

693 Asthma Mortality Among Ever-Employed Persons Aged ≥15 Years, by Industry and Occupation



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RATIONALE: In 2020, an estimated 21 million (8.4%) U.S. adults had current asthma. Despite improvements in asthma management and prevention efforts, asthma deaths still occur. Approximately 11%–21% of asthma deaths might be attributable to occupational exposures. To describe asthma mortality among ever-employed persons aged ≥15 years, by industry and occupation, the 2020 National Vital Statistics System mortality data with industry and occupation information collected from 46 states and New York City were analyzed.

METHODS: Decedents with asthma listed as the underlying cause of death were identified using *International Classification of Diseases, 10th Revision* codes J45 (asthma) and J46 (status asthmaticus). Decedents with information on their usual industry and occupation were considered to be ever employed. Death rates per 100,000 workers aged ≥15 years were age-adjusted using the 2000 U.S. Census standard population. Proportionate mortality ratios (PMRs) for asthma by industry and occupation were calculated.

RESULTS: Among 3,077,127 ever-employed decedents, 3,625 (age-adjusted death rate 1.34 per 100,000 workers) had asthma listed on the death certificate as the underlying cause-of-death. The highest age-adjusted asthma death rates per 100,000 workers were for females (1.57), Blacks or African Americans (3.01), and non-Hispanics (1.43). The highest PMRs were for workers employed in the healthcare and social assistance industry (1.18; 95% confidence interval (CI) = 1.08–1.29) and in healthcare support occupations (1.30; 95% CI = 1.10–1.54).

CONCLUSIONS: High asthma mortality among workers in certain industries and occupations underscores the importance of optimal asthma management and identification and prevention of potential workplace exposures.

694 Vocal Cord Dysfunction: Do Infections Drive Disease?



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RATIONALE: Vocal cord dysfunction (VCD) is often under-recognized and/or misdiagnosed as asthma. Although post-viral syndrome has been suggested as a contributing factor in VCD, there is little data on infectious-associated VCD and no information with COVID-19. The purpose of this ongoing, prospective registry study is to characterize risk factors contributing to VCD.

METHODS: Subjects age ≥ 12 years referred for VCD assessment at the time of provocation challenge-rhinolaryngoscopy were eligible to participate. Enrollment initiated September, 2021. An investigator designed questionnaire of potential risk factors for VCD including COVID-19 infection was administered with data chart collection.

RESULTS: Of 31 subjects currently enrolled, 52% (N=16) reported VCD symptoms either 1) onset following respiratory infection (N=9, 29%) or 2) worsened following COVID-19 infection (N=7, 23%). Those reporting infectious-associated VCD symptoms were more likely to report gastroesophageal reflux disease (p=0.017) with approaching significance for symptoms of throat clearing (p=0.097), chronic sinus infections (p=0.095), and age > 40 years (p=0.097) when compared to subjects who denied infectious-associated VCD symptoms. Additionally, the noninfectious-associated VCD group was approaching significance for reporting increasing number of triggers over time (p=0.051) versus infectious-associated VCD. There was no difference (p>0.05) between groups in Pittsburgh VCD Index scores, BMI, sex, co-morbid asthma,

smoking status, environmental allergy history, or symptoms of shortness of breath, cough, wheezing, or throat tightness.

CONCLUSIONS: Our early results suggest an important role for infectious etiologies, including COVID-19, in triggering and/or worsening VCD. Clinical awareness of these associations is warranted to rapidly address and provide appropriate therapeutic care.

695 Asthma-Related Emergency Department Visits in Texas: Associations with Viruses and Allergenic Pollen



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RATIONALE: Asthma exacerbations cause many emergency department visits but much remains unknown about the role of seasonal environmental triggers including viruses and allergenic pollen. A better understanding of these triggers and the role of regionally-important pollen types such as 'mountain cedar' (in the Cupressaceae family) in Texas could help prioritize public health interventions.

METHODS: We acquired data on all emergency department visits in Texas from 2015–2020 where asthma was the primary ICD diagnosis code. Emergency department visit rates were compared to concentrations of several pollen types (Cupressaceae, trees, and other plants), and to test positivity of viruses (rhinovirus, coronavirus, RSV, and influenza) among populations living near eight pollen monitoring stations. We analyzed these relationships with age-stratified Poisson regression analyses in a distributed lag framework.

RESULTS: Young children had high asthma-related emergency department rates (22.4 visits/1,000,000 person-days), which were explained by viruses (70.4±2.6%), Cupressaceae pollen (0.4±0.1%), and tree pollen (0.9±0.4%). School-aged children also had high rates (19.7 visits/1,000,000 person-days), which were attributed to viruses (61±2%), Cupressaceae pollen (0.5±%) and tree pollen (1.5±0.1%). Adults had lower rates (7.6 visits/1,000,000 people/day) which were attributed to viruses (38±2%), Cupressaceae pollen (0.5±0.1%) and tree pollen (2.5±0.2%). Rates attributed to pollen exhibited spatio-temporal patterns; for example, Cupressaceae accounted for 7% of adult cases in January in Austin, but <1% in Houston. Similarly, for adults in Houston tree pollen accounted for 2% of cases annually but 19% in March.

CONCLUSIONS: These findings demonstrate the consequences of regionally important allergenic plants to respiratory health and spatio-temporal patterns of emergency department visits.