Anti-VEGF Molecule Utilization in Ophthalmology and Potential Impact on Market Dynamics after Biosimilar Entry

HPR145

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Objectives

- The introduction of anti-VEGF molecules has brought improvements to the standard of care in the treatment of retinal diseases, such as nAMD, DR, DME, RVO, and mCNV. This analysis aims to study the current utilization of anti-VEGFs in ophthalmology and the impact of biosimilar entry in Europe and North America to date and for the future.

Methods

- Molecule utilization is measured by treatment days (TD) per capita (i.e., treatment rate). TD and sales information are primarily based on IQVIA Analytics Link proprietary data, complemented with company financial statements where data gaps existed.
- Aflibercept, brolucizumab, faricimab, and ranibizumab with primarily approved ophthalmic indications are included. Ranibizumab has biosimilars on the market already, while the other three are expected to face biosimilar competition in the coming years.
- Separate desk research on the availability of ranibizumab biosimilars was performed in the investigated markets.

Table 1. Growth Rate of Treatment Days† across 30 Investigated Countries[1-3]

	Aflibercept‡	Brolucizumab	Faricimab	Ranibizumab	Total
Total treatment days in 2018	276,377,286	-	-	80,866,544	357,243,830
Total treatment days in 2022	442,913,708	9,616,912	15,153,259	84,012,887	551,696,766
Growth from 2018 to 2022 by %	60%	-	-	4%	54%

†Treatment Days refer to IQVIA Analytics Link sourced Patient Days metric defined as IQVIA MIDAS® sales volume (in standard units) divided by Average Daily Dose (AVDD). ‡Due to restricted data reporting, aflibercept reference molecule treatment days in the US for the years of 2018 to 2022 are author analysis based on company reported revenue and average sales price (ASP), as well as the AVDD metric of aflibercept ophthalmic injectable from Analytics Link yearly data for the same period, as of Q2 2023 data update.

Table 2. Drug Sales by Value§¶ across 30 Markets and Cost Saving Potentials with Biosimilar Entry[2,6]

	2018	2019	2020	2021	2022
Total drug sales by value of reference products# (4 molecules)	9,911	10,846	11,110	12,921	13,251
Annual average drug sales by value			11,608		
Annual savings potential with 30% discount			3,482		
Annual savings potential with 60% discount			6,965		

§All values are US dollar in millions. ¶Drug sales by value: IQVIA Analytics Link sales data, based on IQVIA MIDAS® sales data, reflects local industry standard source of pack prices, which might be list price or average invoice price, depending upon the country and the available information; it does not take into account rebates or clawbacks, details of which are normally confidential, and therefore these estimated prices do not reflect net prices realized by the manufacturers. #Due to restricted data reporting, aflibercept reference molecule sales values in the US for the years 2018 to 2022 are based on company reported revenue.

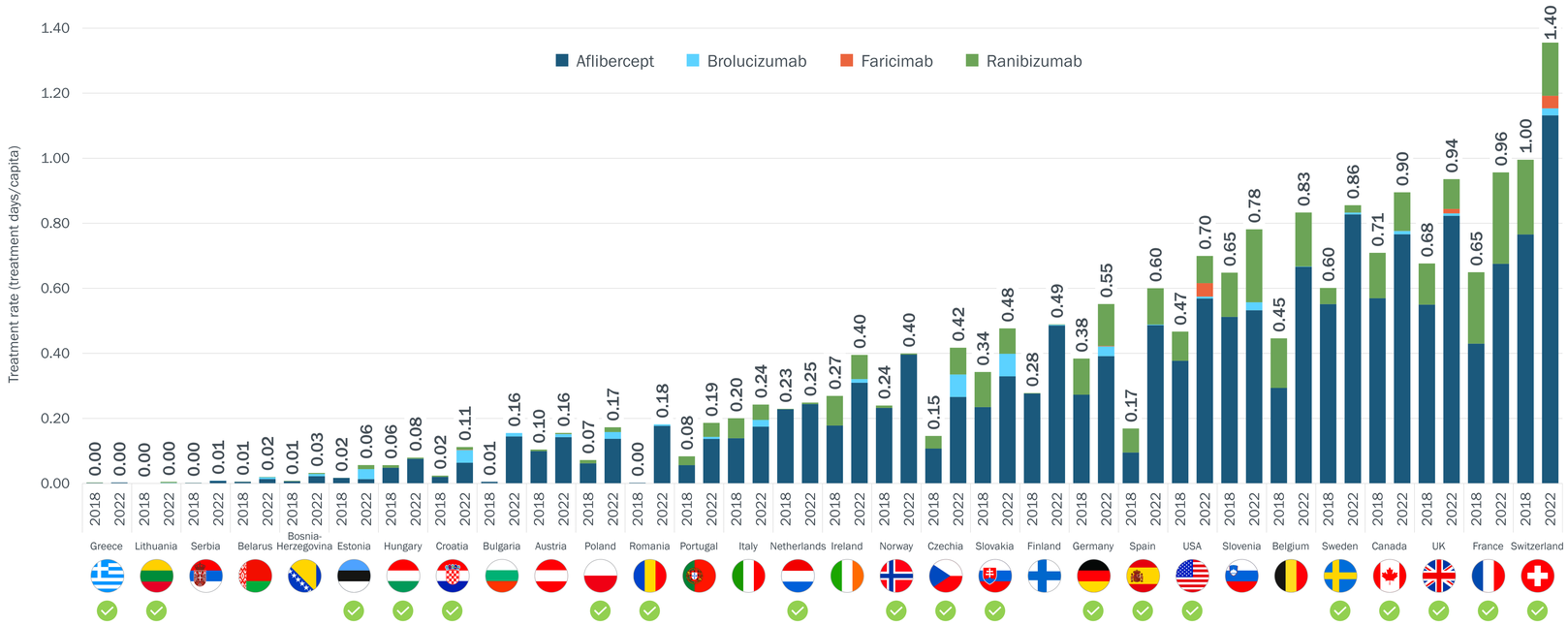

Figure 1.
Treatment Rate of anti-VEGF Molecules in Ophthalmic Indications (2018 vs. 2022)[1-4] and Ranibizumab Biosimilar List Price Availability (by October 1st, 2023)[5]

Green ticks indicate ranibizumab biosimilar list price registered as per October 1st, 2023.

Results

- Total anti-VEGF utilization in ophthalmology has increased significantly. From 2018-2022, total annual TD of the four investigated molecules has increased by 54% (**Table 1**).
- However, substantial disparities of molecule utilization between countries are evident (**Figure 1**).
- The three countries with highest treatment rates (Switzerland, France and UK) have an average of 0.974 TD/capita; the three countries with lowest treatment rates (Serbia, Lithuania, and Greece) have 0.005 TD/capita, indicating a 190-fold difference.
- The average annual drug sales by value for all 4 reference products across the 30 markets is estimated at 11.6 billion USD. Assuming a biosimilar discount rate of 30%-60%, the annual savings potential of biosimilar entry to the market is estimated at 3.5-7.0 billion USD (**Table 2**).
- As per October 1st, 2023, 19 out of 30 studied countries in **Figure 1** have ranibizumab biosimilars list price available.

Limitations

- The treatment rate calculation did not account for the off-label use of bevacizumab in retinal diseases, given its primary approval in oncology. If off-label use of bevacizumab in retinal diseases is taken into consideration, the actual treatment rate gap between countries is likely to be smaller.
- In addition, the estimation of potential biosimilar cost-savings is based on the present pattern of molecule usage, without factoring in potential changes in drug utilization trends or price adjustments.

Conclusions

- **The usage of established and newer anti-VEGFs has increased significantly in the past five years and will likely increase further due to an ageing population. Biosimilars could offer a more cost-effective treatment option and significant savings.**
- **However, in 30% of the examined countries there is little evidence indicating the presence of ranibizumab biosimilars in the market to date, presumably due to unfavorable market conditions.**
- **Effective policy, sustainable pricing and procurement models are essential to secure cost-saving potentials and tackle disparity in patient access.**

Disclosures of interest

Xin Q, Grieco S, Biernacka K, and Bodin M are employees of Biogen and hold stock in Biogen.

Disclaimer

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Abbreviations

Anti-VEGF, anti-vascular endothelial growth factor; ASP, average sales price; AVDD, average daily dose; mCNV, myopic choroidal neovascularization; DME, diabetic macular edema; DR, diabetic retinopathy; nAMD, neovascular age-related macular degeneration; Q2, second quarter; RVO, retinal vein occlusion; UK, United Kingdom; US, United States; USD, United States dollar; vs, versus.

References

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