

Appendix Supplemental Methods

IRB:

The Institutional Review Board at Vanderbilt University Medical Center determined that this study of de-identified data did not constitute human subjects research (IRB 201677).

Population:

Respiratory and non-respiratory illness were defined using ICD-10 classification system (Supplemental Table 1). Neonates were excluded from the study as not all children's hospitals include data from their associated birthing center and there is high variability in decision making across institutions for admission of children less than 30 days of age. Children under 2 were excluded from the asthma cohort and children over 2 were excluded from the bronchiolitis cohort. In order to minimize the effect of hospital care restrictions (moratoriums on elective surgeries etc), surgical service line APR-DRGs were excluded from the study population

Outcome Stratification

Outcomes were stratified by, geography region (Midwest, Northwest, South and West), age (<1, 1-4 y, 5-11 y, 12-18 y), mutually exclusive respiratory illness cohorts (asthma, bronchiolitis, COVID-19-19, croup, influenza, pneumonia, unspecified ILI and other respiratory). The unspecified ILI cohort consisted of all ILI diagnoses not included in bronchiolitis, COVID-19, croup, influenza and pneumonia cohorts. The

“Other respiratory” diagnoses consisted remaining respiratory diagnosis not included in the asthma, bronchiolitis, COVID-19-19, croup, influenza, pneumonia or unspecified ILI cohorts. COVID-19 diagnoses were included in the “Other respiratory” cohort. To assess the impact of COVID-19 on encounter trends in this cohort, the cohort was assessed with and without COVID-19 encounter .diagnoses.

Statistical Analysis:

O:E ratios were calculated for each hospital, and then the mean O:E was calculated from these values with 95% confidence intervals and were not weighted by hospital. O:E ratios were also calculated daily over the study period using the same methodology as weekly calculated values. The first calendar date wherein the decrease in O:E of respiratory illnesses was statistically significant occurred on March 17, 2020. All analyses were performed using SAS version 9.4 (SAS Institute, Inc, Cary, NC), and $p < 0.05$ was considered statistically significant.