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"Influenza-Related Hospitalization Rates in the United States Pediatric Population and How They Have Changed with the Introduction of Non-Pharmaceutical Interventions During the COVID-19 Pandemic"

Background: The COVID-19 pandemic had a tremendous impact on public health and disease prevention approaches. Non-pharmaceutical interventions (NPIs) such as mask mandates, social distancing, and travel bans effectively reduced the transmission of the COVID-19 virus, as well as other respiratory viruses like influenza. This led to a historically mild 2020-21 influenza season, creating an immunity debt, and preventing virus antigenic drift, thus altering the traditional seasonal variation in influenza cases. Subsequent influenza seasons have displayed increasing severity, hospitalizations, and pediatric deaths. Commonly used, publicly available data comes from the US Center for Disease Control and Prevention (CDC) influenza surveillance report FluView. It provides insight into the suggested change in seasonal trends without data that sufficiently determines the same. There is a need to evaluate the data over time to understand the effect of NPI implementation on pediatric influenza cases in the United States.

Objective: This study aims to identify the effect of COVID-19 NPI implementation on the seasonal variation in US pediatric influenza hospitalization rates.

Methods: The study is a retrospective single-group interrupted time series (ITS) measuring monthly hospitalizations, beginning March 2015 and ending in March 2026 comparing hospitalization trends surrounding the intervention in March 2020, when NPIs were initially implemented in the US. This study utilizes the Cosmos Collaborative, a vendor-facilitated electronic health record (EHR) data aggregation platform containing data from over 310 million patients across all 50 states and over 2,198 hospitals and 49,300 clinics. This is population aggregate de-identified data in which the "subjects" are aggregate population level data points. Pediatric (patients under 18 years of age at the time of admission) hospitalization rates among those with 'Influenza' as Encounter Diagnosis will be obtained within the timeframe, along with the variables patient demographics, influenza vaccination status, COVID-19 infection status, underlying medical conditions, complications or mortality due to illness, financial strain, housing instability, food insecurity, and area deprivation index to describe and evaluate the factors that may contribute to influenza infection and severity. No identifiers are to be collected.