# Cost-Consequence Analysis of Cabozantinib in Combination with Nivolumab in Treatment of First-Line Advanced Renal Cell Carcinoma in Germany: A Payer Perspective

EE262

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## KEY LEARNINGS

Among the combination therapies for aRCC, CaboNivo has the lowest lifetime costs and offers the longest life years outcomes amongst currently available treatments.

## BACKGROUND

- Every year, around 14,000 people in Germany are newly diagnosed with kidney cancer. 95% of these are renal cell carcinomas (RCC). Men are affected about twice as often as women.[1]
- Currently there are roughly 110,000 patients with kidney cancer in Germany and approximately 5,000 deaths are caused by kidney cancer per year.[2]
- The treatment of advanced renal cell carcinoma (aRCC) has been transformed by the introduction of combination therapies approximately five years ago.
- The CheckMate 9ER, a pivotal Phase III study, demonstrated significantly prolonged progression-free and overall survival for cabozantinib+nivolumab (CaboNivo) compared with sunitinib in first-line therapy.[3]

## OBJECTIVE

The objective of this analysis was to predict the total expected lifetime costs and effectiveness of CaboNivo in the treatment of patients with naïve aRCC in Germany, taking the public payer perspective, compared to other therapies including[4-9] :

- sunitinib,
- lenvatinib+pembrolizumab (LenPem),
- axitinib+pembrolizumab (AxiPem),
- axitinib+avelumab (AxiAve)

## CONCLUSIONS

- CaboNivo has the lowest expected lifetime costs among first-line aRCC combination treatments. However, the expected lifetime costs are in a similar range (ratio of lowest to highest combination treatment costs: 1/1.3).
- Monotherapy sunitinib was associated with the lowest costs followed by combination therapy CaboNivo, which had the longest overall life years (matching AxiAve) with the longest time in the pre-progression state.

## METHODS

### Model

- A partitioned survival model with three health states was developed to predict total treatment costs and life years (LY) from the beginning of treatment until death. The health states included in the model were: pre-progression, post-progression, and death (**Figure 1**).
- A fractional polynomial network meta-analysis (NMA) based on CheckMate 9ER and published Phase III studies was conducted to compare the efficacy outcomes of CaboNivo versus other first-line therapies with comparable labels. The NMA informed the overall survival and progression-free survival fractional polynomial curve fits used in the disease state modeling.

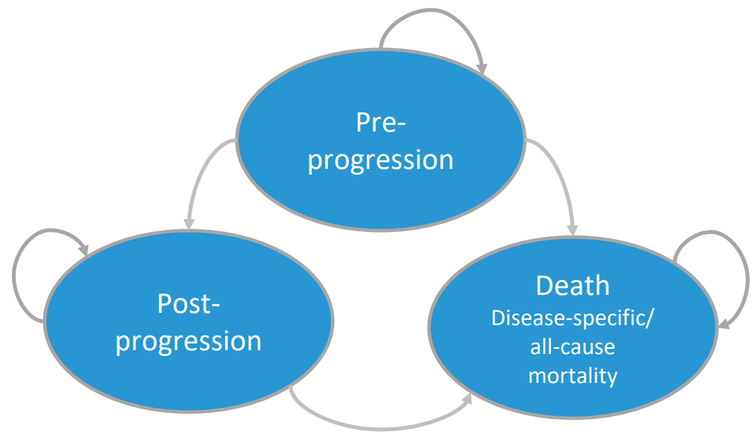
### Inputs and Analyses

- A 3% discount rate was applied for costs and effects, as recommended by IQWiG.[10]
- The model encompasses costs for drug acquisition, adverse events (AE) based on pivotal studies, disease management costs per health state, and terminal care. All costs are determined from a statutory health insurance perspective according to reimbursement numbers in 2024 and expert opinion.
- The sensitivity analyses tested the robustness regarding variation in key variables: joint discount rate, baseline age, AE costs, end of life costs.

### Sensitivity analysis

Sensitivity analysis showed that joint discount rates, baseline age, and AE costs for CaboNivo were the main drivers of the outcomes.

**Figure 1.** Model structure




The model is a partitioned survival model with mutually exclusive health states. All patients entered the model in the pre-progression health state and could move to the post-progression or death states. Patients could not move back to the pre-progression health state from the post-progression state. A cycle length of one week was applied for the first two years in the model, especially to match the treatment/dosing regimens of CaboNivo and the comparators. After two years six-month cycles were applied.

## RESULTS

### Lifetime costs

- Model predictions demonstrated the following total expected lifetime costs: Lowest costs for sunitinib: 41,139€, followed by CaboNivo: 186,409€, LenPem: 213,555€, AxiPem: 217,216€, AxiAve: 237,721€ (**Table 1**).
- For combination therapies 80% of lifetime costs were caused by the primary intervention. CaboNivo is the combination therapy with the lowest costs in both groups.

**Table 1.** Lifetime costs*

| | CaboNivo | Sunitinib | LenPem | AxiPem | AxiAve |
|---|---|---|---|---|---|
| **Pre-progression costs [in €]** | | | | | |
| Primary intervention | 153,484 | 3,308 | 172,840 | 175,034 | 190,455 |
| Disease management | 6,186 | 3,660 | 5,771 | 5,530 | 5,260 |
| Adverse Events | 1,592 | 949 | 1,115 | 852 | 848 |
| Total | 161,262 | 7,917 | 179,726 | 181,416 | 196,563 |
| **Post-progression costs [in €]** | | | | | |
| Subsequent treatment | 4,084 | 11,766 | 12,678 | 14,877 | 19,113 |
| Disease Management | 7,795 | 7,783 | 7,827 | 7,506 | 8,791 |
| End of life costs | 13,266 | 13,673 | 13,324 | 13,417 | 13,253 |
| Total | 25,146 | 33,221 | 33,829 | 35,801 | 41,158 |
| **Total costs [in €]** | | | | | |
| Total costs | **186,409** | **41,139** | **213,555** | **217,216** | **237,721** |

* Costs are composed of costs for: Drugs for first- and second-line treatment (based on LauerTaxe[11]), outpatient consultations (based on Einheitlicher Bewertungsmaßstab[12]), CT scans (based on Einheitlicher Bewertungsmaßstab[12]), blood tests (based on Einheitlicher Bewertungsmaßstab[12]), adverse event management (based on literature and on expert opinion), end of life management (based on literature and on expert opinion).

### Life years

- At a lifetime horizon, expected overall LYs and LYs in the pre-progression state were the following: sunitinib: overall LYs 4.0 (pre-progression: 1.3); CaboNivo: 4.9 (2.2), LenPem: 4.8 (2.0), AxiPem: 4.6 (1.9), AxiAve: 4.9 (1.8) (**Table 2**). Patients with initial CaboNivo treatment had the longest time in the pre-progression state.

**Table 2.** Life years**

| | CaboNivo | Sunitinib | LenPem | AxiPem | AxiAve |
|---|---|---|---|---|---|
| **Life years** | | | | | |
| Pre-progression | 2.2 | 1.3 | 2.0 | 1.9 | 1.8 |
| Post-progression | 2.7 | 2.7 | 2.8 | 2.7 | 3.1 |
| **Total** | **4.9** | **4.0** | **4.8** | **4.6** | **4.9** |

** Estimating how many years a patient remains in the pre-progression and post-progression phase.

**Author contributions** Substantial contributions to study design: DG, EK, ML; Drafting of the publication, or reviewing it critically for important intellectual content: DG, EK, ML, JK, JS; Final approval of the publication: All authors

**Disclosures JK** received: consultancy fees from AbbVie, AstraZeneca, Beigene, BMS, Daiichi Sankyo, Incyte, Ipsen, Janssen, Lilly, MSD, Novartis, Oncopeptides, Pfizer, Roche, Sanofi, Takeda, honorarium from Beigene, BMS, Janssen, Roche, congress-support from Beigene, Ipsen, Lilly, Octapharm, Roche. **EK, ML, JS** are employees of Ipsen.

Presented at the International Society for Pharmacoeconomics and Outcomes Research Europe (ISPOR EU) |17-20th November 2024

**References**

1. Robert Koch-Institut and Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V. (2023): Krebs in Deutschland für 2019/2020. URL: *https://www.krebsdaten.de/Krebs/DE/Content/Publikationen/Krebs_in_Deutschland/kid_2023/kid_2023_c64_niere.pdf?__blob=publicationFile*
2. Zentrum für Krebsregisterdaten (2024): Nierenkrebs ICD-10 C64. URL: *https://www.krebsdaten.de/Krebs/DE/Content/Krebsarten/Nierenkrebs/nierenkrebs_node.html*
3. Choueiri K, et al. (2021): Nivolumab plus Cabozantinib versus Sunitinib for Advanced Renal-Cell Carcinoma. N Engl J Med. 2021 Mar 4;384(9):829-841.
4. Fachinformation Cabozantinib (2023). URL: *https://fachinfo.de/fi/detail/021250/cabometyx-r-20-mg-40-mg-60-mg-filmtabletten*
5. Fachinformation Nivolumab (2024). URL: *https://fachinfo.de/fi/detail/022541/opdivo-r-10-mg-ml-konzentrat-zur-herstellung-einer-infusionsloesung?query=Nivolumab*
6. Fachinformation Sunitinib (2024). URL: *https://fachinfo.de/fi/detail/023624/sunitinib-ratiopharm-hartkapseln*
7. Fachinformation Lenvatinib (2024). URL: *https://fachinfo.de/fi/detail/021265/kisplyx-r-4-mg-10-mg-hartkapseln*
8. Fachinformation Pembrolizumab (2024). URL: *https://fachinfo.de/fi/detail/021480/keytruda-r-25-mg-ml-konzentrat-zur-herstellung-einer-infusionsloesung*
9. Fachinformation Avelumab (2024). URL: *https://fachinfo.de/fi/detail/021697/bavencio-20-mg-ml-konzentrat-zur-herstellung-einer-infusionsloesung*
10. Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen (IQWiG): Allgemeine Methoden, Version 7.0. URL: *https://www.iqwig.de/methoden/allgemeine-methoden_version-7-0.pdf.de*
11. CGM Lauer (2024). URL: *https://portal.cgmlauer.cgm.com/LF/Seiten/Verwaltung/Kundencenter/1.aspx*
12. Kassenärztliche Bundesvereinigung (KBV) (2024): Der Einheitliche Bewertungsmaßstab – EBM 2024. URL: *https://ebm.kbv.de/*

This study was sponsored by Ipsen.