

INTRODUCTION

- In Brazil, dupilumab and omalizumab are available for the treatment of severe allergic asthma
- While dupilumab dosage is fixed, omalizumab dosage (and, therefore, cost of treatment), varies according to patient’s body weight and serum IgE level.

OBJECTIVE

- Compare the treatment costs of dupilumab and omalizumab for severe allergic asthma patients in the Brazilian private healthcare perspective.

METHODS

- We developed a stochastic model to simulate a cohort of severe allergic asthma patients, using demographic and clinical data from ProAr Brazilian cohort of adult asthma patients.¹
- A cohort of 5,000 patients was simulated by sampling individuals according to the following characteristics: sex, body weight and IgE level (Table 1).

Table 1: Variables used in the stochastic simulation.

Variable	Input
Sex	Male: 18.4% Female: 81.6%
Body weight (kg)	Men: 85.3 ± 13.7 kg Women: 72.9 ± 11.7 kg Distribution: normal
Serum IgE (IU/mL)	2.5117 ± 0.4327 IU/mL Distribution: lognormal

- For each simulated patient, we estimated treatment costs with both immunobiologics.
- We also identified the proportion of patients ineligible for omalizumab (due to serum IgE < 30 IU/mL or a combination of a very high serum IgE and/or body weight), according to on-label proposed dosage in the simulated cohort (as exemplified in Table 2).
- Costs were assumed according to the Brazilian private healthcare perspective. Reference costs were from 31st August 2021, with USD 1.00 equivalent to BRL 5.1427.
- Reference price (per vial) was USD 782.75 for dupilumab 200mg/300mg and USD 227.38 for omalizumab 75mg (USD 454.77 for 150mg), according to CMED (*Câmara de Regulação do Mercado de Medicamentos*, PF 18%). Drug administration cost was USD 19.22 based on the local database (D-TISS).²

Table 2: Variability in the cost of treatment according to patients characteristics.

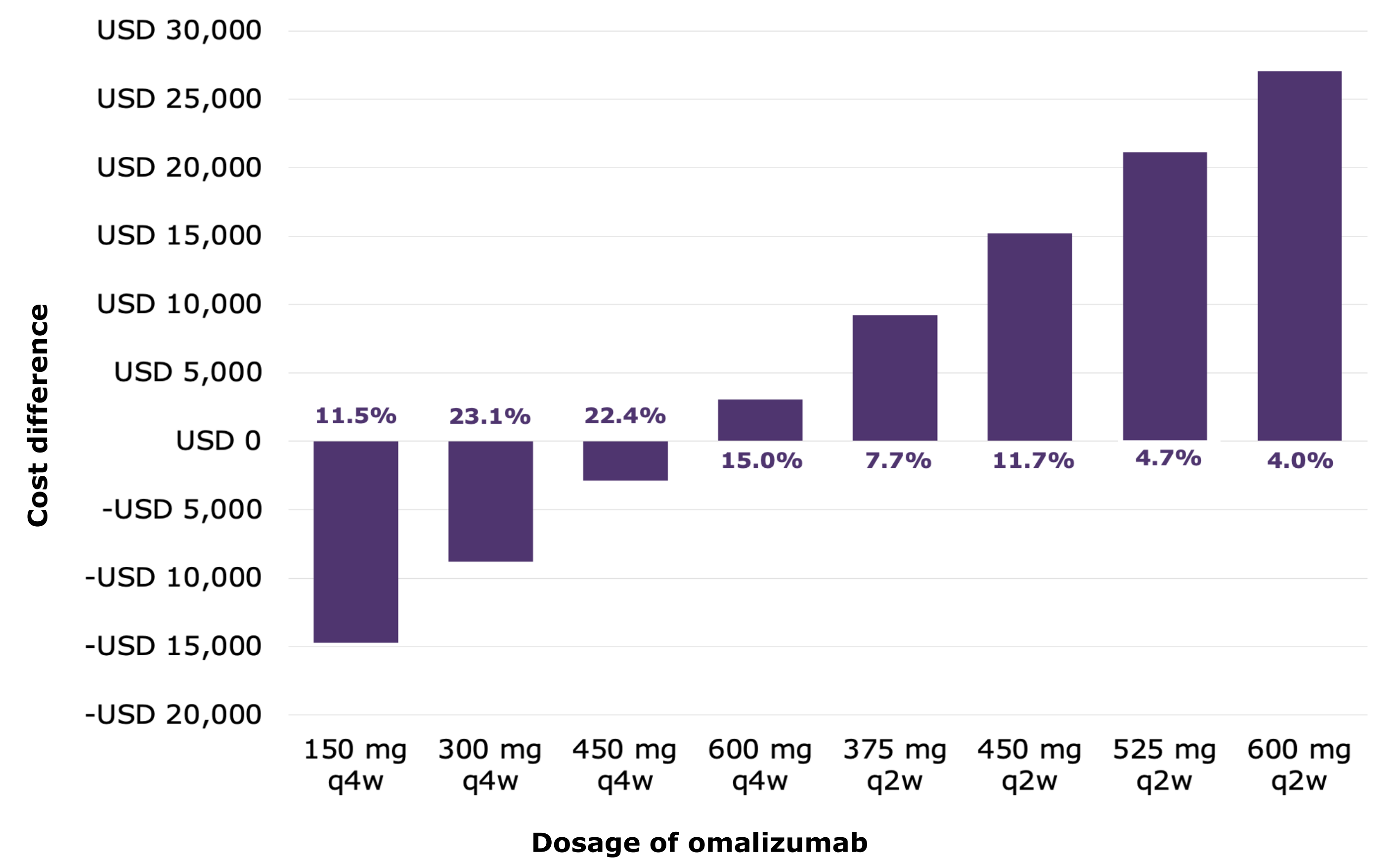
Patient	Cost of treatment
A: 65 kg, 350 IU/mL	Dupilumab (year 1): USD 21,725 Dupilumab (subsequent years): USD 20,923 Omalizumab: USD 18,048 (450mg q4w)
B: 95 kg, 550 IU/mL	Dupilumab (year 1): USD 21,725 Dupilumab (subsequent years): USD 20,923 Omalizumab: USD 47,960 (600mg q2w)
C: 80 kg, 800 IU/mL	Dupilumab (year 1): USD 21,725 Dupilumab (subsequent years): USD 20,923 Omalizumab: not eligible for treatment

q2w: every 2 weeks; q4w: every 4 weeks.

RESULTS

- The simulated cohort resulted in 81.3% female patients, mean body weight of 75.1kg and mean IgE level of 532IU/mL.
- 16.6% of the simulated cohort were non-eligible for omalizumab due to their body weight and serum IgE level combination.
- Annual cost of dupilumab was USD 21,725 for the first year and USD 20,923 for subsequent years, per patient.
- Average annual cost of omalizumab was USD 21,542, per patient, regarding a mean dose of 537mg (SD 285) over a four-week period. Annual cost of omalizumab ranged from USD 6,183 to USD 47,960 per patient.
- Figure 1 presents the cost difference between dupilumab and omalizumab according to dosage of omalizumab and with the proportion of patients in each drug regimen.

Figure 1: Cost difference between dupilumab and omalizumab, according to dosage of omalizumab.



Costs differences were calculated considering the cost of treatment of dupilumab year 2 onwards. q2w: every 2 weeks; q4w: every 4 weeks.

DISCUSSION

- We observed similar average treatment costs with dupilumab and omalizumab in the simulated population.
- However, while cost of dupilumab treatment is fixed for patients with severe allergic asthma allowing more resource use predictability, costs of omalizumab treatment are highly variable depending on patient characteristics.
- These findings should be considered by policy makers for decisions regarding coverage/reimbursement and clinical protocols development.

CONCLUSIONS

- Average costs of treatment with dupilumab and omalizumab were similar. However, dupilumab costs are predictable while costs of omalizumab are highly variable according to patient’s characteristics.

REFERENCES

- 1.Cruz AA, et al. *Respir Med.* 2020; 161: 105817.
- 2.Agência Nacional de Saúde Suplementar. D-TISS: painel dos dados do TISS. Dados e Indicadores do setor. Brasília; 2020 Available from: <http://www.ans.gov.br/perfil-do-setor/dados-e-indicadores-do-setor/d-tiss>.

DISCLOSURES

Barbosa A, Magro FJB, Taminato A, Federico P, Prioli RNT, Goldflus S — Sanofi employees. Migliavaca CB, Falavigna M — Received honoraria from Sanofi for study conduction.

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