

# Biomarkers of Air Pollution and Asthma Medication Use: Addressing Temporal Limitations of Environmental Health Analyses Within NHANES

PRESENTER:  
Stephen P. Uong, MPH

**BACKGROUND:** Within cross-sectional studies like the U.S. National Health and Nutritional Examination Survey (NHANES), previous studies have used ever having an asthma diagnosis as an outcome when examining associations with polycyclic aromatic hydrocarbon (PAH) exposure.

**OBJECTIVE:** Examine the relationship between markers of PAH exposure and 30-day short-acting beta agonist (SABA) or systemic corticosteroid use, a temporally appropriate indicator for recent asthma symptoms.

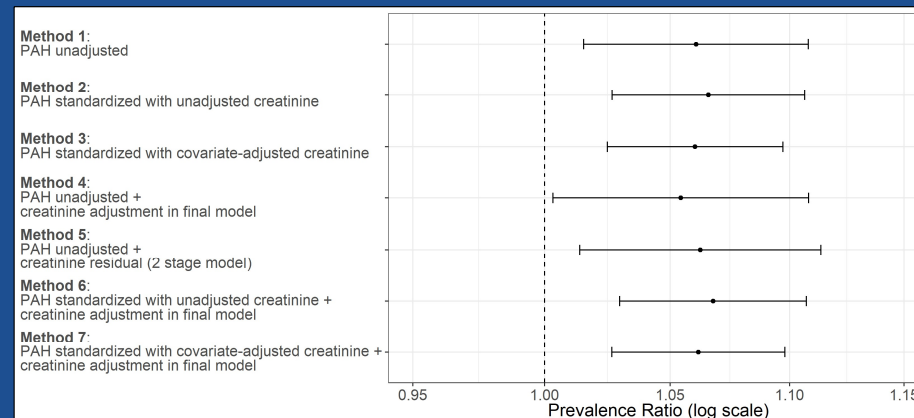
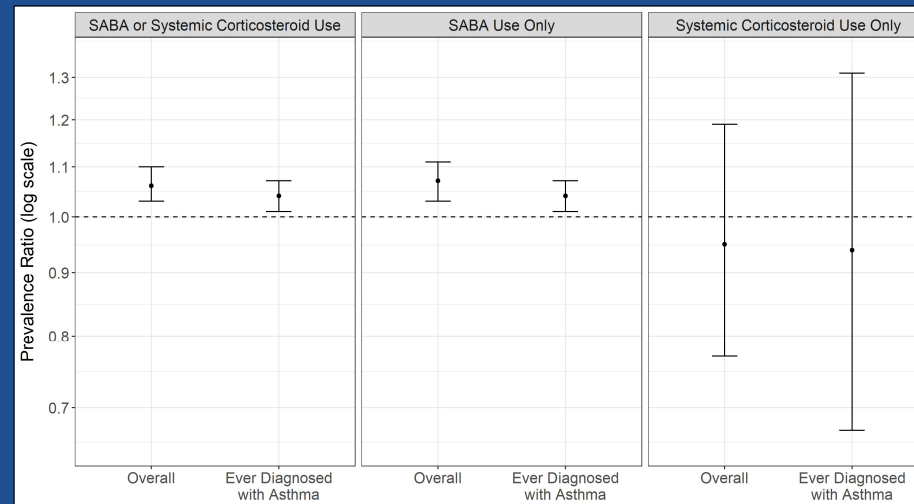
## METHODS

**Study Population:** N=16,550 participants across multiple waves of NHANES (2005-2016) with laboratory data.

## Statistical analysis using quasi-Poisson regression

- **Independent variable:** PAH metabolite, urinary 1-hydroxypyrene
- **Dependent variable:** SABA or systemic corticosteroid use
- **Confounders:** Age, female/male designation, race/ethnicity, poverty, insurance coverage, and serum cotinine
- **Effect Modifiers:** Age, controller medication use
- **Sensitivity Analyses:**
  - Among those ever diagnosed with asthma
  - Different urine creatinine dilution adjustment methods

# PAH exposure was positively associated with SABA or systemic corticosteroid use, across urine creatinine dilution adjustment methods



## RESULTS

- After controlling for confounding, an increase of one standard deviation of PAH exposure was associated with 1.06 (95% CI 1.03-1.10) times the prevalence of SABA or systemic corticosteroid use.
- No effect modification by age or controller medication use.
- **Sensitivity Analyses:**
  - Among those ever diagnosed with asthma, similar prevalence ratio
  - Different urine creatinine dilution adjustment methods, similar prevalence ratio across methods

## CONCLUSIONS

PAH exposure was positively associated with SABA or systemic corticosteroid use, across various urine dilution adjustment methods. It is important to ensure appropriate temporality between exposures and outcomes in cross-sectional studies.

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Stephen Uong, MPH<sup>1</sup>, Stephanie Lovinsky-Desir, MD, MS<sup>2</sup>, Jeanette Stingone, PhD, MPH<sup>1</sup>

<sup>1</sup>Columbia University, Department of Epidemiology

<sup>2</sup>Columbia University, Vagelos College of Physicians and Surgeons

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