Canada's Drug Agency
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CoLab Network

Summary Report

Drugs for Advanced Renal Cell Carcinoma: A Treatment Pattern Analysis

Report Authors

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This work was conducted by the Canadian Cancer Real-world Evaluation (CCRE) Platform team through the Post-Market Drug Evaluation (PMDE) CoLab Network.

Executive Summary

Renal cell carcinoma (RCC) is the most common type of kidney cancer and is often difficult to treat because it is usually found at a late stage. There have been major advancements in treatments for advanced RCC, including new therapies to enhance the body's immune response against the cancer, referred to as immunotherapies, as well as drugs that target specific molecules on or inside cancer cells, called targeted therapies. These may be used alone or in various combinations. However, not much is known about how these treatments are used in real-world settings and how long patients continue to use them.

This study looked at the use of publicly funded treatments for RCC in Ontario, Alberta, and British Columbia. It described how many patients used these drugs, how use has changed over time, the order in which these drugs are used, for how long, and at what dose. The study found that new combination treatments, like ipilimumab plus nivolumab and axitinib plus pembrolizumab, are now most used as the first treatment for advanced RCC, replacing older drugs like pazopanib and sunitinib. Across all provinces, the most common sequence that includes 2 lines of treatment was sunitinib or pazopanib followed by nivolumab. The duration of first-line treatments ranged from 10 to 13 months, while second-line and third-line treatments lasted about 6 to 8 months.

These findings can help with resource planning and identifying pressure points in drug funding programs. However, the study had some limitations, so the results should be interpreted with caution.

Background

RCC is the most common type of kidney cancer, making up about 90% of cases worldwide. In 2022, around 8,100 people in Canada were diagnosed with kidney and renal pelvis cancer, with 85% being RCC. Since early stage RCC often shows no symptoms, more than one-third of patients are diagnosed at a late (metastatic) stage when the cancer has spread to other parts of the body.

In the last 2 decades, there have been significant advancements in the development of new treatments for advanced or metastatic RCC. This includes the introduction of immunotherapies, which enhance the immune response to fight cancer, and the introduction of targeted therapies, which are drugs that disrupt specific molecules that drive tumour growth. Health Canada has approved 11 systemic therapies for advanced RCC, 7 of which are designated as the first drug treatment option (first-line treatment). Despite the availability of many drug treatment options, there is limited information on their current use and duration of treatment in Canada.

Policy Issue

The use of drug treatments for advanced RCC in Canada, including treatment sequences, duration, and doses, is not well understood.

Policy Question

1. How are drugs that treat advanced RCC currently used?

Objectives

This study aimed to use health care data from Ontario, Alberta, and British Columbia to:

- Count the number of patients receiving publicly funded systemic therapy for advanced RCC by type and year.
- Describe the treatment duration for each therapy.
- Identify the most common treatment sequences.
- Describe the clinical and demographic characteristics of patients treated for advanced RCC.

Findings

The study included data from Ontario, British Columbia, and Alberta, identifying 2,224 patients who started treatment for advanced RCC through the public funding program, from 2017 to 2021 in British Columbia and Alberta and from 2017 to 2022 in Ontario (Figure 1). The average age of patients at the start of treatment was 67 years, and most were male.

Currently, the main first-line treatments are combination therapies, such as ipilimumab plus nivolumab and axitinib plus pembrolizumab. Since their approvals in 2019 and 2021, respectively, these newer therapies have largely replaced the use of older drugs like sunitinib and pazopanib.

The duration of first-line treatments was typically about 10 to 13 months, while second-line and third-line treatments lasted about 6 to 8 months. Combination therapies usually involve lower monthly doses compared to single-drug treatments (monotherapies). In Alberta and British Columbia, the most common first-line therapy was sunitinib, while in Ontario, it was ipilimumab plus nivolumab. The most common second-line treatment sequence was sunitinib or pazopanib, followed by nivolumab monotherapy.

Limitations

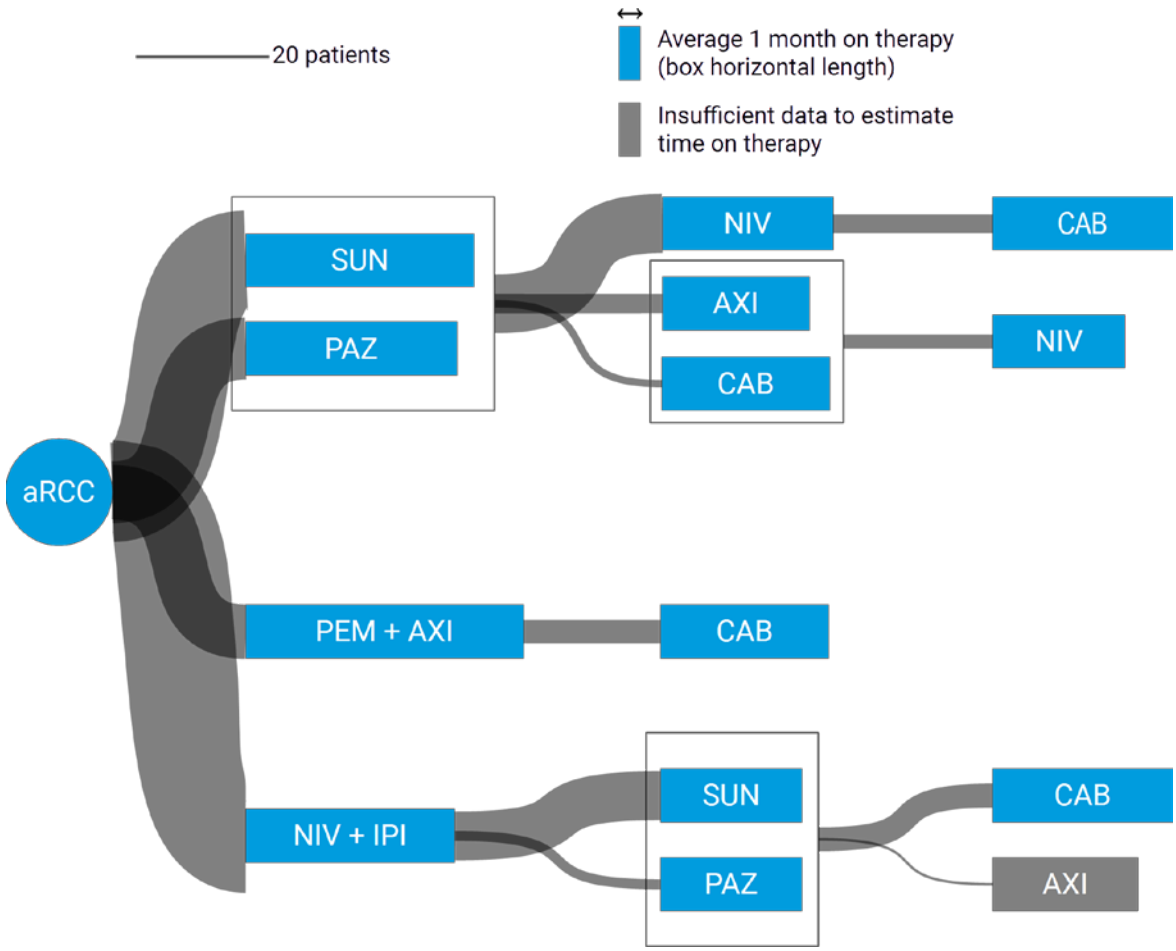
The study only includes patients who started publicly funded first-line treatments in 3 provinces across Canada, which may not be representative of the entire population. Important variables such as risk score (a predictor of survival) and cancer stage were not available. This study was not designed to estimate the effectiveness of these treatments; therefore, the treatment duration estimates should not be used to guess or compare treatment effectiveness.

Implications for Policy-Making

There are many publicly funded treatment options for advanced RCC. This study identifies current trends in treatment use, such as the increased use of combination therapies. These findings can help with resource planning and identifying pressure points in drug funding programs.

Figure 1

Flow Diagram for Treatment Duration and Frequency Across All Included Provinces



aRCC = advanced renal cell carcinoma; AXI = axitinib; CAB = cabozantinib; NIV = nivolumab; NIV + IPI = nivolumab with ipilimumab; PAZ = pazopanib; PEM + AXI = pembrolizumab with axitinib; SUN = sunitinib.

Considerations

Post-Market Drug Evaluation (PMDE) projects aim to produce health policy issue evidence and are not linked to a recommendation.

This work was intended to inform health policy. Clinical questions regarding the use of drugs for the treatment of advanced RCC should be directed to a health care professional.

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

For the full scientific report, visit:

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This work was conducted by the Canadian Cancer Real-world Evaluation (CCRE) Platform team through the Post-Market Drug Evaluation CoLab Network. It was supported by Canada's Drug Agency (CDA-AMC) and its Post-Market Drug Evaluation Program through funding provided by Health Canada.

CDA-AMC is a pan-Canadian health organization. Created and funded by Canada's federal, provincial, and territorial governments, we're responsible for driving better coordination, alignment, and public value within Canada's drug and health technology landscape. We provide Canada's health system leaders with independent evidence and advice so they can make informed drug, health technology, and health system decisions, and we collaborate with national and international partners to enhance our collective impact.

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

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