

Healthcare Resource Utilization and Costs Among Adolescent Patients with Chronic Rhinosinusitis with Nasal Polyps (CRSwNP): A US Administrative Claims Database Study

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Objective

To describe the economic burden of chronic rhinosinusitis with nasal polyps (CRSwNP) among adolescents in the United States.

Background

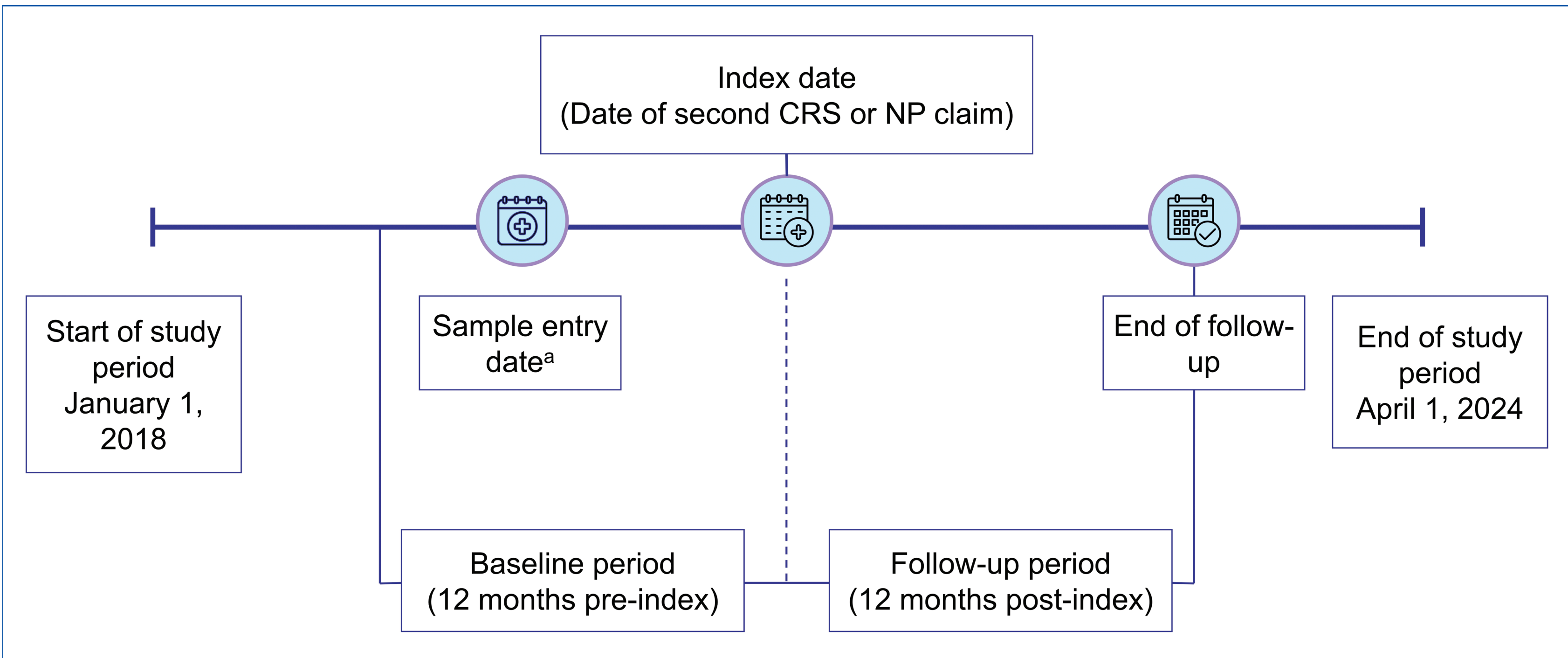
- CRSwNP is an inflammatory disease of the nasal cavity and paranasal sinuses, associated with substantial clinical, humanistic, and economic burden.¹
- Increased healthcare resource utilization (HCRU) and costs are associated with the severity of disease, with more severe cases associated with significantly greater burden on patients with CRSwNP.²
- There is limited real-world evidence evaluating HCRU and costs in adolescent patients with CRSwNP in the United States.

Methods

Study design and population

- This retrospective cohort study leveraged claims data from Optum's de-identified Clinformatics® Data Mart Database between January 1, 2018, to April 1, 2024.
- The study cohort consisted of eligible adolescent patients (12–17 years) with CRSwNP identified using international classification of diseases (ICD)-10 codes.
- CRSwNP was defined as ≥1 claim with chronic rhinosinusitis (CRS) ICD-10 code (J32.X), and ≥1 claim with nasal polyp (NP)-related ICD-10 code (J33.X) occurring ≥30 days apart or ≥2 NP-related claims occurring ≥30 days apart.
- The index date was defined as the date of the second CRS or NP claim. Patients were required to be continuously enrolled in their health plan for ≥12 months prior to (baseline) and post (follow-up) the index date. The study design is illustrated in **Figure 1**.
- Patient demographics, comorbidities, and treatments were described at baseline.

Figure 1: Study design



*The earliest date when a patient met the inclusion criteria for uncontrolled disease, defined as having either (i) ≥1 claim with CRS-related (J32.X) and NP-related (J33.X) ICD-10 codes, or (ii) ≥2 NP-related claims occurring ≥30 days apart. CRS, chronic rhinosinusitis; CRSwNP, chronic rhinosinusitis with nasal polyps; ICD, international classification of diseases; NP, nasal polyp.

Outcomes

- HCRU and costs during the 12-month follow-up period were reported for the study population and a subgroup of patients treated with systemic corticosteroids and/or functional endoscopic sinus surgery (FESS) at baseline (treated subgroup).

Statistical analysis

- Descriptive statistics were used to summarize continuous (described using mean, standard deviation [SD], median, and interquartile range [IQR]) and categorical variables (described using *n* and %).

Results

- A total of 538 adolescent patients with CRSwNP (mean [SD] age, 15.0 [1.7] years; male, 62.8%; treated subgroup patients, 66.2%) were included in the study. Allergic rhinitis (70.1%) and asthma (39.4%) were the most prevalent type 2 comorbidities at baseline (**Table 1**).
- FESS was performed in 26.2% of patients; 60.8% and 53.5% of the patients were dispensed oral antibiotics and oral corticosteroids, respectively, at baseline (**Table 1**).

Table 1. Patient demographic and clinical characteristics at baseline

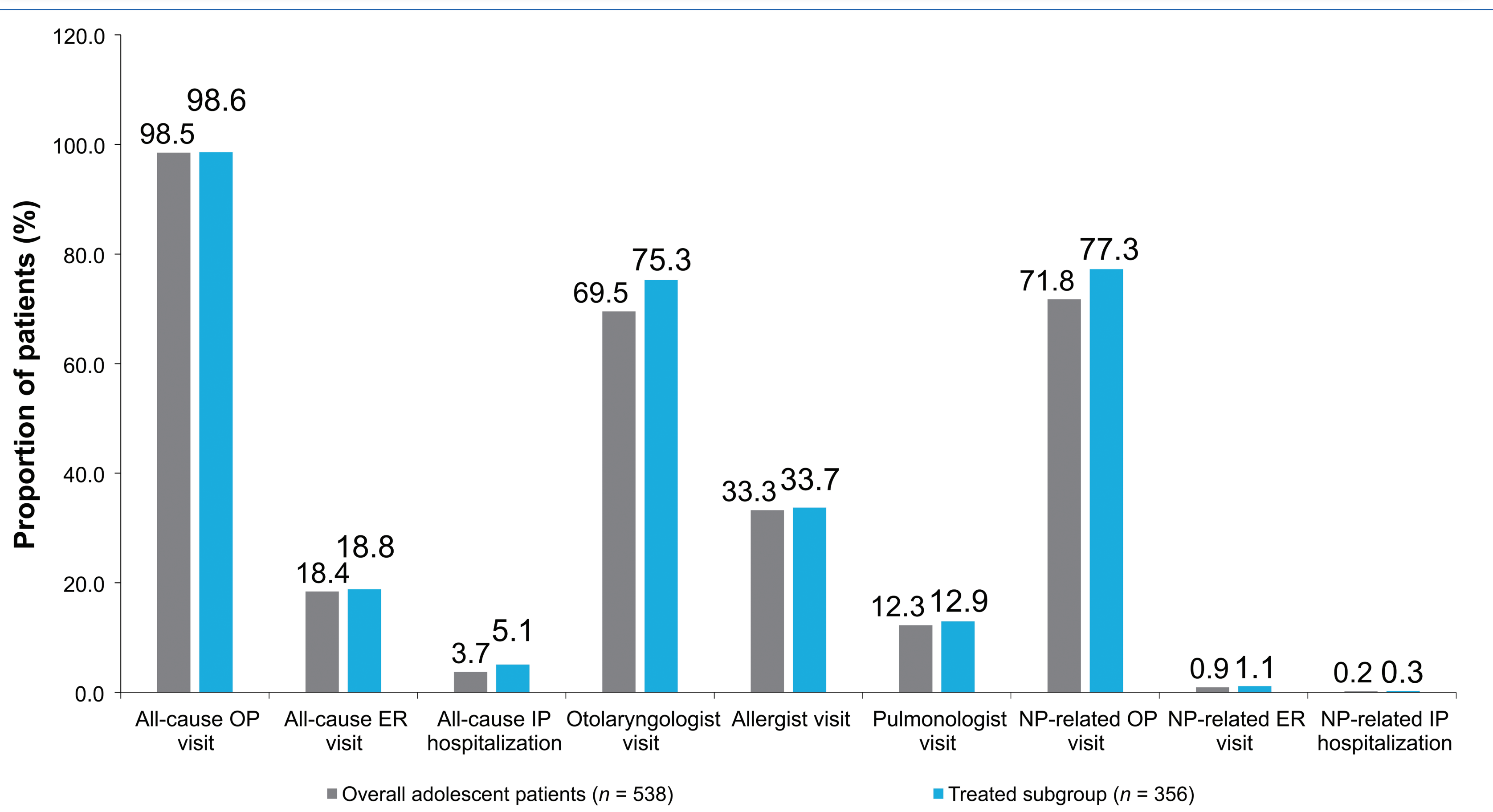
Patient demographic and clinical characteristics	Overall adolescent patients (N = 538)
Age, mean (SD), years	15.0 (1.7)
Male, n (%)	338 (62.8)
Type 2 inflammatory conditions, n (%)	
Allergic rhinitis	377 (70.1)
Asthma	212 (39.4)
Atopic dermatitis	45 (8.4)
Allergic conjunctivitis	31 (5.8)
Eosinophilic esophagitis	7 (1.3)
Chronic spontaneous urticaria	6 (1.1)
Treatment history ^a , n (%)	
Oral antibiotics	327 (60.8)
Oral steroids	288 (53.5)
Macrolides	151 (28.1)
Leukotriene receptor antagonists	142 (26.4)
NSAIDs	75 (13.9)
Inhaled corticosteroids	70 (13.0)
Antihistamines	15 (2.8)
Biologics ^b	7 (1.3)
NP-related surgery	
FESS	141 (26.2)
Polypectomy	63 (11.7)

^aPatient may have received more than one treatment. ^bIncluded dupilumab, omalizumab, and mepolizumab. FESS, functional endoscopic sinus surgery; N, size of the population. n, sample size; NP, nasal polyp; NSAID, non-steroidal anti-inflammatory drug; SD, standard deviation.

HCRU and costs

- During the 12-month follow-up period, the proportion of patients with otorhinolaryngologist visits and all-cause inpatient hospitalizations were 69.5% and 3.7% in the total study population and 75.3% and 5.1% in the treated subgroup, respectively (**Figure 2**).
- The median annual all-cause healthcare costs were \$8,047 and \$9,145 in the total study population and the treated subgroup, respectively (**Figure 3**).

Figure 2. HCRU during the 12-month follow-up period in patients with CRSwNP



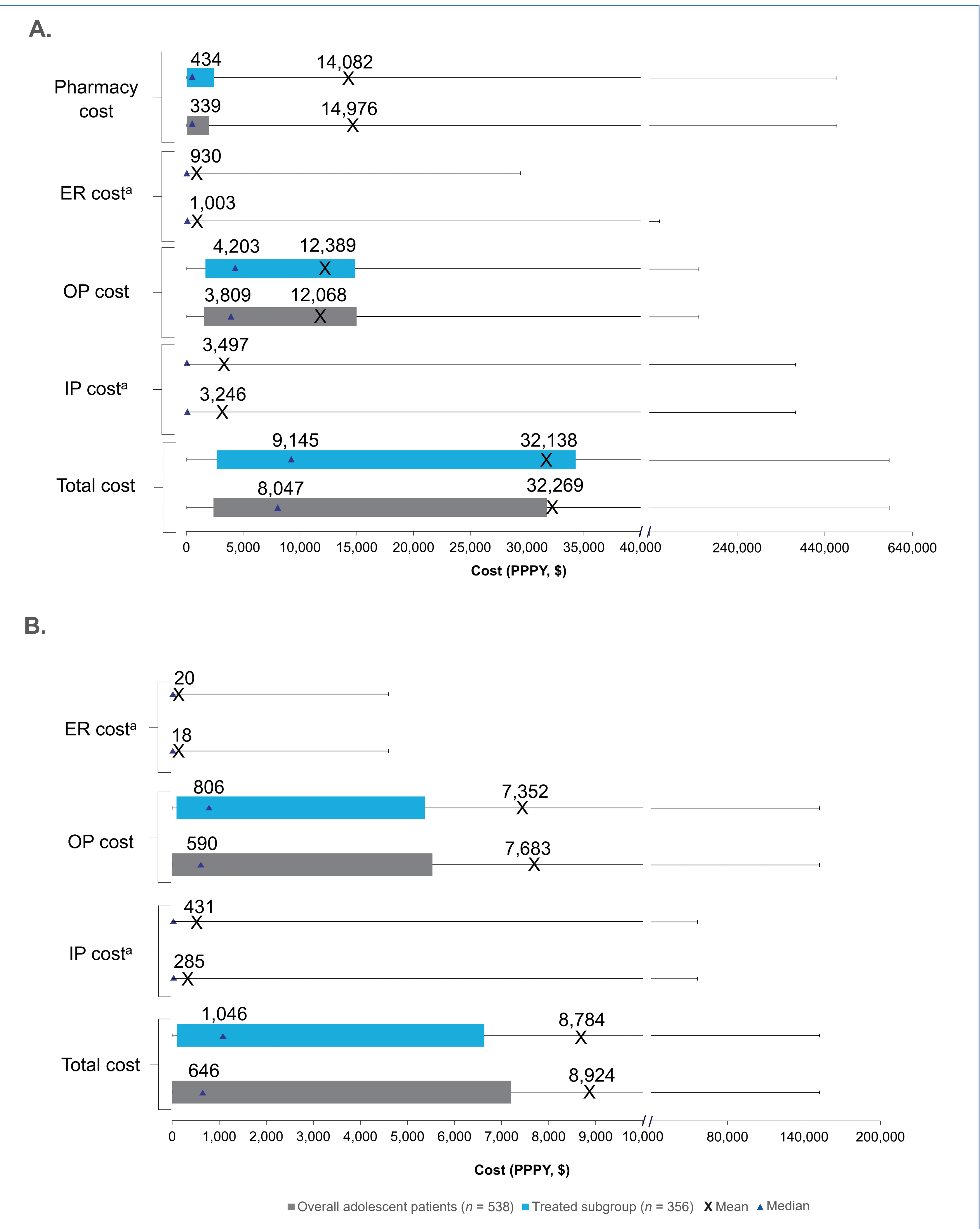
NP-related visits were defined as claims with diagnosis codes for CRS or NP in the primary position for inpatient and in any position for ER and OP visits. CRS, chronic rhinosinusitis; CRSwNP, chronic rhinosinusitis with nasal polyps; ER, emergency room; HCRU, healthcare resource utilization; IP, inpatient; n, sample size; NP, nasal polyp; OP, outpatient.



Conclusion

- Economic burden among adolescents with CRSwNP varied by prior treatment status and the HCRU point of service assessed.
- Future research should compare the economic burden of CRSwNP among adolescents to that in those without the disease.

Figure 3: (A) All-cause (B) NP-related^b healthcare costs during the 12-month follow-up period in patients with CRSwNP



The box in the plot spans from the first quartile (Q1) to the third quartile (Q3), represents IQR. ^aMedian value is 0; ^bNP-related visits defined as claims with diagnosis codes for CRS or NP in the primary position for inpatient and in any position for ER and OP visits. CRS, chronic rhinosinusitis; CRSwNP, chronic rhinosinusitis with nasal polyps; IP, inpatient; IQR, interquartile range; ER, emergency room; n, sample size; NP, nasal polyp; OP, outpatient; PPPY, per patient per year; \$, dollar.

References:

- Bachert C, et al. *J Asthma Allergy*. 2021;14:127–134.
- Bhattacharyya N, et al. *Laryngoscope*. 2019;129(9):1969–1975.

Funding:

This study was sponsored by Sanofi and Regeneron Pharmaceuticals, Inc.

Conflicts of Interest:

SG, EE, NP-I, SS, MC, and ABG – Sanofi – employees, may hold stocks and/or stock options in the company. RBT, SN, and AR – Regeneron Pharmaceuticals, Inc. – employees, may hold stocks and/or stock options in the company.

Acknowledgments:

This research was funded by Sanofi and Regeneron Pharmaceuticals, Inc. Medical writing/editorial assistance was provided by Purushottam Shiranal, Amit Kandhare, and Kaushik Subramanian of Sanofi, according to the Good Publication Practice guidelines.

Poster Code:
EE107

