Healthcare Resource Utilization in Patients with Severe Asthma treated with tezepelumab in Spain: Insight from the T-ROSS II study

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T-ROSS II

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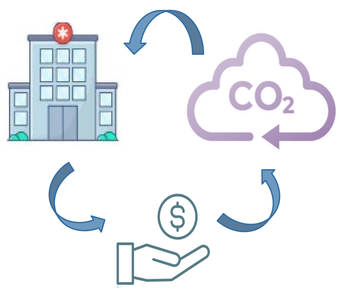
Background

- Patients with severe asthma (SA) often require substantial healthcare resource utilization (HCRU), generating high direct costs and environmental burden.
- Although tezepelumab has demonstrated clinical benefit in severe uncontrolled asthma (SUA) in clinical trials, data from routine clinical practice in Spain and its effect on healthcare utilization, costs, and related greenhouse gas emissions are still scarce.

OBJETIVE

- To evaluate the impact of initiating treatment with tezepelumab on HCRU, associated costs and related greenhouse gas emissions in patients with SA in Spain.



METHODS

- The **T-ROSS II** was a retrospective, observational, multicenter study with SUA treated with tezepelumab in Spain (recruited between June and December 2025).
- The analysis included data on **emergency room** (ER) **admissions, hospitalizations, ICU admissions, primary care** (PC), **and specialist visits**, across two time periods: baseline (12 months before treatment initiation) and Follow up (FU) (12 months after tezepelumab initiation).
- Greenhouse gas (GHG) emission modelled factors per HCRU were applied to estimate environmental impact.
- Costs and emissions were based on relevant published literature from the Spanish National Health System perspective.

RESULTS

- A total of 420 patients were included, 71.19% females with a mean (SD) age of 56.99 (13.92). After the initiation of treatment with tezepelumab, it was observed a decrease in number asthma related visits, especially in emergency visits (43.96%) and unscheduled hospitalizations (33.33%) **(Figure and Table 1),** resulting in a reduction of 21.82% in healthcare costs with annual savings of €438,948.78 per 1,000 patients (€438.99 per patient), excluding drug cost **(Table 2)**.

Figure 1. Asthma ER visits and hospitalizations

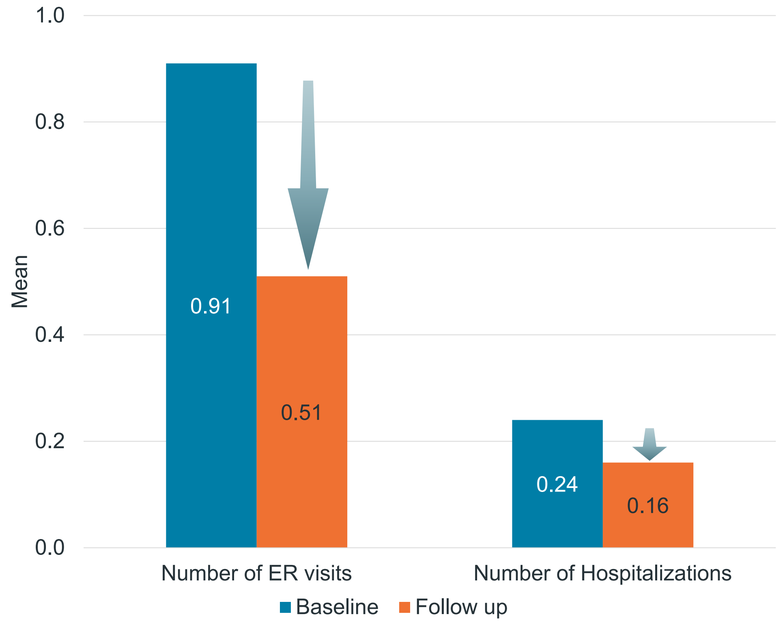


Table 1. Asthma related visits

	Baseline (mean (SD))	FU (mean (SD))	Diference %
Number of ER visits	0.91 (1.32)	0.51 (1.23)	-43.96
Number of Hospitalizations	0.24 (0.56)	0.16 (0.55)	-33.33
nº days hospitalized /year	1.62	1.23	-24.27
Number of ICU admissions	0,02 (0,21)	0,01 (0,08)	-50.00
nº days ICU/year	0.077	0.043	-43.47
Number of Primary Care visits (including GP)	1.37 (2.16)	0.67 (1.35)	-51.09
Number of total outpatient visits	3.14 (2.50)	3.31 (3.36)	5.41

Table 2. Healthcare costs per patient

	Unitary Cost[2] (€)	Baseline	FU	Diference
Hospitalization/day	780.2€	1,267.67€	959.96€	-307.71€
ICU/day	1,698.0€	33.96€	16.98€	-16.98€
ER visits	225.57€	205.27€	115.04€	-90.23€
Outpatient primary care	66.32€	90.86€	44.43€	-46.42€
Specialist consultation	131.73€	413.63€	436.03€	22.39€
Savings/patient		**2,011.39**	**1,572.44€**	**-438.95€**

Table 3. Greenhouse gas emissions reductions per patient

	Emissions[3] ($KgCO_2$)	Baseline	FU	Difference
Number of ER visits	23.0	20.93	11.73	-9.20
nº days hospitalized /year	32.5*	52.81	39.99	-12.82
nº ICU days/year	80.0*	6.13	3.46	-2.66
Number of Primary Care visits (including GP)	7.5	10.28	5.03	-5.25
Number of total outpatient visits	36.9	115.87	122.14	6.27
$KgCO_2$/patient				**-23.66**

* Patients hospitalized after ER visit and ICU admission was during a hospitalization, so transport for hospitalizations and ICU have not been taken into account

43.96% ER visits

33.33% hospitalizations

21.82% healthcare cost

438,949€ annual savings / 1,000 patients

- These reductions in HCRU resulted in an estimated decrease of 23,660 kg CO_2eq emissions per 1,000 patients (equivalent to 72 round-trip flights between Madrid and Vienna[1]).



CONCLUSION

Patients with SUA treated with tezepelumab had reductions in the number of hospitalizations, costs, and carbon emissions, suggesting that better disease control may drive both better clinical outcomes and greater environmental sustainability, which reinforce the value of optimizing severe asthma management.

References

[1]https://www.icao.int/environmental-protection/environmental-tools/icec

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[3]Garcia Sanchez JJ, Barraclough KA, Cases A, et al. Using Chronic Kidney Disease as a Model Framework to Estimate Healthcare-Related Environmental Impact.Adv Ther. 2025;42(1):348-361.

Disclosures

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