EE238

Eosinophilic esophagitis-related healthcare resource utilization: a retrospective cohort study of US health insurance claims data

Benjamin D Gold,[1] Elizabeth T Jensen,[2,3] Bridgett Goodwin,[4] Yiyan Liu,[4] Michael Kim,[5] Taylor T Schwartz,[6] Carolyn R Schaeffer-Koziol,[4] Brian Terreri[4] and Alan P Baptist[7]

[1]GI Care for Kids, Children's Center for Digestive Healthcare, LLC, Atlanta, GA, USA; [2]Department of Epidemiology and Prevention, Wake Forest University School of Medicine, Winston-Salem, NC, USA; [3]Internal Medicine, Gastroenterology Section, Wake Forest University School of Medicine, Winston-Salem, NC, USA; [4]Takeda Pharmaceuticals USA, Inc., Lexington, MA, USA; [5]Takeda Pharmaceuticals USA, Inc., Chicago, IL, USA; [6]Avalere Health, Washington, DC, USA; [7]Division of Allergy and Clinical Immunology, Henry Ford Health and Michigan State University Health Sciences, Detroit, MI, USA

Introduction

- EoE is a chronic, immune-mediated disease of the esophagus, characterized by esophageal dysfunction and eosinophilic infiltration of the esophageal mucosa.[1]
- If untreated or inadequately treated, patients with EoE can progress to a fibrostenotic phenotype,[1,2] which is associated with the formation of esophageal strictures and the potential for food impactions.[2]
- The incidence and prevalence of EoE are rapidly increasing worldwide,[3,4] and the impact on healthcare systems is substantial.[1,5]
  - Patients require endoscopies and biopsies for diagnosis, with further procedures to monitor treatment outcomes.[1]
  - Patients with EoE utilize healthcare resources more than those without EoE.[5]
  - EoE is now a commonly encountered condition in GI and allergy practices and in EDs.[1]
- In 2017, EoE-related healthcare costs in the USA were estimated to be $1.04 billion, and this had increased to $1.32 billion by 2024.[4]

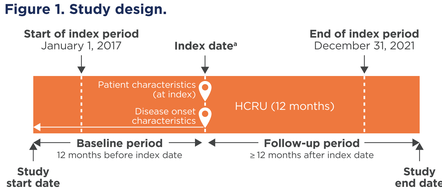
Aim

- To provide up-to-date EoE-related HCRU estimates for patients diagnosed with EoE in the USA to further understand the burden of the disease on the healthcare system.

Methods

- This was a retrospective, longitudinal cohort study (**Figure 1**) conducted to analyze US health insurance closed claims data from the Inovalon closed claims (ICC) database and the 100% sample of Medicare Fee-For-Service (MFFS) parts A/B/D claims and enrollment data (January 1, 2016 – December 31, 2022).
  - The ICC database includes commercial, Medicare Advantage and Medicaid managed plan members.
- Patients were included if they:
  - had an EoE diagnosis (defined as ≥ 2 claims ≥ 30 days apart for EoE [ICD-10-CM: K20.0] in the index period [January 1, 2017 – December 31, 2021])
    - The index date was the date of the first claim for EoE.
  - were ≥ 11 years old at the index date
  - had continuous enrollment in medical and pharmacy benefits for ≥ 12 months both pre- and post-index date ('baseline' and 'follow-up' periods, respectively).
- Patients with a post-index claim for eosinophilic gastritis or gastroenteritis (ICD-10-CM: K52.81) were excluded.
- EoE-related HCRU (hospitalizations and ED, outpatient and post-acute care visits) was assessed over the 12-month follow-up period.

Figure 1. Study design.



[a]The index date was defined as the first of the two claims (≥ 30 days apart) with a diagnosis code for EoE (ICD-10-CM: K20.0) between January 1, 2017, and December 31, 2021.

Results

Study population and baseline demographics

- Data were analyzed from 37,809 and 15,109 patients diagnosed with EoE (ICC and MFFS, respectively; **Table 1**).

Table 1. Baseline demographics and clinical characteristics for patients diagnosed with EoE were generally similar, except for age at index and prevalence of some comorbidities, which were higher in MFFS beneficiaries than in ICC members.

Demographic/clinical characteristic	ICC (N = 37,809)	MFFS (N = 15,109)
Age at index date, years, mean (SD)	38.1 (16.7)	66.8 (13.2)
Median (Q1–Q3)	39.0 (23.0–51.0)	70.0 (66.0–74.0)
Sex, n (%)		
Male	22,560 (59.7)	7638 (50.6)
Female	15,248 (40.3)	7471 (49.4)
Unknown	1 (0.0)	0 (0.0)
Race/ethnicity, n (%)		
Asian	NA	100 (0.7)
Black	NA	527 (3.5)
Hispanic	NA	126 (0.8)
North American Native	NA	53 (0.4)
White	NA	13,649 (90.3)
Other	NA	654 (4.3)
Census region, n (%)		
Midwest	13,386 (35.4)	3636 (24.1)
South	10,841 (28.7)	5017 (33.2)
West	7719 (20.4)	3594 (23.8)
Northeast	5793 (15.3)	2862 (18.9)
Unknown	70 (0.2)	0 (0.0)
CCI, mean (SD)	0.6 (1.2)	1.8 (2.2)
Comorbidities of interest, n (%)		
Atopic		
Allergic rhinitis/hay fever	9502 (25.1)	3481 (23.0)
Asthma	8179 (21.6)	2891 (19.1)
Allergic conjunctivitis	1260 (3.3)	480 (3.2)
Atopic dermatitis	924 (2.4)	347 (2.3)
Cardiometabolic		
Hyperlipidemia	6849 (18.1)	8866 (58.7)
Obesity	4626 (12.2)	2376 (15.7)
Atrial fibrillation	421 (1.1)	1301 (8.6)
Endocrine		
Hypothyroidism	3223 (8.5)	3711 (24.6)
General		
Fatigue	4941 (13.1)	3332 (22.1)
Psychiatric		
Anxiety	8685 (23.0)	3762 (24.9)
Depression	5528 (14.6)	3306 (21.9)
Vascular/blood		
Hypertension	7162 (18.9)	9193 (60.8)
Anemia	2062 (5.5)	2674 (17.7)
Iron deficiency	1385 (3.7)	1325 (8.8)
Signs/symptoms at disease onset,[a] n (%)		
Regurgitation	20,845 (55.1)	10,578 (70.0)
Dysphagia	20,441 (54.1)	9104 (60.3)
Esophageal fibrosis	13,825 (36.6)	7061 (46.7)
Abdominal pain	13,388 (35.4)	5014 (33.2)
Chest pain	6538 (17.3)	3865 (25.6)
Vomiting	5596 (14.8)	1960 (13.0)
Esophageal dilation	5352 (14.2)	3350 (22.2)
Food impaction	3533 (9.3)	1148 (7.6)
Weight loss/poor growth	2883 (7.6)	1337 (8.8)

[a]The presence of at least one claim for any of these signs/symptoms was used to determine the date of disease onset. Disease onset must have been before or at the index date.

EoE imposes a substantial healthcare burden on patients and healthcare systems in the USA, primarily driven by frequent outpatient visits. Notably, ~2% of patients diagnosed with EoE were admitted to the hospital annually, and ~3% of patients visited the ED each year for EoE-related complications with almost half due to food impactions.

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Conclusions

- **In summary, EoE imposes a substantial healthcare burden on patients in the USA.**
- **The most used healthcare resource among patients diagnosed with EoE was outpatient services, similar to findings by Lu *et al.* (2022).[5]**
- **In total, ~2% of patients diagnosed with EoE were admitted to the hospital annually, and ~3% of patients visited the ED each year for EoE-related complications.**
  - **Approximately half of patients diagnosed with EoE visiting the ED had food impactions, consistent with previous reports.[8]**
- **Our analysis highlights the burden of EoE on patients and healthcare systems in the USA.**
- **There remains an unmet need for early diagnosis and treatment in EoE to prevent disease progression and the development of fibrostenotic complications, which may lead to ED presentation/hospitalization.**

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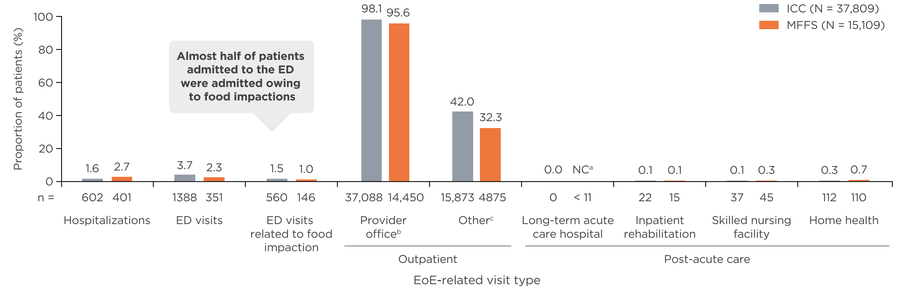
Email contact: echo.liu@takeda.com

EoE-related HCRU during the follow-up period

Figure 2. During the 12-month follow-up period, patients diagnosed with EoE relied mostly on outpatient services. In total, ~2% of patients were admitted to the hospital annually and ~3% of patients visited the ED each year for EoE-related complications.



Data are presented as the proportion of patients with ≥ 1 EoE-related visit within each care setting over the 12-month follow-up period.
[a]Owing to the small sample size, the sharing of these data was not permitted. [b]For ICC, this includes FFS provider visits. For MFFS, this includes professional providers (physicians, PAs, clinical social workers and NPs) and organizational providers (e.g. free-standing facilities). [c]For ICC, this includes ambulance services, ambulatory surgical centers, ESRD/renal centers and other outpatient services. For MFFS, this includes hospital outpatient departments, rural health clinics, renal dialysis facilities, outpatient rehabilitation facilities, comprehensive outpatient rehabilitation facilities, Federally Qualified Health Centers and community mental health centers.

Table 2. During the 12-month follow-up period, outpatient services were the healthcare resource most used by patients diagnosed with EoE, with a substantial number of ED visits related to food impactions.

EoE-related HCRU PPPM	ICC (N = 37,809)	MFFS (N = 15,109)
Hospitalizations		
n	602	401
Number of admissions, mean (SD)	0.02 (0.17)	0.03 (0.22)
Length of admission, days, mean (SD)	0.14 (6.41)	0.15 (1.40)
ED visits		
n	1388	351
Number of visits, mean (SD)	0.04 (0.24)	0.03 (0.18)
ED visits related to food impaction		
n	560	146
Number of visits, mean (SD)	0.02 (0.13)	0.01 (0.10)
Outpatient visits		
Provider office[a]		
n	37,088	14,450
Number of visits, mean (SD)	3.00 (4.40)	3.12 (2.53)
Other[b]		
n	15,873	4875
Number of visits, mean (SD)	0.69 (1.12)	0.56 (1.08)
Days spent in post-acute care		
Long-term acute care hospital		
n	0	< 11
Number of days, mean (SD)	0.00 (0.00)	0.00 (0.25)
Inpatient rehabilitation		
n	22	15
Number of days, mean (SD)	0.01 (0.34)	0.01 (0.50)
Skilled nursing facility		
n	37	45
Number of days, mean (SD)	0.03 (1.68)	0.11 (2.47)
Home health		
n	112	110
Number of days, mean (SD)	0.05 (1.53)	0.17 (3.03)

Data are presented for patients with ≥ 1 EoE-related visit within each care setting over the 12-month follow-up period.
[a]For ICC, this includes FFS provider visits. For MFFS, this includes professional providers (physicians, PAs, clinical social workers and NPs) and organizational providers (e.g. free-standing facilities). [b]For ICC, this includes ambulance services, ambulatory surgical centers, ESRD/renal centers and other outpatient services. For MFFS, this includes hospital outpatient departments, rural health clinics, renal dialysis facilities, outpatient rehabilitation facilities, comprehensive outpatient rehabilitation facilities, Federally Qualified Health Centers and community mental health centers.

Limitations

- It is estimated that approximately half of patients with EoE are undiagnosed in the USA,[6] and that a substantial proportion of adults in the USA are underinsured/uninsured.[7] Hence, these data are likely to underestimate the burden of EoE.

Abbreviations

CCI, Charlson Comorbidity Index; ED, emergency department; EoE, eosinophilic esophagitis; ESRD, end-stage renal disease; FFS, fee-for-service; GI, gastrointestinal; HCRU, healthcare resource utilization; ICC, Inovalon closed claims; ICD-10-CM, International Classification of Diseases, Tenth Revision, Clinical Modification; MFFS, Medicare Fee-For-Service; NA, not available; NC, not calculable; NP, nurse practitioner; PA, physician assistant; PPPM, per patient per month; Q, quartile; SD, standard deviation.

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