A0192

Healthcare Resource Utilization and Costs Among Eosinophilic Esophagitis Patients in the United States

Mirna Chehade[1], Andrew J Epstein[2], Eilish McCann[3], Sarette T Tilton[4], Arpita Nag[4], Chao Chen[3], Degang Wang[3], Tiffany Pela[4], Angela Khodzhayev[3], Ryan B Thomas[3]

[1]Mount Sinai Center for Eosinophilic Disorders, Icahn School of Medicine at Mount Sinai, New York, NY, USA; [2]Medicus Economics, Milton, MA, USA; [3]Regeneron Pharmaceuticals, Tarrytown, NY, USA; [4]Sanofi, Cambridge, MA, USA

BACKGROUND

- Eosinophilic esophagitis (EoE) is a chronic, progressive type 2 inflammatory disease, characterized by symptoms related to esophageal dysfunction, including dysphagia, which can lead to food impaction.[1,2]
- EoE prevalence appears to be increasing over time; US prevalence was approximately 79 per 100,000 in 2017 and 117 per 100,000 in 2018.[3]
- EoE negatively impacts quality of life; however, the economic burden associated with EoE and its management is currently unclear.[4,5]

OBJECTIVE

- **To describe the current healthcare resource utilization (HCRU) and economic burden associated with EoE in the US.**

METHODS

- We conducted a retrospective cohort analysis of claims data from the IQVIA PharmMetrics Plus Database, comparing patients with ≥1 EoE diagnosis (identified via ICD-10-CM code: K20.0) versus matched non-EoE control patients.
- Index date was defined as the date of a randomly selected claim with an EoE diagnosis code (for patients with EoE) or a random date (for controls) during the identification period (Jan 1, 2018–Jun 30, 2019).
- In addition, EoE patients and controls had to have 365 days of pre-index baseline data and 365 days of continous post-index follow-up data to be eligible for inclusion in the analysis.
- EoE patients were matched 1:1 with controls by age, sex, insurance, and geographic region.
- Direct HCRU and HCRU-associated costs per patient during follow-up were reported and compared by Wilcoxon signed-rank tests.
- Adjusted HCRU and costs were analyzed via regression analysis, adjusting for non-EoE–related comorbidities based on Charlson and Sun comorbidity indices.
- The following regression model types were estimated:
  - Generalized linear models with log links for continuous outcome measures (eg, total healthcare costs).
  - Negative binomial regression models for discrete count outcome measures (eg, number of outpatient visits).
- A subanalysis was conducted to assess outcomes among patients who received esophageal dilation for EoE during baseline.

RESULTS

- In total, 15,432 patients with EoE and 15,432 matched controls were included; the mean age of patients with EoE was 36.2 years, and 62.8% were male (**Table 1**).
- During baseline, a considerable proportion of patients with EoE received proton pump inhibitors (63.7%), corticosteroids (29.6%), or underwent esophageal dilation (21.4%) (**Table 1**); the EoE cohort also had higher rates of type 2 inflammation–related, gastrointestinal, and psychiatric comorbidities than matched non-EoE controls.

Table 1. Baseline Characteristics

	EoE (N=15,432)	Non-EoE (N=15,432)
Mean age, years (SD)	36.16 (17.09)	36.16 (17.09)
Age group, n (%)		
0–11 years	1459 (9.5)	1459 (9.5)
12–17 years	1588 (10.3)	1588 (10.3)
18–24 years	1461 (9.5)	1461 (9.5)
25–34 years	2111 (13.7)	2111 (13.7)
35–44 years	3226 (20.9)	3226 (20.9)
45–54 years	3149 (20.4)	3149 (20.4)
55–64 years	2130 (13.8)	2130 (13.8)
≥65 years	308 (2.0)	308 (2.0)
Male, n (%)	9698 (62.8)	9698 (62.8)
Geographic region, n (%)		
Midwest	4919 (31.9)	4919 (31.9)
Northeast	2820 (18.3)	2820 (18.3)
South	5559 (36.0)	5559 (36.0)
West	2134 (13.8)	2134 (13.8)
Insurance type, n (%)		
Commercial	15,191 (98.4)	15,191 (98.4)
Medicaid	68 (0.4)	68 (0.4)
Medicare	173 (1.1)	173 (1.1)
Charlson/Sun combined comorbidity count, n (%)		
0	0	7007 (45.4)
1	2636 (17.1)	3313 (21.5)
2	3277 (21.2)	2112 (13.7)
≥3	9519 (61.7)	3000 (19.4)
Type 2 inflammation–related comorbidities, n (%)		
Allergic rhinitis	4035 (26.1)	993 (6.4)
Anaphylaxis episodes	17 (0.1)	5 (0.0)
Asthma	3268 (21.2)	780 (5.1)
Atopic dermatitis	561 (3.6)	156 (1.0)
Chronic rhinosinusitis	516 (3.3)	131 (0.8)
Eczema	565 (3.7)	328 (2.1)
Eosinophilic colitis	39 (0.3)	0
Eosinophilic gastritis or gastroenteritis	283 (1.8)	1 (0.0)
Food allergy	1902 (12.3)	73 (0.5)
Nasal polyps	130 (0.8)	25 (0.2)
Peanut allergy	406 (2.6)	20 (0.1)
Pollen or food allergy	321 (2.1)	62 (0.4)
Gastrointestinal comorbidities, n (%)		
Gastroesophageal reflux disease	6547 (42.4)	875 (5.7)
Inflammatory bowel disease	431 (2.8)	92 (0.6)
Psychiatric comorbidities, n (%)		
Anxiety	2763 (17.9)	1423 (9.2)
Depression	1368 (8.9)	855 (5.5)
Treatment use and procedures, n (%)		
Any corticosteroid use	4563 (29.6)	842 (5.5)
Proton pump inhibitors	9832 (63.7)	983 (6.4)
Prescription food	136 (0.9)	1 (0.0)
Antibiotics	6848 (44.4)	5042 (32.7)
Antifungals	976 (6.3)	502 (3.3)
Esophageal dilation	3310 (21.4)	22 (0.1)

SD, standard deviation.

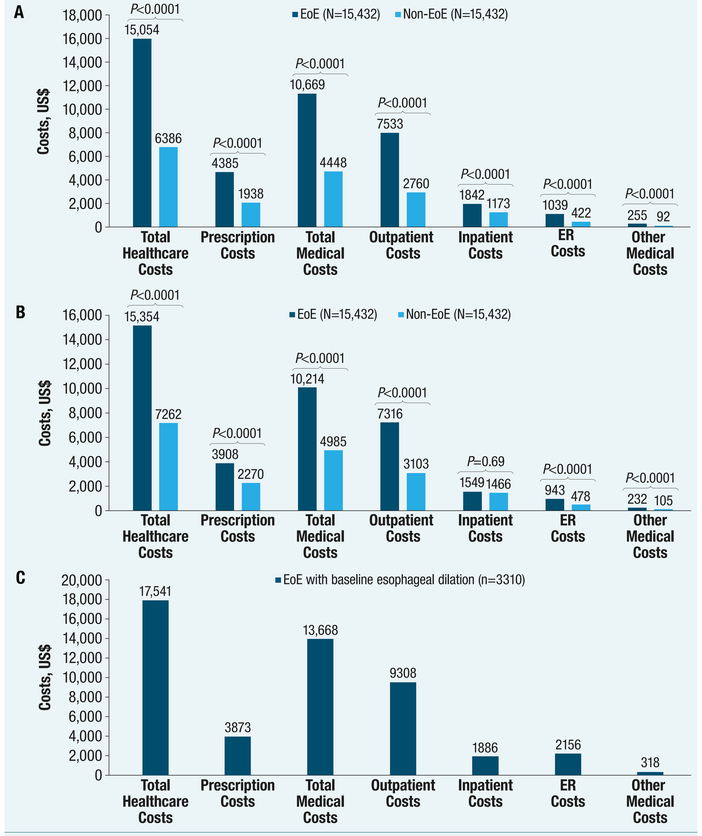
- Unadjusted HCRU burden and costs were consistently higher for patients with EoE compared with non-EoE control patients (**Table 2**; **Figure A**).
- After adjusting for non-EoE–related comorbidities, the majority of HCRU outcomes and costs (including prescription use, outpatient visits, days with ER visits, and total healthcare costs) remained significantly higher in patients with EoE compared with controls (**Table 2**; **Figure B**).
- EoE patients with baseline esophageal dilations (n=3310) had high total costs and frequent ER visits in the year after index date. (**Table 2**; **Figure C**).

Table 2. Mean (SD) Annual HCRU of Patients With EoE and Matched Non-EoE Controls

				Adjusted*			
	EoE N=15,432	Non-EoE N=15,432	*P*-value	EoE N=15,432	Non-EoE N=15,432	*P*-value	EoE With Dilation During Baseline n=3310
Prescriptions filled, n (SD)	20.0 (22.4)	10.5 (17.9)	<0.0001	20.6 (0.2)	11.6 (0.2)	<0.0001	21.6 (24.1)
Outpatient visits, n (SD)	16.5 (19.9)	7.3 (11.5)	<0.0001	15.3 (0.2)	8.4 (0.1)	<0.0001	16.7 (19.6)
Inpatient visits, n (SD)	0.5 (4.0)	0.3 (5.5)	<0.0001	0.6 (0.2)	0.5 (0.1)	0.05	0.5 (2.7)
Inpatient visit, total days (SD)	0.6 (5.8)	0.4 (5.6)	<0.0001	0.9 (0.4)	0.8 (0.3)	0.134	0.6 (3.8)
ER visits, n (SD)	0.6 (1.6)	0.2 (0.8)	<0.0001	0.5 (0.0)	0.2 (0.0)	<0.0001	1.1 (2.2)
Other medical visits, n (SD)	1.3 (2.8)	0.70 (1.6)	<0.0001	1.2 (0.0)	0.8 (0.0)	<0.0001	1.4 (2.7)

ER, emergency room; SD, standard deviation.
*Adjusted for non-EoE–related comorbidities: AIDS/HIV, alcohol, anemia, anxiety or panic disorder, cancer, cardiovascular conditions, cerebrovascular disease, chromosomal anomalies, chronic pulmonary disease, conduct disorder, congenital malformations, congestive heart failure, dementia, developmental delays, diabetes mellitus, diabetes with/without chronic complication, drug abuse or dependence, eating disorders, epilepsy or convulsions, hemiplegia or paraplegia, joint disorders, liver, menstrual disorders, metastatic solid tumor, mild liver disease, myocardial infarction, nausea and vomiting, pain conditions, peptic ulcer disease, peripheral vascular disease, psychotic disorders, renal disease, rheumatic disease, sleep disorders, smoking, and weight loss.

Figure. Annual Healthcare Costs of Patients With (A) EoE and Matched Non-EoE Controls (Unadjusted); (B) EoE and Matched Non-EoE Controls (Adjusted); and (C) EoE With Dilation During Baseline (Unadjusted)



ER, emergency room.
Total medical costs include outpatient costs, inpatient costs, ER costs, and other medical costs.

CONCLUSIONS

- **Annual HCRU and costs were higher in patients with EoE versus matched controls, particularly for prescription use, outpatient visits, and ER visits.**
- **EoE patients with dilation during baseline had high cost and HCRU burden, highlighting the importance of achieving disease control to prevent fibrostenotic complications and consequent esophageal dilations.**

References: 1. Reed CC, et al. *Med Clin North Am* 2019;103:29-42. 2. Dellon ES, et al. *Gastroenterology* 2018;155:1022-33.e10. 3. Kamat, S, et al. *Am J Gastroenterol* 2021;116:5184-5185. 4. Lucendo AJ, et al. *United European Gastroenterol J* 2017;6:38-45. 5. Mukkada V, et al. *Clin Gastroenterol Hepatol* 2018;16:495-503.e8.
Acknowledgments: This research was funded by Regeneron Pharmaceuticals, and Sanofi. Medical writing assistance was provided by Martin Bell and Vanessa Gross of Curo (part of Envision Pharma Group), funded by Sanofi and Regeneron Pharmaceuticals.
Disclosures: EM, RBT, CC, DW, and **AK:** Employees and stockholders of Regeneron Pharmaceuticals. **STT, AN,** and **TP:** Employees and stockholders of Sanofi. **MC:** Has received research funding from Regeneron Pharmaceuticals, Allakos, Shire/Takeda, AstraZeneca, Adare/Ellodi, and Danone and consulting fees from Pharmaceuticals, Shire/Takeda, Allakos, Adare/Ellodi, AstraZeneca, Sanofi, Bristol Myers Squibb, and Phathom. **AJE** is an employee of Medicus Economics, which received funding from Regeneron Pharmaceuticals, and Sanofi for this analysis.

Presented at the American College of Gastroenterology (ACG)–87th Annual Scientific Meeting. October 21-26, 2022. Charlotte, North Carolina.

Please scan this QR (Quick Response) code with your smartphone app to view an electronic version of this poster. If you do not have a smartphone, access the poster via the internet at: https://bit.ly/3V55muN