

The Prevalence of Non-cystic Fibrosis Bronchiectasis in the U.S.

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OBJECTIVES

- Non-cystic fibrosis bronchiectasis (NCFBE) is a rare, chronic lung disease characterized by bronchial inflammation and permanent airway dilation.¹
- It is reported to be often associated with *Pseudomonas aeruginosa* (PA), an underlying pathogen associated with higher rates of morbidity and mortality.²
- This study assessed healthcare utilization and costs in commercially insured NCFBE patients with and without PA.

METHODS

- Using data from the 2007-2013 PharMetrics Plus administrative claims database, we identified bronchiectasis (ICD-9-CM: 494.xx) patients, then excluded those with cystic fibrosis (277.XX).
- Patients were stratified by PA (482.1 or 041.7).
- We compared patient demographics, comorbidities, healthcare costs and utilization between NCFBE patients with and without PA infection. Frequencies and percentages were compared using bivariate statistics (e.g., chi-square test).
- Recognizing the non-parametric nature of costs, we calculated median values and interquartile ranges for these variables for each group.
- Finally, healthcare utilization and costs were adjusted for baseline characteristics using generalized linear models.

RESULTS

- Of 23,740 patients with NCFBE, 2.5% (595) had evidence of PA (Figure 1).
- Patients with PA had higher comorbidity rates in numerous disease areas including cardiac arrhythmias (44.2% vs 24.1%, p<0.0001), chronic heart failure (CHF) (28.0% vs 12.3%, p<0.0001), chronic obstructive pulmonary disease (COPD) (83.7% vs 60.9%, p<0.0001), coagulopathy (12.2% vs 5.5%, p<0.0001) and fluid and electrolyte disorders (34.7% vs 17.7%, p<0.0001) (Figure 4).
- When adjusting for age, sex and significant comorbidities, total healthcare costs for patients with PA were \$56,499 more costly (95% CI 55,398-57,600), than for those patients without PA, including hospital costs accounting for \$41,972 of that difference (95% CI 41,249-42,695) (Figure 6).
- Healthcare utilization in all measured endpoints also increased in PA patients including a five-fold greater number of hospitalizations (IRR=5.14, 95% CI 4.73-5.59) and 84% more ER visits (IRR=1.84, 95% CI 1.64-2.07) (Figure 5).

Figure 2. Patient Age

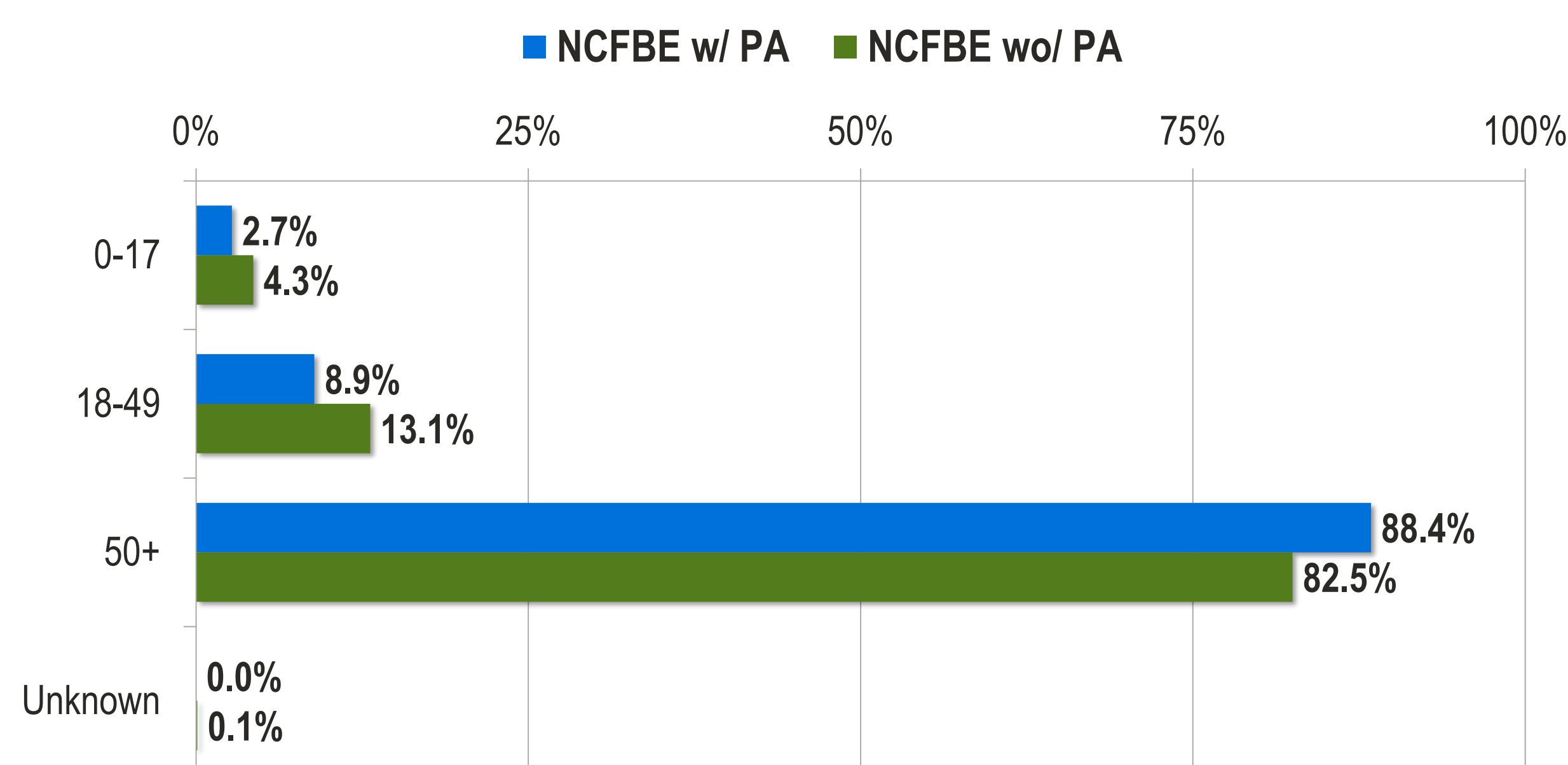
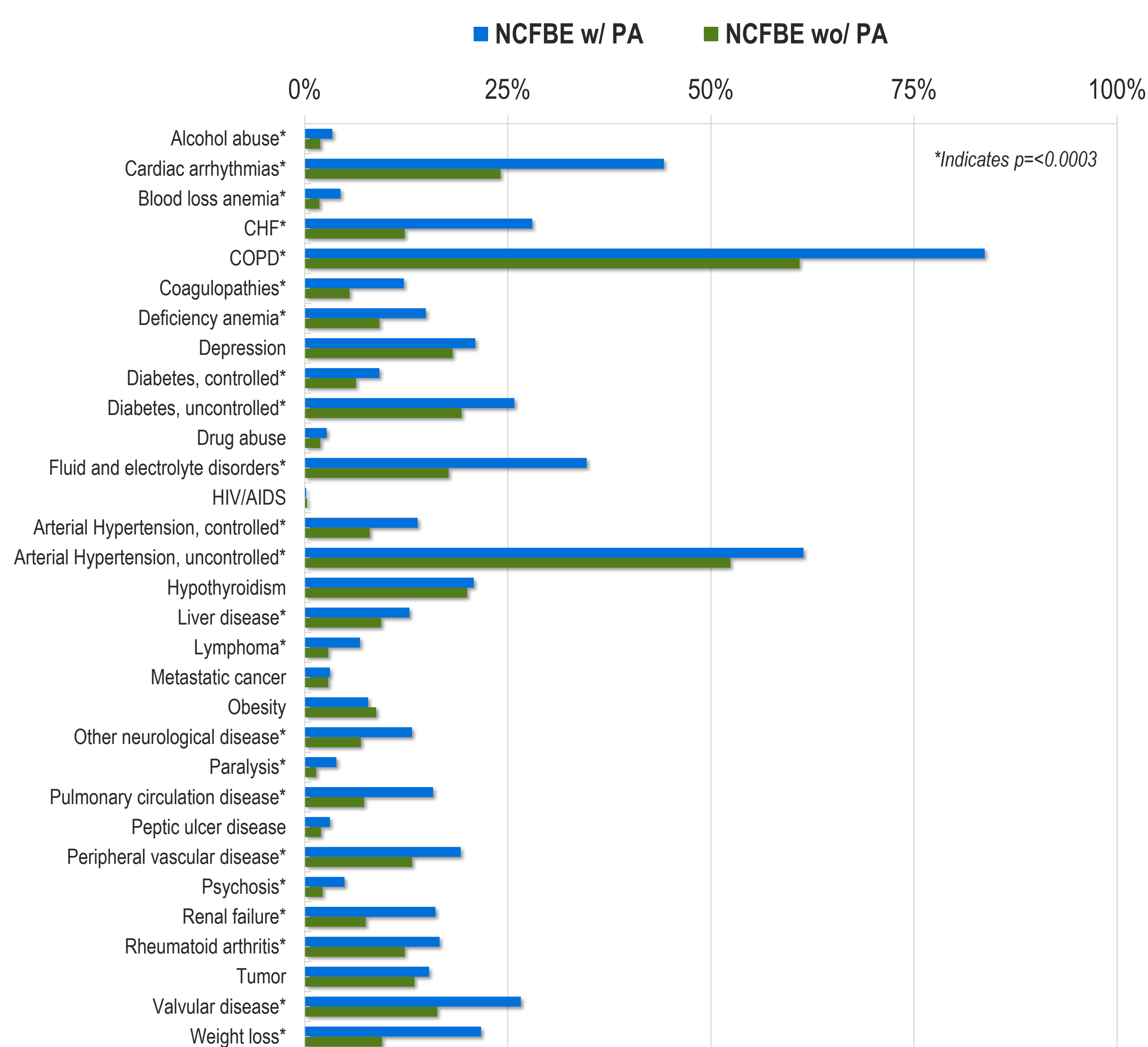


Figure 4. Patient Comorbidities



DISCUSSION

- Previous reports have shown that roughly 12-26% of NCFBE patients have PA, but the current study indicates a much lower number of NCFBE +PA patients (2.5%).^{3,4}
 - This may be explained by differences in study design (observational vs. retrospective study), setting (small clinic vs. hospital), level of data detail (access to PA test results), country/region (Europe vs. United States) or other factors.
- Findings from the current study also indicate that NCFBE patients with PA:
 - Had higher comorbidity rates in numerous disease areas.
 - Had higher total healthcare costs (when adjusting for age, sex and significant comorbidities).
 - Increased health care utilization.

Figure 1. Patient Demographics

	Total	NCFBE w/ PA	NCFBE wo/ PA
Total, n	23,740	595	23,145
Age, Mean (SD)	61.4 (±17.8)	65.1 (±16.1)	61.3 (±17.8)
Months of follow up, Mean (SD)	70.0 (±30.1)	70.2 (±30.1)	70.0 (±30.1)

Figure 3. Patient Gender

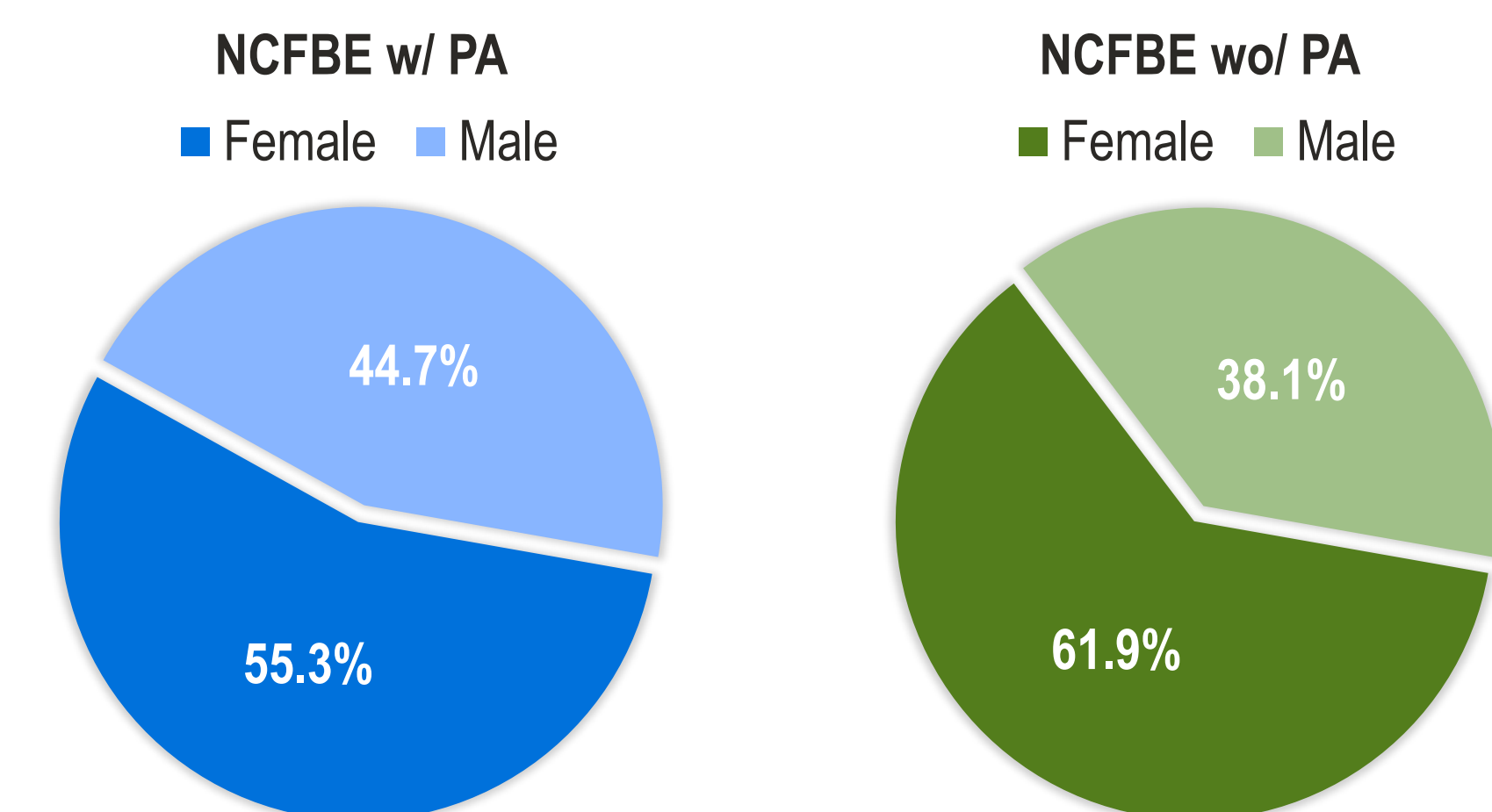


Figure 5. Adjusted All-Cause Healthcare Utilization¹

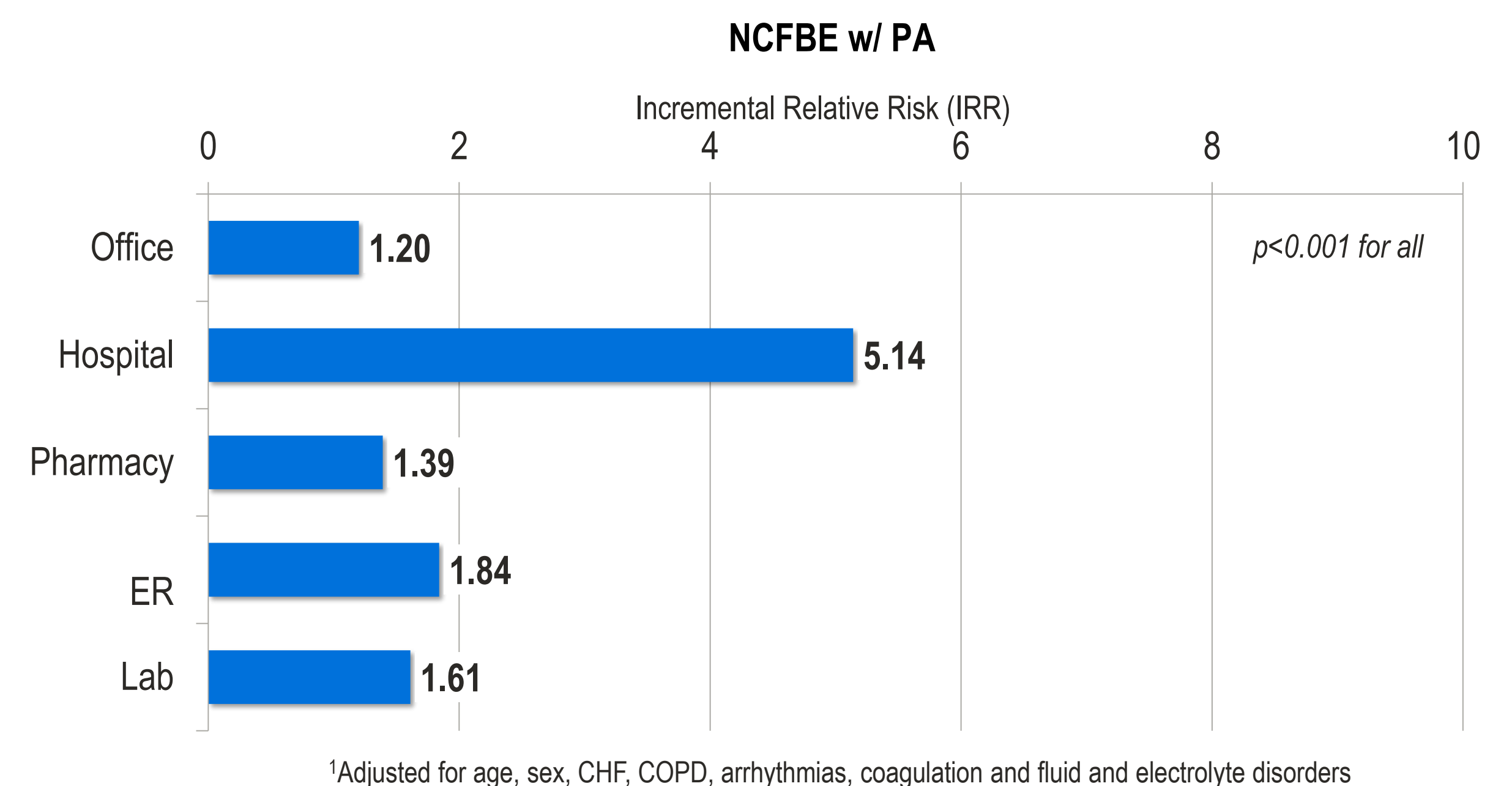
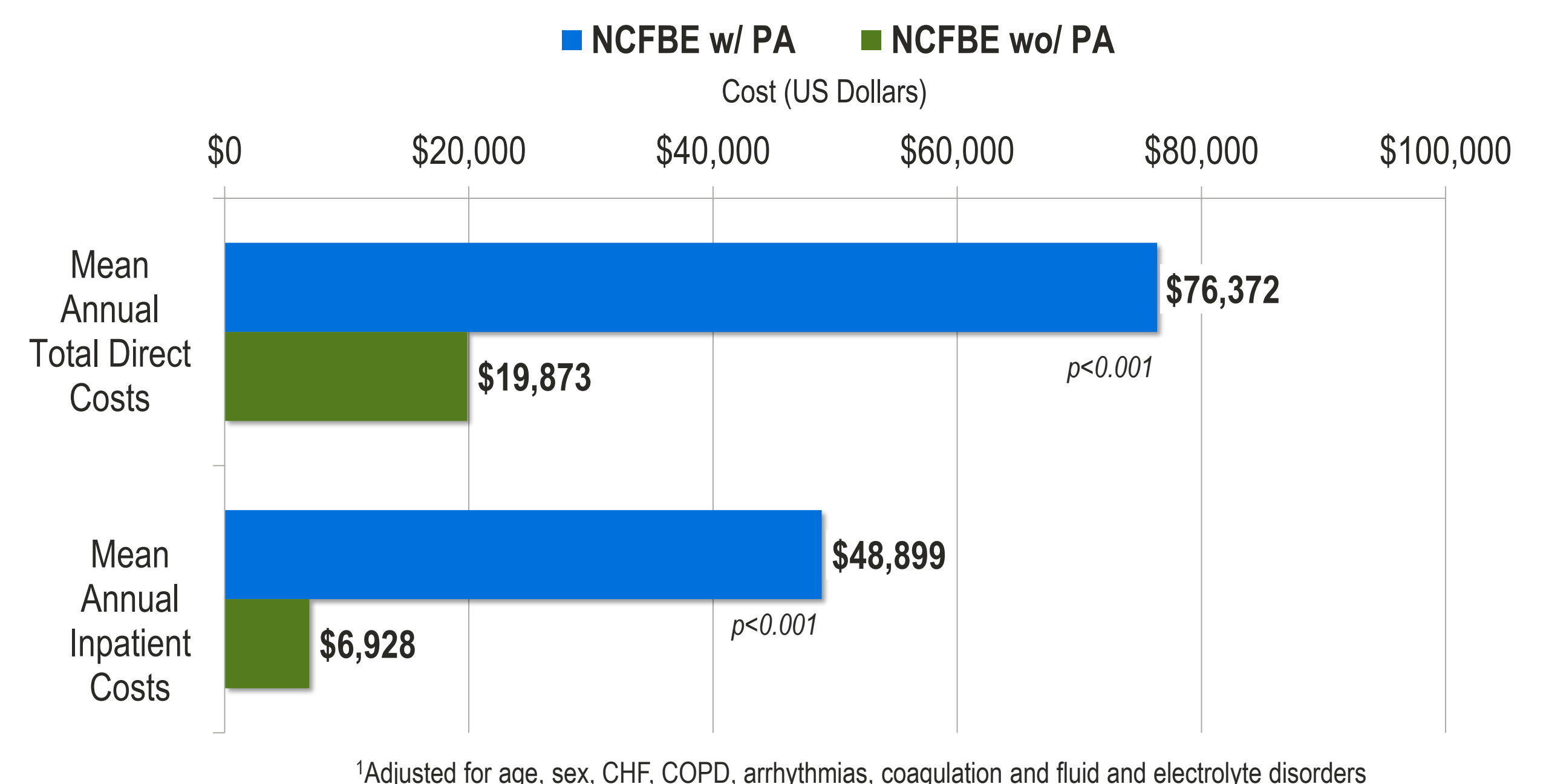


Figure 6. Adjusted Healthcare Cost¹



CONCLUSIONS

- NCFBE with *Pseudomonas aeruginosa* appears to be associated with higher healthcare costs and utilization.
- Future research should explore approaches to identify and treat NCFBE patients with PA to reduce the burden on the US healthcare system and patients.

REFERENCES

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