Cost-Effectiveness Analysis of Axitinib (Caxetib®) as Second-Line Therapy for the Treatment of Metastatic Renal Cell Carcinoma in the National Oncology Institute in Mexico

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INTRODUCTION

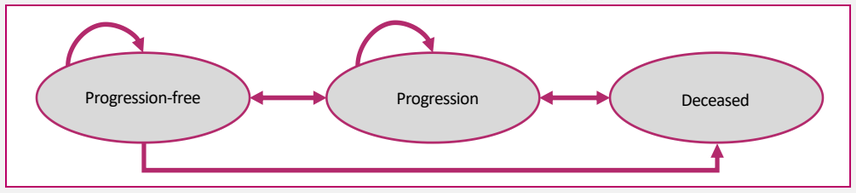
Renal cell carcinoma (RCC) is the seventh most common cancer in men and the ninth most common in women globally. It imposes a significant economic burden due to the high costs of diagnosis, treatment, and long-term management, especially in advanced stages. In Mexico, 5,925 new cases of kidney cancer and 3,083 deaths were reported in 2020, making it one of the 10 deadliest cancer types nationwide.

A cost-effectiveness analysis was conducted to compare Axitinib (Caxetib®) and Everolimus as second-line treatments for advanced RCC, from the perspective of the National Oncology Institute of Mexico (INCAN).

METHODS

A Markov model was developed to estimate direct medical costs and health outcomes at the National Oncology Institute of Mexico (INCAN) for two available treatments: Axitinib (Caxetib®) and Everolimus. The analysis applied a 3.0% annual discount rate over a 3-year time horizon. Patients transitioned among three health states—progression-free, progressed, and deceased—based on overall survival (OS) and progression-free survival (PFS) data derived from Kaplan-Meier curves in the scientific literature.

Illustration 1. Cost-effectiveness model.



Active treatment was provided until disease progression, after which patients received best supportive care (BSC). Costs related to wholesale drug acquisition and adverse events (AEs) were sourced directly from INCAN.

A probabilistic sensitivity analysis (PSA) was conducted to evaluate model uncertainty.

RESULTS

The total cost per patient was $6,175.28 for Axitinib (Caxetib®) and $10,038.19 for Everolimus. Over a 3-year period, Axitinib (Caxetib®) provided 0.7524 life years (LYs) compared to 0.6790 LYs for Everolimus. Axitinib (Caxetib®) dominated Everolimus by achieving an additional 0.0734 LYs while reducing costs.

Table 1. Total cost per alternative.

Axitinib	Mean cost	Low	High
Axitinib 3-year cost	$3,087.64	$2,778.88	$3,396.40
Adverse Events	$926.29	$833.66	$1,018.92
Progression cost	$2,161.35	$1,945.21	$2,377.48
Axitinib Total cost	**$6,175.28**	**$5,557.75**	**$6,792.81**
Everolimus			
Everolimus3-year cost	$6,022.91	$5,420.62	$6,625.21
Adverse Events	$2,007.64	$1,806.87	$2,208.40
Progression cost	$2,007.64	$1,806.87	$2,208.40
Everolimus Total cost	**$10,038.19**	**$9,034.37**	**$11,042.01**

Table 2. Effectiveness per alternative.

Axitinib	Mean	Low	High
Life Years	0.752	0.677	0.828
Avoided Adverse Events	21.850	19.665	24.035
Patients Progressed	14.580	13.122	16.038
Everolimus			
Life Years	0.679	0.611	0.747
Adverse Events	0.234	0.211	0.257
Patients Progressed	11.990	10.791	13.189

Illustration 2. Cost-effectiveness PSA.

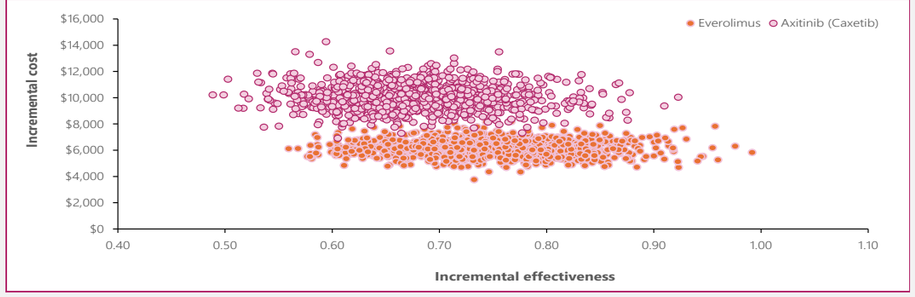
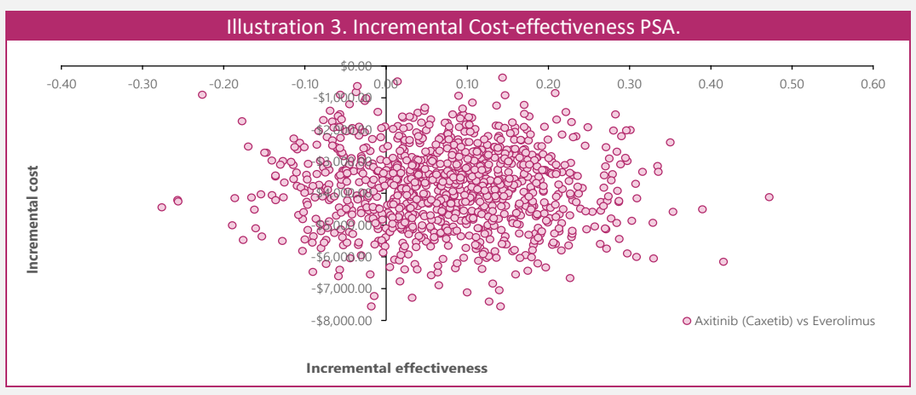


Illustration 3. Incremental Cost-effectiveness PSA.



Probabilistic sensitivity analysis (10,000 Monte Carlo iterations) confirmed the robustness and consistency of these findings. Additionally, deterministic sensitivity analyses Axitinib (Caxetib®) consistently remained the preferred option in all tested scenarios.

CONCLUSION

Axitinib is a dominant alternative as a second-line treatment of patients with advanced RCC, versus everolimus, on a typical willingness-to-pay threshold.

This dual advantage—greater life-year gains at a lower cost—strongly supports the consideration of Axitinib as the preferred therapeutic option within institutional treatment protocols, particularly in a resource-constrained healthcare setting like Mexico.

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