# Cost-effectiveness of pembrolizumab for the first-line treatment of patients with recurrent or metastatic head and neck squamous cell carcinoma in Colombia

## Background

Head and neck squamous cell carcinoma (HNSCC) includes cancers of the oral cavity, oropharynx, hypopharynx, and larynx.<sup>1</sup> Recurrent or metastatic (R/M) HNSCC is associated with a poor long-term prognosis; the estimated 5-year survival rate is 14.2% for patients with stage IVC cancer (metastatic). In 2020, the number of deaths with HNSCC was 1.155 and the 5-year prevalence was 6.884<sup>2</sup> in Colombia.

Phase III KEYNOTE-048 trial showed that programmed death receptor 1 (PD-1) inhibitor pembrolizumab, in the combined positive score (CPS)  $\geq 1$  population and combined with platinum + 5-fluorouracil (5-FU) in the total population, improves overall survival (OS) over cetuximab + platinum + 5-fluorouracil (5-FU) in patients with R/M HNSCC. Based on those findings, pembrolizumab was approved in October 2020 to be used in Colombia.

# Objective

To evaluate the cost-effectiveness of pembrolizumab as combination therapy with platinum-based therapies (cisplatin or carboplatin) plus 5-FU in the CPS ≥1 population versus cetuximab + platinum + 5-FU from a third payer perspective in Colombia.

## Methods

A three-state, cohort-based, partitioned survival model projected costs and outcomes over 40 years with 3% annual discounting. Health state occupancy was modeled using KEYNOTE-048 Kaplan-Meier curves for progression-free survival (PFS) and OS, until the final analysis data cutoff, followed by parametric extrapolations guided by statistical criteria. Costs for initial and subsequent treatments, disease and adverse events management, and terminal care were included using public drug and procedures lists prices (SISMED & ISS Tariff Manual, respectively).

Time-on-treatment and EuroQol five-dimension scores were taken from KEYNOTE-048. Utilities were derived from a Latin America-specific algorithm from Argentina.

# Results

With pembrolizumab combination therapy, patients accrued 2.0512 additional life-years (LY) and 1.6230 additional quality-adjusted life-years (QALY) (Table 1 & Figure 1), for incremental cost-effectiveness ratios (ICER) of COP \$48,330,146/LY and COP \$61,078,685/QALY gained over cetuximab + platinum + 5-FU, making a cost-effective option considering a willingness to pay threshold of COP \$69,150,201 (based on three GDP per capita of Colombia). Scenario analysis versus platinum + cetuximab + paclitaxel showed additional QALYs gained with pembrolizumab combination therapy (1.2597), for an ICER of COP \$21,418,177/QALY.

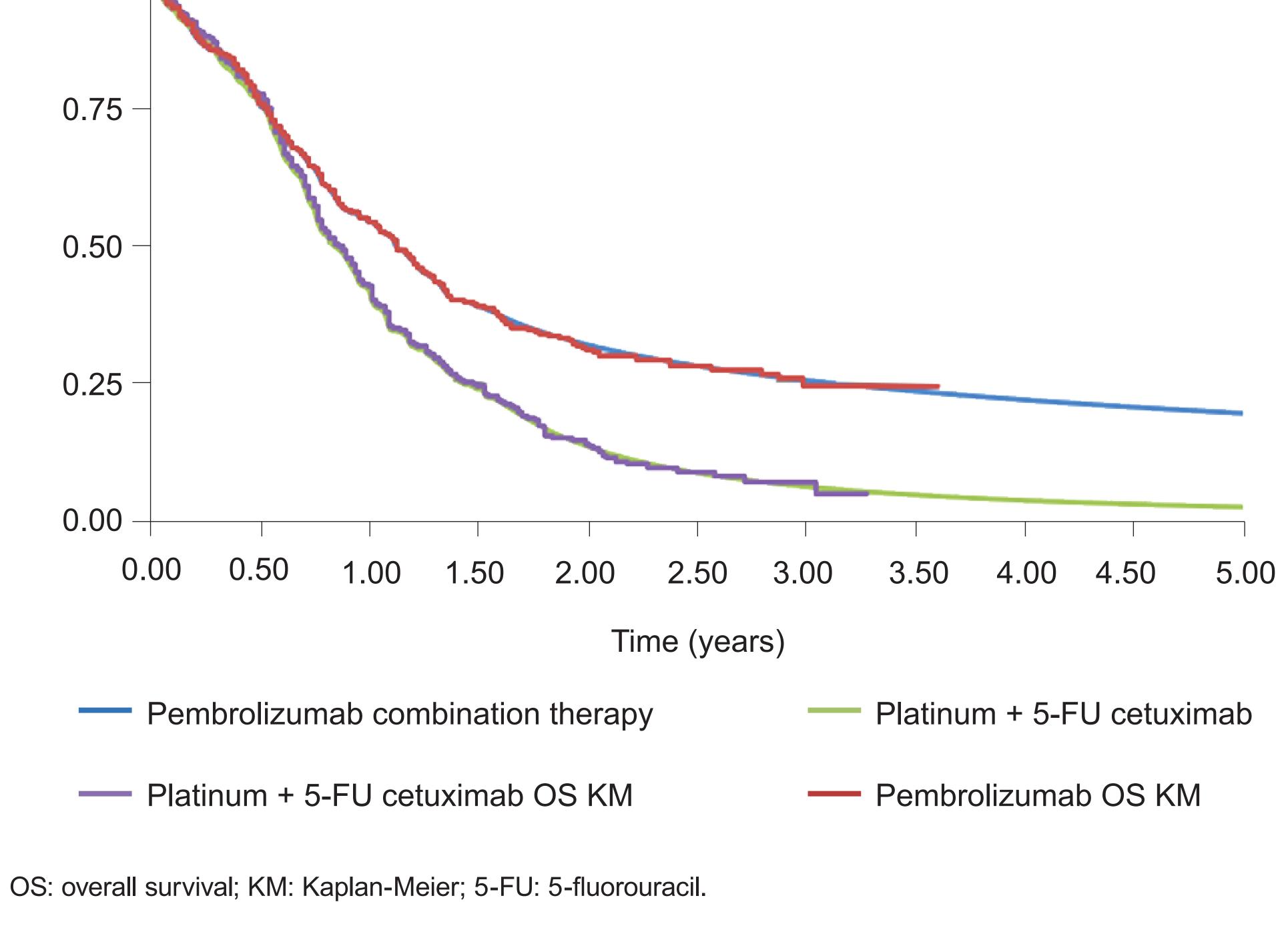
### Table 1. Base case analysis results (pembrolizumab combination therapy versus cetuximab + platinum + 5-FU)

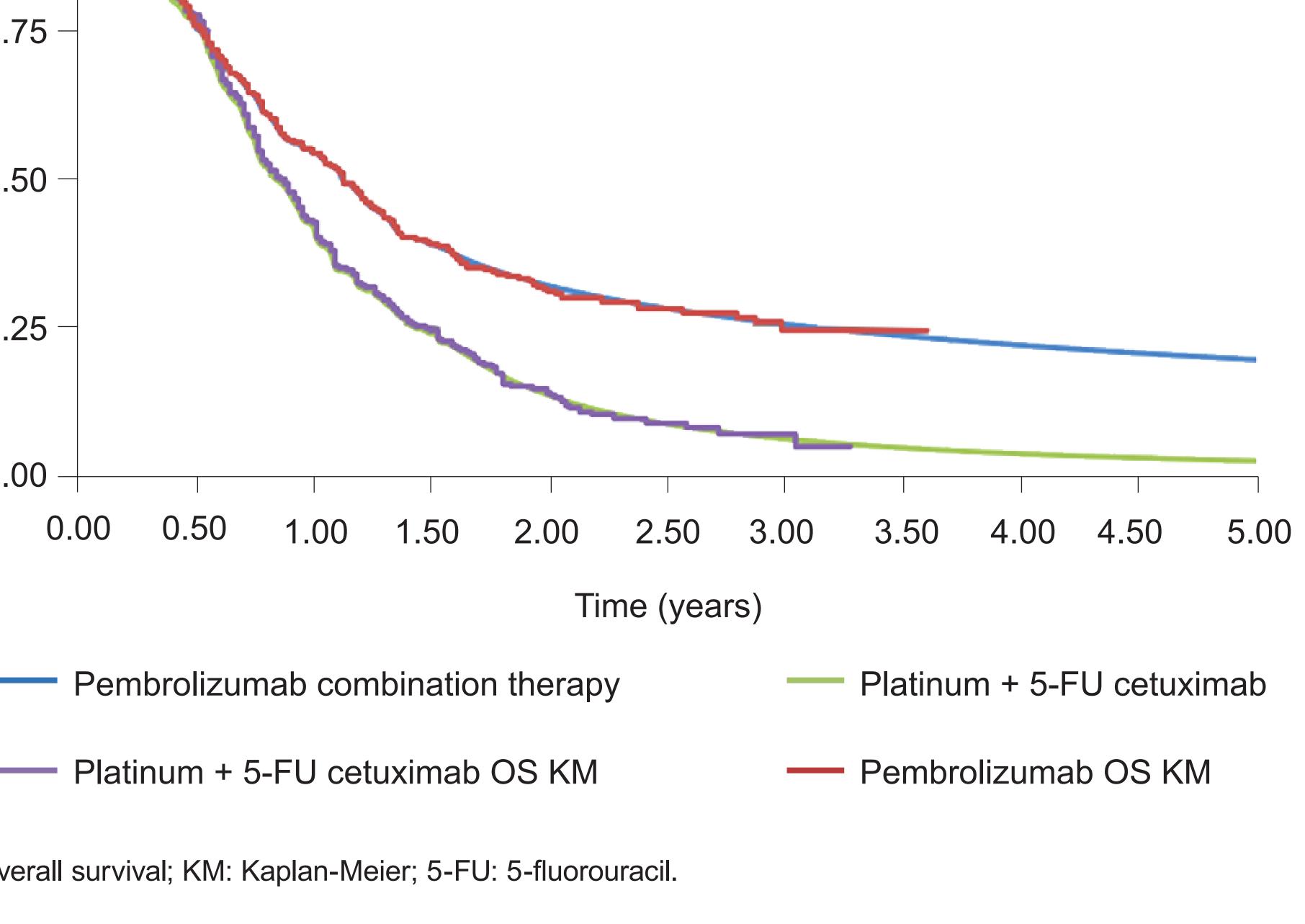
Outcomes	Pembrolizumab combination therapy	Platinum + 5-FU + Cetuximab
Total costs (COP)	297,846,686	198,714,302
Total LYs	3.3166	1.2654
Total QALYs	2.6329	1.0099
PF	0.7097	0.4940
PD	1.9325	0.5259
AEs disutilities	-0.0011	-0.0010
TTD disutilities	-0.0082	-0.0090
Incremental results		
Incremental costs (COP)	_	99,132,384
Incremental LYs	_	2.0512
Incremental QALYs	-	1.6230
Incremental costs per LY gained (COP)	_	48,330,146
Incremental costs per QALY gained (COP) LY: life-years; QALY: quality-adjusted life-years; PF:	-	61,078,685

LY: life-years; QALY: quality-adjusted life-years; PF: progression-free; PD: progressed disease; AE: adverse event; TTD: time to death; COP: Colombian Pesos.

<u>Urrego-Reves J<sup>1</sup></u>; López C<sup>1</sup>; Marrugo AC<sup>1</sup>; Wurcel V<sup>2</sup>; Khandelwal A<sup>3</sup>; Patel A<sup>3</sup>; Black C<sup>4</sup> <sup>1</sup>Colombia, Bogotá, Colombia; <sup>2</sup>MSD Argentina, Buenos Aires, Argentina; <sup>3</sup>CHEORS, North Wales, PA, USA; <sup>4</sup>Merck & Co., Inc., Rahway, NJ, USA







### Conclusion

Pembrolizumab in combination with chemotherapy offers substantial survival and QALY gains for patients with R/M HNSCC with PD-L1 expression of CPS ≥1 at small additional costs, making it a cost-effective treatment versus cetuximab + platinum + 5-FU in Colombia.

### References

- Head and Neck Cancers, version 2, 2019

### Diclosures

MSD Argentina employee and Christopher Black is an employee of Merck Sharp & Dohme LLC, a subsidiary of Merck & Co., Inc., Rahway, NJ, USA.

### **Contact information**

Corresponding author: Juan Camilo Urrego, MD, MPH, MSc. juan.camilo.urrego.reyes@merck.com.

# Figure 1. Overall survival extrapolations: Pembrolizumab combination therapy

. National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines). https://www.nccn.org/professionals/physician\_gls/pdf/head-and-neck.pdf. Accessed October 20, 2022. 2. International Agency for Research on Cancer. Colombia Globocan 2020. Cancer Today. https://gco.iarc.fr/today/ data/factsheets/populations/170-colombia-fact-sheets.pdf. Accessed October 20, 2022. This study was funded by MSD Colombia, a subsidiary of Merck & Co., Inc., Rahway, NJ, USA. Juan Urrego-Reyes, César López, and Carlos Marrugo are MSD Colombia employees. Victoria Wurcel is an