Retrospective analysis of COVID-19 incidence and health outcomes among patients with asthma in a large integrated health care delivery system

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| Challenge | Asthma is listed as a risk factor by the CDC for severe outcomes associated with COVID-19. Little is known based upon medical literature regarding asthma and COVID-19. KPNC currently has over 81,000 adult members (age 18-85) that are considered to have active asthma and our understanding would greatly improve our ability to care for this large population. This knowledge gap prevents us from advising our patients confidently regarding their risk and treating all asthmatics as high-risk individuals. This also impacts our asthma patient’s ability to leave the home to work with all qualifying for high risk letters. |
| Existing Evidence | There is limited information regarding Asthma and COVID-19. Data from China did not indicate asthma was a significant risk factor. Data from COVID-Net group showed that the percentage of patients in the 18 to 49 year-old group with asthma hospitalized was higher than expected in the general population. This suggested that those with asthma in the 18 to 49 year-old age range may be at increased risk of hospitalization due to COVID-19 . There is also no information/data on outpatient patients with asthma and COVID-19. |
| Target Population | Cohort of adults greater than 18 years old with active asthma as of 1/01/2020 |
| Intervention or Exposure | Positive COVID-19 PCR testing  Hospitalization for COVID-19  All cause and cause-specific hospitalizations  EHR and chart review validation |
| Outcomes/Key Findings | Each cohort comprised 41, 282 adults (mean [SD] age=55 (16) years; 63% female, 45% non-white). Asthma was inversely related with having a positive COVID-19 test (8.7 vs 9.4% positive among those tested; OR=0.90; 95% CI, 0.82-0.99; p=0.03) after adjusting for age, sex, race/ethnicity, BMI, smoking, Neighborhood Deprivation Index and comorbidities.  Asthma was associated with COVID-19 hospitalization (27.8 vs 13.8 per 10,000 person-years; HR=1.51; 95% CI, 1.08-2.12; p=0.01) after adjusting for the same covariates.  Asthma was positively associated with a composite outcome of COVID-19 related ICU admission, intubation or Remdesivir treatment (OR=1.89; 95% CI, 1.28-2.81; p=0.001) after adjusting for the same covariates. |
| Resulting Action/Change | The results from this project help provide guidance that asthmatic individuals that they may be associated with more severe COVID-19 course and may alter their behavior according to risk. |
| Additional Recommendations |  |
| Implementation Tools | Data will be distributed to specialists, asthma population care management groups to help support guidance for member. |
| Implementation and Follow-up Measures | Follow up survey to assess understanding and utility of data presented |
| Reference(s) [Key Figure if applicable] | See attached modelling figures |