

# A Unique Pattern of Average Sales Price Erosion of Pegfilgrastim Following Biosimilar Entry Into The US Market

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## INTRODUCTION

### Background

- Pegfilgrastim is a granulocyte colony-stimulating factor (G-CSF) supportive biologic agent in oncology.
- Pegfilgrastim is used to manage neutropenia: >90% of patients use it, increasing total healthcare expenditures and limiting patient access.
- Biosimilars are clinically equivalent, lower-cost alternatives that drive market competition.

### Objectives

- To quantify the longitudinal impact of biosimilar entry on the Average Sales Price (ASP) of reference pegfilgrastim and its US-approved biosimilars.
- To visualize changes in ASP trends.
- To assess if differences in ASP trends are statistically significant.

## METHODS

#### Study Design and Data Source

- Retrospective analysis of the real-world acquisition costs through the ASP data over 55 quarters (2010Q4-2024Q2)
- Published ASP Pricing Files at the Centers for Medicare and Medicaid Services (CMS) website

#### Biologic and Biosimilars

- Reference agent: pegfilgrastim
- Biosimilars: pegfilgrastim-jmdb, pegfilgrastim-cbqv, pegfilgrastim-bmez, pegfilgrastim-apgf, pegfilgrastim-pbbk, pegfilgrastim-fpgk

#### ASP Calculations

- For reference pegfilgrastim:  $ASP = \text{payment limit} / (1 + \text{Add-on } \%)$
- For biosimilars:  $ASP = \text{payment limit} - \text{reference ASP} * \text{Add-on } \%$
- Using CMS payment limits, incorporating temporal add-on percentage changes (4.3%, 6.0%, and 8.0%)

#### ASP Erosion Metrics

- ASP difference at biosimilar entry
- Biosimilar ASP % change over time
- Average quarterly percent increase in reference pegfilgrastim ASP pre-biosimilar entry
- Average quarterly percent decrease in reference pegfilgrastim ASP post-biosimilar entry
- Cumulative percent increase in reference pegfilgrastim ASP pre-biosimilar entry
- Projected to actual reference pegfilgrastim ASP in 2024Q2

#### Statistical Analysis

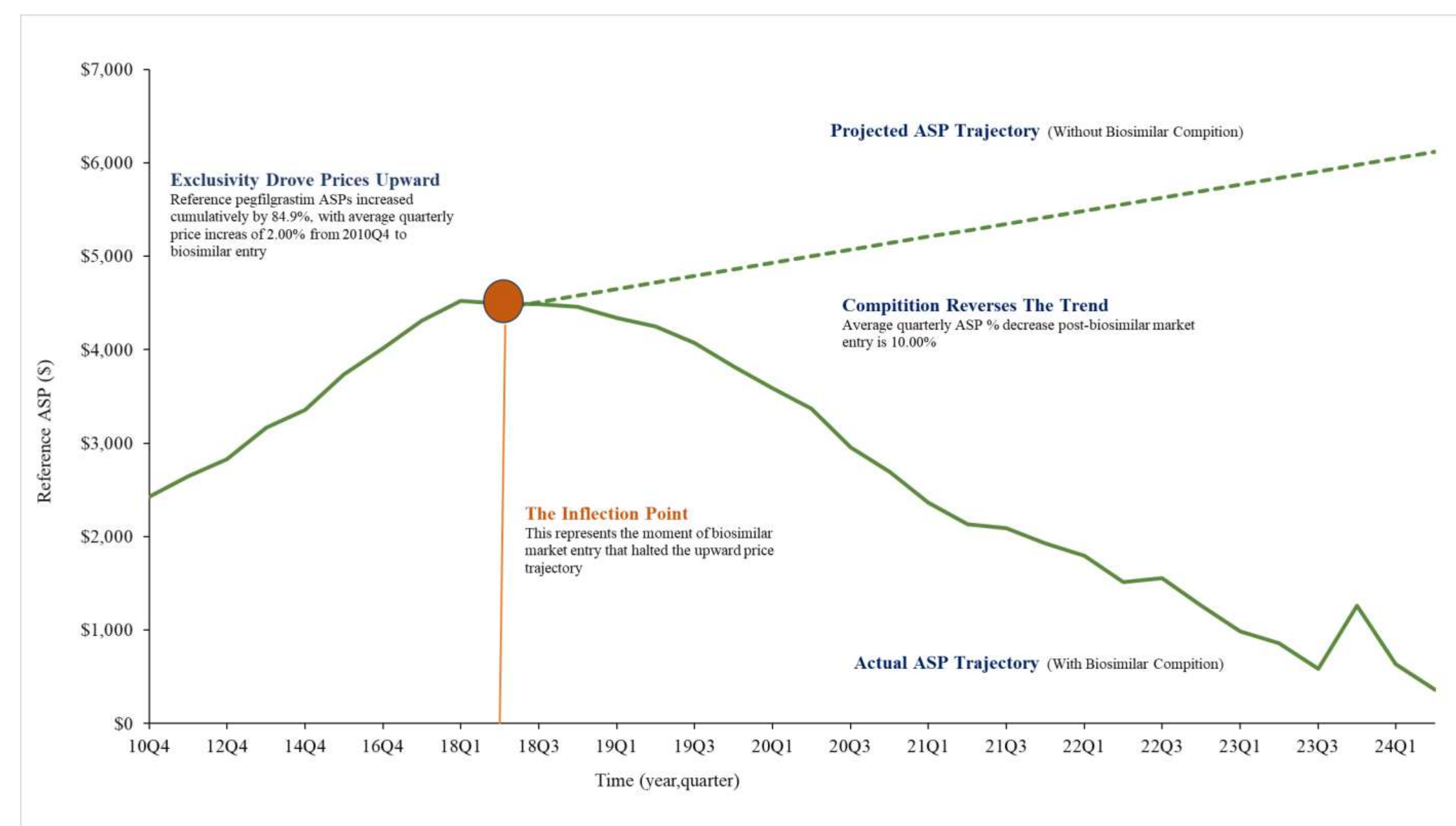
- t-test: Comparing the slope coefficients for reference pegfilgrastim pre- vs. post-biosimilar market entry
- Analysis of Covariance (ANCOVA): Comparing the slope coefficients of biosimilars

## RESULTS AND KEY FINDINGS

### ASP change of reference pegfilgrastim and its biosimilars in the US market

Biologic	Biosimilar (pegfilgrastim-)	Entry ASP	Reference ASP	Difference	Last ASP	Percent decline
Pegfilgrastim	jmdb	\$4,066	\$4,494	-\$429	\$1,605	-60.5%
	cbqv	\$3,943	\$4,464	-\$520	\$1,699	-56.9%
	bmez	\$3,592	\$3,592	\$0.10	\$282	-92.2%
	apgf	\$3,881	\$2,692	\$1,189	\$1,137	-70.7%
	pbbk	\$2,454	\$862	\$1,592	\$2,213	-9.8%
	fpgk	\$4,138	\$862	\$3,276	\$3,646	-11.9%

### Longitudinal ASP trends of reference pegfilgrastim (2010Q4-2024Q2)



▲▢ Projected reference ASP is 17.08 times the actual reference ASP in 2024Q2

### Comparative statistical summary of pegfilgrastim vs. biosimilar slope coefficients

Pegfilgrastim pre vs. post-biosimilar entry  
 $p = 0.007$   
Biosimilar differences  
 $p < 0.0001$

## DISCUSSION

- Biosimilar entry forces immediate reference pegfilgrastim ASP reduction, and this reduction continued over time.
- Most pegfilgrastim biosimilars entered markets and continued to have higher ASPs than the reference pegfilgrastim.
- This paradox in pegfilgrastim pricing strategies reflects its high utilization as a supportive care therapy, various administration forms, and specific contracting strategies between payers and providers.
- Biosimilar entry drives market competition, enhances the affordability of biologics, and lowers treatment costs.

## LIMITATIONS

- The analysis covers physician-administered biologics, which may not reflect the dynamics of biologics available through pharmacies.
- The analysis excludes other pricing drivers, including market adoption rates, private-label branding, and payer and provider contracting.

## KEY TAKEAWAY

Unlike other reference biologics, reference pegfilgrastim ASPs declined unusually after biosimilar entry, reflecting a unique defensive pricing strategy by the manufacturer.

## REFERENCES

- Synerg Biopharma. Biologics vs Small Molecules: A New Era in Drug Development. <https://synergbiopharma.com/biologics-vs-small-molecules/>
- U.S. Food & Drug Administration. <https://www.fda.gov/drugs/therapeutic-biologics-applications-bla/biosimilars>
- Centers for Medicare & Medicaid Services. ASP Pricing Files. <https://www.cms.gov/medicare/payment/part-b-drugs/asp-pricing-files>