Regional disparities in cost-effectiveness of biologics for CRSwNP should not modify the strategy*

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Dear Editor:

Chronic rhinosinusitis with nasal polyps (CRSwNP) represents a significant burden on the healthcare system [(1)]. Xian et al. discussed several aspects of our economic model, based on French pricing, that may impact the cost-effectiveness of biologics [(2)]. Briefly, they outlined the regional disparities in the cost of biologics, the potential better outcomes of biologics in real-world evidence, and the recurrence rate after endoscopic sinus surgery (ESS). We think that these aspects may be further discussed.

Xian et al. commented on a 63% (mepolizumab) to 72% (dupilumab) reduction in price based on regional disparities, suggesting that the extra-cost of the biological approach described in scenario 1 could be balanced by such a price reduction [(2)]. They based their assumption on our sensitivity analysis, which used a 50% reduction in price as an example to test the robustness of our findings [(3)]. Unsurprisingly, even if we simulate a price reduction up to 90%, prescribing biologics as first-line treatment in refractory CRSwNP prior to surgery would still be overwhelming (Figure 1). Indeed, a 91% reduction is needed to favor the biological approach. However, considering both a decrease in price up to 70% and a tapering in dose, a reduction in price of at least 91% could be reached, favoring the biological approach (€ 8,000,000 instead of €90,000,000; Figure 1). Tapering in dose has proven effective in CRSwNP [(4)]; here lies a narrow space for biologics as first-line treatment without prior surgery.

We could not agree more with Xian et al. regarding the efficacy of biologics in CRSwNP patients in phase III and IV studies, even though some recent randomized controlled trials (RCT) were not mentioned. The results from the LIBERTY-NP-SINUS, SYNAPSE, WAYPOINT and ANCHOR studies have indeed shown promising results [(5–7)] and are already shaping the future for patients with and without comorbidities. We also acknowledge that, based on real-world evidence, biologics outperform their efficacy reported in RCTs [(7)]. However, the external validity of these studies is highly dependent on the sample studied, the number of studies per biologics, as well as the number of patients included in each study, which vary greatly, preventing strong conclusions to be drawn.

The authors mentioned that biologics could potentially avoid costly surgical interventions. Some papers support that assumption, but these cost-effectiveness studies usually have short-term follow-up, and if a 5-year modelling analysis is performed, the extra cost is overwhelming [(3)]. In a recent cost-effectiveness analysis, Yong et al. reported that the ESS strategy costs $50,436.99 and produces 9.80 quality-adjusted life years (QALYs) while the dupilumab treatment strategy costs $536,420.22 and produces 8.95 QALYs [(8)]. Even when considering that only a small proportion of patients remain controlled by surgery alone at 5 years, and that only 50% experience improvement in olfaction, the cost of surgery is so limited that it remains the most cost-effective initial option, as outlined in our budget impact analysis (BIA) [(3)]. Furthermore, physicians need to consider that ESS does not reduce the effectiveness of biologics as second-line treatment, as shown in the subgroup analysis of the WAYPOINT [(5)] and ANCHOR studies [(6)].

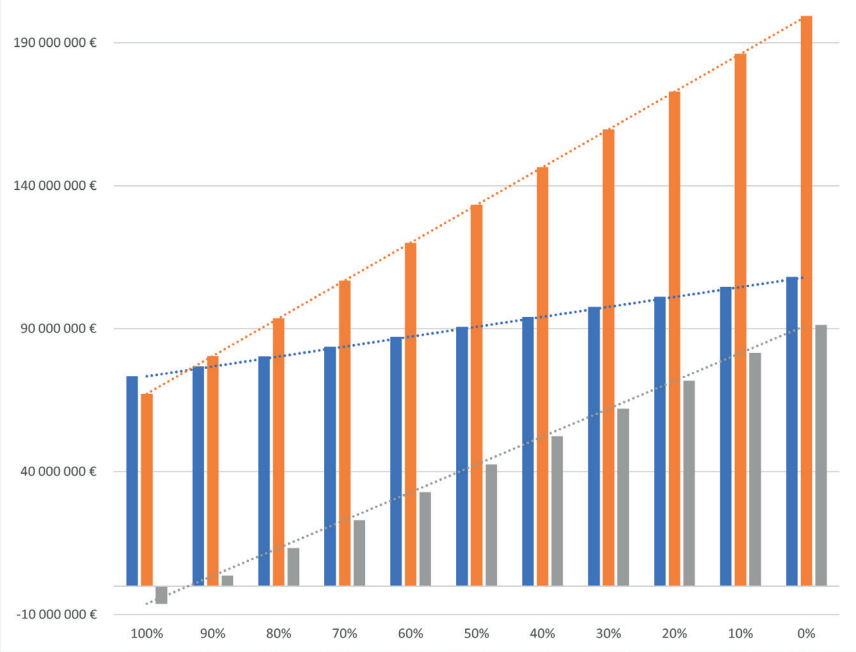

Figure 1. Total cost to the healthcare system by percentage in biologics price reduction. Footnotes: The X-axis represents the total cost to the healthcare system (in euros), ranging from 10,000,000€ (biologics are cost-effective) to +200,000,000€ (surgery is cost-effective). The Y-axis shows the percentage reduction in biologics pricing, from 0% (no price reduction) to 100% (biologics provided at no cost). Blue bars and dotted lines: surgical approach; orange bars and dotted lines: biological approach; grey bars and dotted lines: incremental budget impact (euros).

Therefore, to not consider one ESS prior to a biologic's prescription is not cost effective and the extra cost for society would be overwhelming, regardless of regional disparities. Thus, a decrease in revision surgeries is expected as reported in 2021 [9].
Of course, physicians should not limit their therapeutic strategy based only on costs. Decision-making for revision ESS or biologics should also account for the impact on immediate postoperative quality of life and work activities, the continuation and optimization of topical corticosteroids to maintain surgical outcomes, the extent of prior surgical intervention and the potential risk of serious complications.

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Authorship contribution

Conceptualization: MF, JM; data curation: JM; formal analysis and methodology: JM; resources: MF; software: JM; supervision: VF, MC, ZP, PH, FC, and MF; validation: MF and ZP; visualization: FC and VF; writing - original draft: MF and ST; writing - review and editing: MF, FC, PH, ZP, MC, VF and JM. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

MF, FC, ZMP, and VF report personal fees as expert consultants for Sanofi, GlaxoSmithKline and AstraZeneca. All the other authors have no competing interests in relation to this work.

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References

1. Bhattacharyya N, Villeneuve S, Joish VN, et al. Cost burden and resource utilization in patients with chronic rhinosinusitis and nasal polyps. Laryngoscope. 2019;129(9):1969-1975.
2. Xian M, Wang C, Zhang L. Regional disparities in cost-effectiveness of biologics for CRSwNP warrant tailored treatment strategies. Rhinology. This issue.
3. Fieux M, Margier J, Bartier S, et al. The extra cost of biologics as first-line treatment in uncontrolled chronic rhinosinusitis with nasal polyps with no previous sinus surgery is overwhelming: a budget impact analysis. Rhinology. 2025 Aug 1;63(4):495-504.
4. van der Lans RJL, Otten JJ, Adriaensen GFJPM, et al. Two-year results of tapered dupilumab for CRSwNP demonstrates enduring efficacy established in the first 6 months. Allergy. 2023;78(10):2684-2697.
5. Lipworth BJ, Han JK, Desrosiers M, et al. Tezepelumab in adults with severe chronic rhinosinusitis with nasal polyps. N Engl J Med. 2025;392(12):1178-1188.
6. Gevaert P, Desrosiers M, Cornet M, et al. Efficacy and safety of twice per year depemokimab in chronic rhinosinusitis with nasal polyps (ANCHOR-1 and ANCHOR-2): phase 3, randomised, double-blind, parallel trials. Lancet. 2025;405(10482):911-926.
7. Cai S, Xu S, Zhao Y, Zhang L. Efficacy and safety of biologics for chronic rhinosinusitis with nasal polyps: a meta-analysis of real-world evidence. Allergy. 2025. May;80(5):1256-1270.
8. Yong M, Kirubalingam K, Desrosiers MY, Kilty SJ, Thamboo A. Cost-effectiveness analysis

of biologics for the treatment of chronic rhinosinusitis with nasal polyps in Canada. Allergy Asthma Clin Immunol. 2023;19(1):90.
9. Low CM, Wang AR, Yong M, Nayak J, Patel Z, Hwang PH. Impact of dupilumab prescribing on utilization of medical and surgical therapies for chronic rhinosinusitis with nasal polyps. Int Forum Allergy Rhinol. 24 Jul;14(7):1249-1252.

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