

The Value of a Dedicated IBD Flare Clinic to Effectively Manage Exacerbations of Inflammatory Bowel Disease: The Edinburgh IBD Unit

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Lay Summary

We assessed the impact of a dedicated inflammatory bowel disease flare clinic. Attenders had more changes to maintenance medications made and less steroid use than inflammatory bowel disease patients reviewed at the Acute Receiving Unit. This model of care may potentially reduce hospital admissions.

Key Words: inflammatory bowel disease, IBD, flare clinic

Introduction

The COVID-19 (coronavirus disease 2019) pandemic has had a profound impact on inflammatory bowel disease (IBD) services and patients alike.^{1–4} In March 2020 The Edinburgh IBD Unit at the Western General Hospital (WGH) in Edinburgh, United Kingdom, established a daily flare clinic (FC) for IBD patients at high risk of hospitalization. Patients initiated contact via the pre-existing IBD telephone helpline and approximately 2 to 3 face-to-face FC appointments were made available daily; suitability for these appointments was triaged using clinical judgment at a daily huddle attended by the multidisciplinary team. In attendance at the FC were the duty consultant and an IBD specialist nurse.

We aimed to compare the FC with the existing standard of care for those with a severe flare (review in Acute Receiving Unit [ARU] by the on-call gastroenterology service) and to determine (1) the most appropriate method of triage to the FC vs the ARU, (2) if there were variations in prescribing practices between each setting, and (3) if there was a difference in subsequent admission rates.

Methods

Patients and study design

A retrospective search of the local healthcare software (TrakCare; InterSystems, Cambridge, MA, USA) was performed in March 2021, and all IBD FC appointments at WGH between March 18, 2020 (date of the first appointment), and March 17, 2021, were identified. All patients who attended the FC for a flare of IBD (ulcerative colitis [UC], Crohn's disease [CD], and IBD–unclassified [IBD-U]) were included.

Data were also obtained from clinical coding on all international classification of disease (International Classification of Diseases–Tenth Revision) K50 (CD) and K51 (UC) admissions to WGH between January 1, 2019, and March 17, 2021. Elective admissions, previous FC attenders, and patients not presenting with an IBD flare were excluded.

Demographic, clinical and laboratory data from March 18, 2020, to March 17, 2021, were gathered for both groups by case record review between March and July 2021.

Definitions

An IBD flare was defined as a reoccurrence of disease symptoms, including increased stool frequency or urgency, the passing of bloody stools, opening bowels overnight, abdominal pain, and weight loss.

Statistical analysis

IBM SPSS Statistics Subscription (Build 1.0.0.1461; IBM, Armonk, NY, USA) was used for all statistical analysis. Descriptive statistics are presented as median values and interquartile ranges (IQRs) for continuous variables and percentages with frequencies for categorical variables. The Mann Whitney *U* test compared continuous variables; the chi-square test compared categorical variables. Relevant variables with a *P* value <.05 on univariable analysis were fitted, and the enter method was used to identify variables significant on multivariable regression analysis. Receiver-operating characteristic curve analyses were performed on significant continuous variables, and cut-off values were identified using the Youden Index.

A *P* value of <.05 was considered significant for all statistical tests.

Key Messages

What is already known?

Prompt interventions are essential to ensure optimal management of flares of inflammatory bowel disease.

What is new here?

We have identified that a consultant-led flare clinic promotes greater changes to maintenance medications and less steroid use than review at an acute admissions unit; simple biochemical markers may be used to aid patient triage.

How can this study help patient care?

We have reported a novel model of care that both focuses on the management of an acute flare, while also taking into consideration long-term management of the disease; it has the potential to reduce hospital admission rates.

Results

Patient demographics

A total of 218 patients attended the FC at WGH for an IBD flare between March 18, 2020, and March 17, 2021; 161 patients attended ARU during the same time period. ARU attenders were more likely to be older (ARU median age 44.0 [IQR, 32.0-61.0] years vs FC median age 39.0 [IQR, 28.8-55.0] years; $P = .003$), have a higher C-reactive protein (CRP) (ARU median 14.0 [IQR, 3.0-51.3] mg/L vs FC median 7.0 [IQR, 2.0-19.0] mg/L; $P < .001$), lower albumin (ARU median 36.0 [IQR, 32.0-39.0] g/L vs FC median 38.0 [IQR, 35.0-41.0] g/L; $P < .001$), and increased stool frequency (ARU median 9.0 [IQR, 6.0-10.0] vs FC median 7.0 [IQR, 5.0-10.0]; $P = .001$).

Clinical outcomes

A total of 79.8% ($n = 174$) of FC attenders did not require admission to hospital for IBD after attendance (median follow-up time 9 months). A total of 12.8% ($n = 28$) were admitted >30 days after FC, 4.6% ($n = 10$) were admitted <30 days after FC, and 2.8% ($n = 6$) of FC attenders were admitted directly (Figure 1A). A total of 36.0% ($n = 58$) of patients who attended ARU were reviewed and discharged; 103 (64.0%) patients were admitted. A total of 10.3% ($n = 6$) of discharged ARU attenders were admitted >30 days after attendance; 10.3% ($n = 6$) were admitted <30 days after attendance (Figure 1B). There was no difference in subsequent admission rate between FC attenders and discharged ARU attenders ($P = .631$).

There was an 8.2% fall in admissions between March 18, 2020, and March 17, 2021, compared with from January 1, 2019, to December 31, 2019 (when 159 patients were admitted). Total admissions >24 hours for patients with known IBD between March 18, 2020, and March 17, 2021, was 146 patients (including 43 patients who attended FC and required admission during the follow-up period and 103 patients who attended ARU only). One patient who attended FC required admission in April 2021.

Medication Changes

The maintenance medications most frequently initiated at FC were infliximab (+85% compared with on attendance), ustekinumab (+140%), and tofacitinib (+64%).

Steroid treatment was used in 49.1% of patients (+98.1%). Discharged ARU attenders were less likely to have maintenance medications changed than those at FC ($P = .001$). Steroid treatment was used in 58.6% of this group (+288.9% compared with on attendance) and did not vary significantly from FC attenders ($P = .182$).

Risk stratification

Univariate analysis demonstrated that admitted patients (from either FC or ARU) were more likely to have UC ($P = .010$), be older ($P = .002$), have a higher CRP ($P < .001$), have lower albumin ($P < .001$), have higher fecal calprotectin ($P < .001$), and have higher stool frequency ($P < .001$). On multivariable analysis CRP, albumin, and stool frequency also varied between these groups ($P < .001$, $P < .001$, and $P < .001$, respectively). Age was excluded from the multivariable analysis, as it was a fixed variable, and fecal calprotectin was also excluded due to the delay in availability of results. Receiver-operating characteristic curves were generated for CRP (area under the curve [AUC], 0.735; $P < .001$), stool frequency (AUC, 0.673; $P < .001$), and albumin (AUC, 0.720; $P < .001$). Cut-off values of CRP ≥ 10 mg/L (sensitivity 67.9%, specificity 67.6%), stool frequency ≥ 9 (sensitivity 69.1%, specificity 64.6%), and albumin ≤ 36 g/L (sensitivity 67.8%, specificity 68.0%) were identified and each attributed a score of 1 (minimum possible score = 0; maximum possible score = 3). A total of 88.8% ($n = 71$) of patients scoring 0 did not require immediate admission from the ARU or FC; 66.7% ($n = 28$) of patients scoring 3 did require admission (sensitivity 75.7%, specificity 83.5%, positive predictive value 66.7%, negative predictive value 88.8%).

When CD and UC were considered separately on univariate analysis, albumin and CRP were significantly related to outcome (UC: $P < .001$ and $P < .001$, respectively; CD: $P < .001$ and $P < .001$, respectively); however, stool frequency was not in significant in CD (UC: $P < .001$; CD: $P = .134$).

Discussion

Between March 18, 2020, and March 17, 2021, the FC saw 57.5% ($n = 218$) of patients who presented to WGH with a flare of IBD. Compared with ARU attenders, fewer patients were admitted, steroids were used less frequently, and maintenance treatments were adjusted more frequently.

A concurrent CRP ≥ 10 mg/L, stool frequency ≥ 9 , and albumin ≤ 36 g/L produced a good positive predictive value of 66.7% and an excellent negative predictive value of 88.8% to help supplement clinical decision making at triage and stratify patients at highest risk of admission. However, the practicalities of where blood tests would take place need to be addressed. The reduction in patients attending ARU would reduce the burden on a stretched admissions unit and would ensure that those not requiring admission received care in a less stressful environment.

FC patients were more likely to have changes made to their maintenance medications ($P = .001$) than discharged ARU attenders reviewed by the on-call gastroenterology registrar. The fact that the FC is consultant led is likely to have influenced this; this is further evidenced by the maintenance medications most frequently initiated or adjusted at the FC being infliximab, tofacitinib, and ustekinumab, compared with mesalazines at the ARU. There is also arguably more

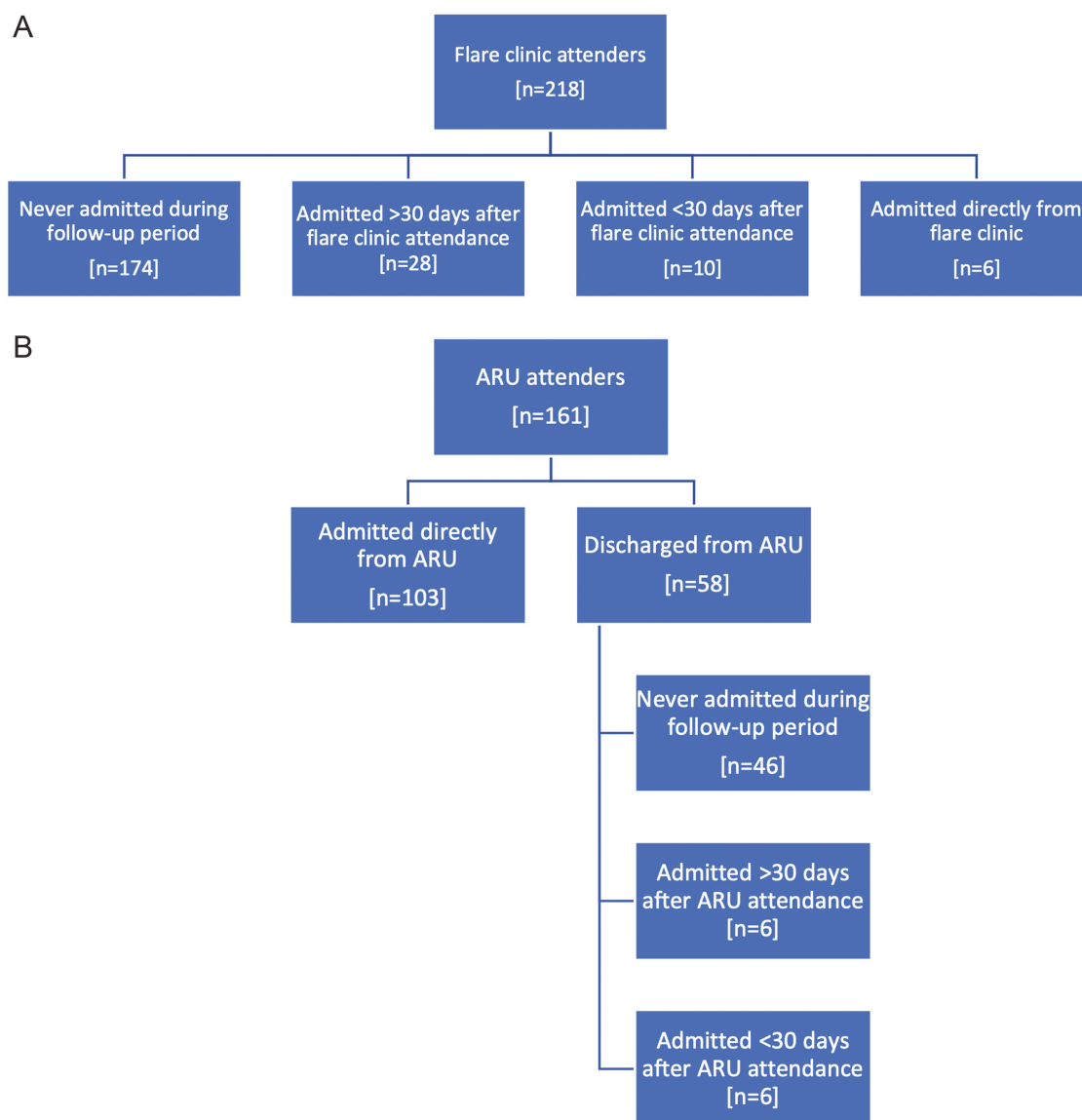


Figure 1. A, Flare Clinic outcomes. B, Acute Receiving Unit (ARU) outcomes.

time available at FC for complex management decisions to be made. While steroid treatment did not vary significantly between FC and discharged ARU attenders ($P = .182$), when the numbers of patients on steroids at attendance was compared with those after attendance, the difference in percentage change between the two settings was stark (+98.1% at the FC compared with +288.9%), again suggesting a variation in clinical decision making and more awareness of the long-term sequelae of uncontrolled disease.

There was a reduction in inpatient admissions of 8.2% compared with January 1, 2019, to December 31, 2019 (this period was chosen for comparative purposes as opposed to March 18, 2019, to March 17, 2020, to reduce the influence of the COVID-19 pandemic). It is not possible to attribute this reduction solely to the FC, and the role of other factors such as a potential decrease in presentations to secondary care pandemic-related concerns must be acknowledged. Furthermore, it must be noted that the rate of admissions <30 days after FC attendance and ARU discharge did not vary significantly ($P = .108$). In the longer term, however, with more robust triage and

through monitoring the outcomes of earlier interventions regarding maintenance medications, it may be possible to determine a positive impact of the FC on inpatient admissions.

The FC is novel, and this study is the first of its kind to consider the role that it may play in the management of IBD patients. We have demonstrated an accurate method of identifying patients requiring admission. We have shown the advantages of consultant-led care with less reliance on steroids and more thought being given to maintenance therapies. There are, however, some limitations. It is retrospective and was occasionally hindered by incomplete data. A prospective study is required to monitor the outcomes of FC attenders. Assessment of the cost-effectiveness of the FC vs ARU was not included and would form an important consideration in future studies. The fact that stool frequency was not significant in those with CD alone ($P = .134$) suggests caution upon its use in CD; however, it was felt preferable that a single score be used for all IBD patients, including those with IBD-U, whose individual numbers would have been statistically underpowered.

A FC may be an important addition to a modern IBD service. Identifying patients most likely to benefit from this treatment pathway may reduce inpatient admissions, decrease the demands on stretched services, and reduce the disease burden felt by patients. Such innovations as point-of-care fecal calprotectin and therapeutic drug monitoring, in addition to bowel ultrasound, have the potential to support this service further (particularly regarding decisions relating to changes to maintenance medications) and make it a viable alternative to attendance at acute admissions units.

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Authors' Contributions

R.K.G. contributed to data collection, statistical analysis and interpretation, and drafted the manuscript. W.M.B. contributed to data collection and revision of the manuscript.

I.D.R.A. was the senior author and contributed to conception of the work and revised the manuscript for important intellectual content.

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Conflicts of Interest

None declared.

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