Patient and Provider Factors Associated with Biosimilar Filgrastim Uptake in the United States

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We identified significant variation in biosimilar filgrastim uptake based on patient demographics, geography, and provider specialty.

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BACKGROUND

- Biosimilars are follow-on versions of complex biologic drugs, made by a different manufacturer from the original. They can be FDA-approved after a period of market exclusivity, leading to price competition and lower spending.
- Biosimilar market uptake has so far been limited, for many hypothesized reasons.
- The first biologic drug facing such direct competition in the US was filgrastim (Neupogen). Tbo-filgrastim (Granix) was commercially available in 2013, followed by additional biosimilars.

OBJECTIVE

- We evaluated patient and provider factors associated with initiation of biosimilar filgrastim in the US.

METHODS

Data
- **Data Source:** Optum Clinformatics Data Mart

Sample
- **Cohort**: Biologic or biosimilar filgrastim initiators from Nov 2013 to Mar 2022 by using CPT/HCPCS codes and NDC codes.

Statistical Analysis
- **Design**: Cross sectional study of filgrastim initiators (new-user design), measuring baseline characteristics during the 365 days before filgrastim use. We used multivariable logistic regression to identify which factors were associated with use of biosimilar vs originator filgrastim.
- **Outcomes**: Biosimilar vs reference biologic use
- **Covariates**: Age, sex, race/ethnicity, region, comorbidities, health care use, insurance type, place of service, physician specialty, and years since biosimilar market entry

RESULTS

Table 1. Association between Patient/Provider Characteristics and Initiation of Biosimilar Filgrastim

Characteristics	Biosimilar filgrastim (n= 17,911)	Reference biologic filgrastim (n=20,018)	Adjusted odds ratio of biosimilar vs biologic use (95% CI)	P value
Age in years, mean (SD)	67.0 (12.6)	64.3 (14.1)	(not included)	
Age category, yrs, n (%)				
>=65	12,116 (67.7)	11681 (58.4)	(reference)	
<18	37 (0.2)	225 (1.1)	0.12 (0.08, 0.18)	<0.001
18-45	1,148 (6.4)	1642 (8.2)	0.96 (0.83, 1.09)	0.512
46-64	4,610 (25.7)	6470 (32.3)	0.96 (0.88, 1.06)	0.448
Sex, n (%)				
Men	8,059 (45.0)	8679 (43.4)	(reference)	
Women	9,852 (55.0)	11339 (56.6)	0.99 (0.94, 1.05)	0.815
Insurance type, n (%)				
Medicare without low-income subsidy	10,446 (58.3)	9521 (47.6)	(reference)	
Medicare with low-income subsidy	1,967 (11.0)	1864 (9.3)	1.13 (1.02, 1.24)	0.017
Commercial HSA/HRA	1,521 (8.5)	2019 (10.1)	0.98 (0.86, 1.11)	0.751
Commercial non-HSA/HRA	3,977 (22.2)	6614 (33.0)	0.92 (0.83, 1.01)	0.094
Race/ethnicity, n (%)				
White	12,330 (68.8)	14232 (71.1)	(reference)	
Black	1,813 (10.1)	2058 (10.3)	0.95 (0.87, 1.04)	0.297
Asian	530 (3.0)	715 (3.6)	0.78 (0.67, 0.92)	0.002
Hispanic	2,209 (12.3)	1976 (9.9)	1.17 (1.07, 1.28)	0.001
Missing/Unknown	1,029 (5.8)	1037 (5.2)	1.03 (0.91, 1.17	0.617
Geographic region, n (%)				
Northeast	1,913 (10.7)	2279 (11.4)	(reference)	
Midwest	3,850 (21.5)	5075 (25.4)	1.03 (0.93, 1.14)	0.561
South	8,044 (44.9)	8908 (44.5)	1.14 (1.04, 1.25)	0.005
West	4,104 (22.9)	3756 (18.8)	1.63 (1.47, 1.81)	<0.001
Gagne comorbidity score (365-day), mean (SD)	7.5 (3.9)	6.6 (3.7)	1.02 (1.01, 1.03)	<0.001
Health care use, mean (SD)				
Emergency department visits	1.3 (2.6)	1.1 (2.6)	1.01 (1.00, 1.02)	0.039
Hospital admissions	1.0 (1.3)	1.1 (1.5)	0.92 (0.90, 0.94)	<0.001
Outpatient visits	3.7 (17.9)	36.5 (44.1)	1.00 (1.00, 1.00)	<0.001
Number of prescriptions	35.9 (29.9)	36.1 (30.4)	1.00 (1.00, 1.00)	0.038
Number of distinct medications	13.3 (8.1)	13.0 (7.9)	1.00 (1.00, 1.01)	0.225
Place of service, n (%)				
Hospital outpatient	8,654 (48.3)	8242 (41.2)	(reference)	
Clinic office	8,768 (49.0)	11238 (56.1)	1.01 (0.92, 1.09)	0.904
Others/Unknown	489 (2.7)	538 (2.7)	1.46 (1.22, 1.75)	<0.001
Provider specialty, n (%)				
Specialist	7,313 (40.8)	9973 (49.8)	(reference)	
Primary care physician	919 (5.1)	780 (3.9)	1.28 (1.11, 1.49)	0.001
Others	7,610 (42.5)	7704 (38.5)	1.19 (1.09, 1.30)	<0.001
Missing/Unknown	2,069 (11.6)	1561 (7.8)	4.47 (4.01, 4.99)	<0.001
Yrs after biosimilar market entry, mean (SD)	6.5 (1.9)	3.1 (2.2)	4.19 (3.87, 4.54)	<0.001
Squared yrs after biosimilar market entry, n (SD)	46.0 (24.1)	14.3 (17.2)	0.93 (0.93, 0.94)	<0.001

Notes: HRA: Health Reimbursement Arrangement; HSA: Health Savings Account; Adjusted OR>1: greater biosimilar use; Adjusted OR <1: less biosimilar use

Figure 1: Trends in Proportion of Biosimilar Filgrastim Initiators in the US

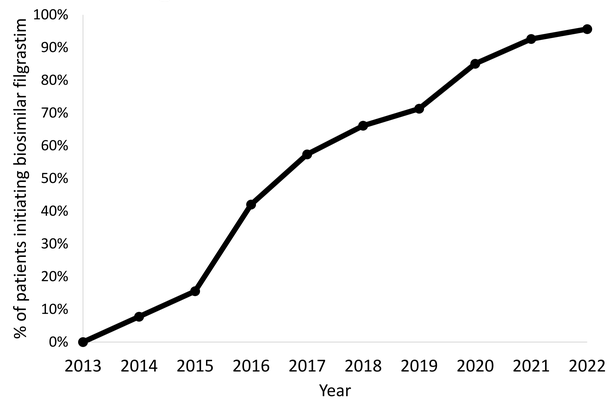
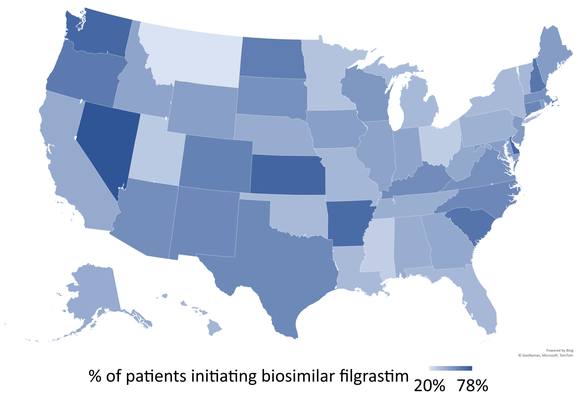


Figure 2: Prevalence of Patients Initiating Biosimilar Filgrastim in the US 2013-2022



DISCUSSION

Conclusions
- Factors associated with higher biosimilar initiation included Hispanic ethnicity, Medicare with low-income subsidy, worse comorbidity score, and prescriptions from primary care physicians and other providers
- Factors associated with less biosimilar initiation included younger age, Asian race, and higher hospital admission.
- There was geographic variation, with the highest biosimilar use in the West and South.

Implications
- Our results can inform policy interventions to improve uptake of less expensive biosimilars, which could yield health care savings and improve affordability and access to biologic medications.

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