National Academy of Sciences 1978:95-139.

#### *Elektronski vir:*

7. Extraintestinal Complications of IBD. Crohns Colitis Found. <https://www.crohnscolitisfoundation.org/what-is-ibd/extraintestinal-complications-ibd> (accessed 7 Dec 2022).

### **g. Izjava avtorjev**

Prispevku, namenjenemu za objavo, mora biti priložena 'Izjava avtorjev prispevkov', ki jo najdete na spletni strani Izjava avtorjev ali pa za predlogo zaprosite uredništvo preko e-pošte [editor@sljogastroenterology.com](mailto:editor@sljogastroenterology.com).

Izjavo naj podpisajo vsi avtorji (lastnoročno ali digitalno), izpolnjeno in podpisano izjavo pa priložite članku, ko ga pošiljate uredništvu v recenzijo. Navodila za popolnito in pošiljanje izjave se nahajajo v predlogi izjave in na spletni strani.

### **3.0 Oddaja prispevkov**

Prispevke pošljite po elektronski pošti na naslov:

[editor@sljogastroenterology.com](mailto:editor@sljogastroenterology.com)

ali na naslov

Uredništvo Slovenian Journal of Gastroenterology / Gastroenterolog  
Japljeva ulica 2, 1000 Ljubljana

**Prispevku priložite vse potrebne priloge našete v navodilih avtorjem.**

### **4.0 Uredniško delo**

Odgovorni urednik vsak oddani prispevek pregleda in se odloči o uvrstitvi v uredniški postopek. Prispevke, uvrščene v uredniški postopek, posreduje drugim članom uredniškega odbora, ki poskrbijo za tehnične in slogovne popravke. Popravljen prispevek nato vrnejo avtorjem v pregled. Vsebino prispevka ocenita dva strokovna recenzenta, ki ju avtorji ne poznajo, prav tako strokovna recenzenta nista seznanjena z identiteto avtorjev. Prispevek pregledata tudi lektorja za slovenski in angleški jezik. Po končanem uredniškem delu dobi avtor svoje delo v pregled, odobritev ter upoštevanje popravkov.

Pred objavo avtor dobi po elektronski pošti v vpogled tudi delovno pdf datoteko s prelomom oblikovanega članka (krtačni odtis), vendar na tej stopnji upoštevamo samo popravke tiskovnih napak in pa opozorila na morebiti manjkajoče ali neustrezno postavljene slike ali tabele ali neustrezne sklice na elemente, vsebovane v prispevku. Končna verzija članka lahko oblikovno nekoliko odstopa zaradi morebitne dodatne prilagoditve prelomu.

Odgovor z morebitnimi pripombami je potrebno vrniti v dveh dneh, sicer razumemo, kot da se avtor s popravki in prelomom prispevka strinja.



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