CoLab Network

Summary Report

Utilization Analysis of Tofacitinib and Other Drugs Among Individuals With Ulcerative Colitis: Feasibility Analysis

Report Authors

Colin Dormuth, Silvia Alessi-Severini, Alain Bitton, Kristian B. Filion, Donica Janzen, Lisa M. Lix, Michael Paterson, Matt Dahl, Xinya Lu, Audray St-Jean, Fangyun Wu

Knowledge Translation Support

Emily Farrell

This Drug Utilization Study was conducted by the Canadian Network for Observational Drug Effect Studies through the Post-Market Drug Evaluation CoLab Network.

Executive Summary

Tofacitinib is a drug used to treat moderate to severe ulcerative colitis and other inflammatory diseases in adults. Safety concerns with tofacitinib have emerged from studies in older patients with rheumatoid arthritis, but these concerns may not be generalizable to people treated for ulcerative colitis. This study aims to describe the use of tofacitinib and other therapies in ulcerative colitis, using data from 3 Canadian provinces (Manitoba, Ontario, and Saskatchewan) and the US. Its purpose is to determine the feasibility of conducting a safety study on tofacitinib in ulcerative colitis. The study identified 401,651 adults diagnosed with ulcerative colitis between 2010 and 2023. Of these, 399 initiated tofacitinib between January 1, 2018, and March 31, 2023. Tofacitinib is currently rarely used for ulcerative colitis, and when it is, is mostly used as a third-line or fourth-line treatment. A limited number of safety events were identified among those taking tofacitinib. Given the limited amount of data available, detailed safety studies of tofacitinib in ulcerative colitis are currently not feasible.

Background

Inflammatory bowel disease is a chronic autoimmune condition that includes Crohn disease and ulcerative colitis. Tofacitinib is a drug that Health Canada approved in 2018 to treat moderate to severe ulcerative colitis and other inflammatory diseases in adults. However, recent studies have raised safety concerns with tofacitinib. The studies have reported an increased risk of major adverse cardiovascular events, thrombotic events, and cancer in older patients with rheumatoid arthritis taking tofacitinib. As a result, regulatory agencies have issued warnings and labelling recommendations.

Policy Issue

It is unknown if the safety concerns noted in patients with rheumatoid arthritis apply to individuals treated for ulcerative colitis, and existing safety data from Canadian studies is limited.

Policy Questions

1. What is the utilization of tofacitinib in ulcerative colitis?
2. What is the feasibility of conducting a safety study of tofacitinib among individuals with ulcerative colitis using the adverse outcomes of major adverse cardiovascular events, hospitalized thrombotic events, and cancer identified in populations with rheumatoid arthritis?

Objective

The objective of this Drug Utilization Study was to describe the use of tofacitinib and other therapies in ulcerative colitis and to determine the feasibility of conducting a comparative safety study of major adverse cardiac events, thrombotic events, and cancer.

Findings

Population

Overall, researchers identified 401,651 adults diagnosed with ulcerative colitis between 2010 and 2023, using data from administrative health databases from 3 Canadian provinces (Manitoba, Ontario, and Saskatchewan) and the US Merative MarketScan database.

A total of 399 adults in this cohort started taking tofacitinib between January 1, 2018, and March 31, 2023. Other drugs captured in this period include tumour necrosis factor alpha inhibitors (2,463 new users), vedolizumab or ustekinumab (1,279 new users), and conventional therapies (51,052 new users).

Tofacitinib is rarely used for the treatment of ulcerative colitis, and when it is, is mostly used as a third-line or fourth-line treatment.

Adverse Events

> ***Follow-up*** is defined as monitoring a person's health over time after receiving treatment.

The overall duration of follow-up was brief, with the median duration ranging from less than 0.5 years to about 1.5 years.

Adverse events were sparse in all databases. There were no major adverse cardiovascular events and either 0 or fewer than 6 thrombotic events among individuals taking tofacitinib and the other drugs of interest. Cancer rates could not be estimated for individuals taking tofacitinib.

Limitations

There are 6 key limitations to this study. First, the definition used to identify patients diagnosed with ulcerative colitis was sensitive rather than specific and the case definition for cancer was imprecise. Second, there was a limited number of adverse events across the databases and treatment groups. Third, follow-up was limited for all outcomes, and as a result, the lag period used for the cancer outcomes was shorter than what is typically used in observational studies of drug and cancer outcomes. Fourth, the analysis did not adjust for confounding variables. Fifth, conventional therapy users were combined into a single group and no analyses were conducted by molecule despite their different safety profiles. Finally, the results may not be generalizable to the broader population in Canada.

These limitations suggest that the findings should be interpreted with caution.

Implications for Policy-Making

It is not possible to draw conclusions about associations between the use of tofacitinib in ulcerative colitis and safety events due to the limited number of adverse events observed.

As a result, safety studies of tofacitinib in ulcerative colitis are not currently feasible given the limited amount of data available.

For more information on CoLab and its work visit the **CoLab website**.

This Drug Utilization Study was conducted by the Canadian Network for Observational Drug Effect Studies (CNODES) through the Post-Market Drug Evaluation CoLab Network. This work was supported by CADTH and its Post-Market Drug Evaluation Program, through funding provided by Health Canada.

About CADTH: CADTH is a not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs and medical devices in our health care system.

About CoLab: CoLab is a pan-Canadian network of experts in applied research, scientific methods, and data analysis. CoLab members work with CADTH's Post-Market Drug Evaluation Program to produce credible and timely evidence on post-market drug safety and effectiveness.