

Healthcare Resource Utilization in Non-Cystic Fibrosis Bronchiectasis (NCFB) Patients with Commercial Insurance Coverage in the US

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BACKGROUND

- Non-Cystic Fibrosis Bronchiectasis (NCFB) is a chronic, progressive respiratory disorder characterized by irreversibly dilated airways, persistent cough, excessive sputum production, and recurrent pulmonary infections¹
- The bacterium *Pseudomonas aeruginosa* is one of the most common and significant pathogens associated with NCFB, and is associated with greater impairment in lung function, increased airway inflammation, more frequent exacerbations, worse quality of life, greater risk of hospitalization, and mortality²
- NCFB exacerbations are defined by an increase in daily symptoms including cough, sputum production, malaise, fatigue, and breathing difficulty
- No curative treatments currently exist for patients with *P. aeruginosa* exacerbations in NCFB³
- The burden of NCFB illness in the US is not well studied

OBJECTIVE

To quantify the burden of NCFB among patients with *P. aeruginosa*, both chronically infected and with frequent acute exacerbations

METHODOLOGY

This retrospective longitudinal study utilized IQVIA's PharMetrics Plus commercial claims database (January 2006 – December 2020)

STUDY POPULATION

- This study included all patients who met the following criteria:
- Aged 18-64 during first year of observation
 - At least one diagnosis for NCFB (International Classification of Diseases, 10th revision, clinical modification [ICD-10-CM] diagnosis code J47.XX or ICD-9-CM: 494.XX) identified as:
 - ≥ 1 hospitalization for bronchiectasis
 - ≥ 2 outpatient bronchiectasis claims in 365 days ≥ 7 apart
 - ≥ 1 outpatient bronchiectasis claim with bronchoscopy or CT scan 180 ≥ days ≥ 7 prior
 - No diagnoses for cystic fibrosis (ICD-10-CM: E84. XX; ICD-9-CM: 277.XX)
 - Observable for ≥1 year after first NCFB diagnosis (index date) with medical and pharmacy benefits

STUDY COHORTS:

Of the patients identified with NCFB using the above criteria, additional inclusion and exclusion criteria were applied to capture NCFB patients with *P. aeruginosa* and/or exacerbations including:

NCFB Patients with *P. aeruginosa*

- Patients who met one of two criteria 6 months before their NCFB diagnosis date or during the 12-month follow-up period:
 - At least one non-ancillary claim for *P. aeruginosa* infection (ICD-9: 041.7; ICD-10: B96.5)
 - At least one non-ancillary claim for pneumonia due to *Pseudomonas* infection (ICD-9: 482.1; ICD-10: J15.1)

NCFB patients with exacerbations

- Patients with NCFB who met one of four criteria
 - At least one hospitalization for bronchiectasis
 - Receiving IV antibiotic treatment
 - ≥ 2 acute NCFB exacerbations within 12 months (ICD-9: 494.1; ICD-10: J47.1)
 - Diagnosis for pneumonia

METHODOLOGY (cont.)

This study examined patient demographics, clinical characteristics, and mean per patient annual healthcare resource utilization for the following cohorts:

Table 1. Study Cohorts

| Cohort | Abbreviation | Description |
|---------|--------------|--|
| NCFB | | All NCFB patients included in study |
| PA+, E+ | | NCFB patients with <i>P. aeruginosa</i> and exacerbations |
| PA-, E+ | | NCFB patients without <i>P. aeruginosa</i> with exacerbations |
| PA-, E- | | NCFB patients without <i>P. aeruginosa</i> and without exacerbations |

RESULTS

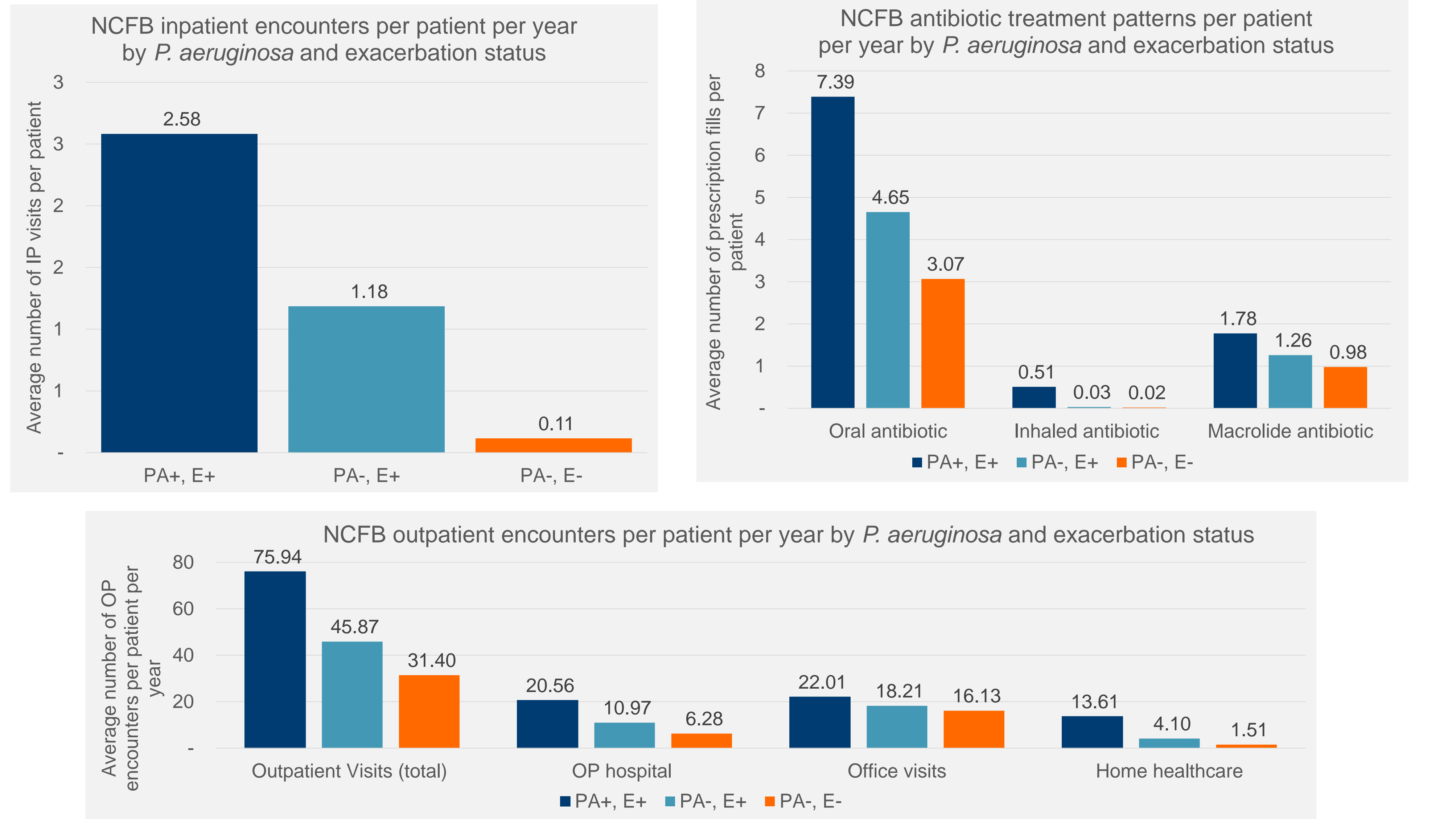
Among 36,283 NCFB patients who met the study inclusion criteria, the mean age was 53.7 ±9.85 and the majority (n=22,690, 63.3%) were female. 1,180 (3%) had exacerbations and *P. aeruginosa* (PA+, E+), 18,074 (50%) had exacerbations and no *P. aeruginosa* (PA-, E-), and 16,946 (47%) had neither *P. aeruginosa* nor exacerbations (PA-, E-).

The average CCI for all NCFB patients was 2.16 ± 1.89. PA+, E+ patients were sicker than the average NCFB patient, with a CCI score of 2.86 ± 2.17.

Table 2. Patient Demographics and Characteristics

| Characteristic | NCFB (n = 36,283) | | PA+, E+ (n = 1,180) | | PA-, E+ (n = 18,074) | | PA-, E- (n = 16,946) | |
|---|----------------------|------|------------------------|--------|-------------------------|--------|-------------------------|------|
| Gender, n (%) | | | | | | | | |
| Female | 22,960 | 63% | 654 | 55% | 11,033 | 61% | 11,220 | 66% |
| Age (Years), Mean ± SD | 53.70 | 9.85 | 53.23 | 10.72 | 53.27 | 10.11 | 54.19 | 9.48 |
| Age Group, n (%) | | | | | | | | |
| 18-29 | 1,387 | 4% | masked | masked | masked | masked | 547 | 3% |
| 30-39 | 2,264 | 6% | 74 | 6% | 1230 | 7% | 953 | 6% |
| 40-49 | 5,323 | 15% | masked | masked | masked | masked | 2,428 | 14% |
| 50-59 | 14,680 | 40% | 467 | 40% | 7386 | 41% | 6,799 | 40% |
| 60-64 | 12,629 | 35% | 407 | 34% | 5965 | 33% | 6,219 | 37% |
| Charlson Comorbidities | | | | | | | | |
| Charlson Comorbidity Index Score, Mean ± SD | 2.16 | 1.89 | 2.86 | 2.17 | 2.44 | 2.08 | 1.82 | 1.57 |

Inpatient admissions were highest among PA+, E+ patients (2.58 ± 3.00) compared to PA-, E+ patients (1.18 ± 1.70); and PA-, E- patients (0.11±0.45). Similarly, across all outpatient encounters, PA+, E+ patients had the highest number of average visits per patient per year, including outpatient hospital visits (PA+ E+: 20.56 ± 26.93 vs PA-,E+: 10.97 ± 15.85 vs. PA-,E-: 6.28 ± 10.47. and home healthcare visits (PA+, E+: 13.61 ± 27.46 vs PA-, E+: 4.10 ± 15.74 vs. PA-, E-: 1.51 ± 9.68). Oral antibiotic prescriptions were also highest among PA+, E+ patients (7.39 ± 6.92; PA-, E+: 4.65 ± 5.22; PA-, E-: 3.07 ± 4.15).



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