**Development of a comprehensive metric for monitoring seasonal respiratory disease using syndromic test data as an alternative to influenza like illness surveillance**

**Introduction**

In the United States (US), epidemiological reporting of respiratory illness typically focuses on influenza, with one particular metric, influenza-like illness (ILI), used by healthcare professionals to monitor seasonal disease onset and duration. Using data from FilmArray Trend, we have developed the Test Utilization Rate Normalized (TURN) metric, which may be a better indicator of broader respiratory disease in the US. FilmArray Trend exports de-identified Respiratory Panel (RP) test results from FilmArray instruments at participating research sites to a central database. The RP Panel tests for 20 targets simultaneously, making test utilization a proxy for respiratory illness not limited to influenza.

**Methods**

RP Panel tests from FilmArray instruments are used as an indicator of respiratory disease; however, increased adoption of FilmArray products at research sites may increase test utilization unrelated to disease severity. Therefore, growth in the instrument install base and changes in the number of non-RP FilmArray panels being run at sites is accounted for using linear regression modeling. Each variable is weighted by the coefficient of determination and normalized by the lower tenth quartile of the test utilization in a rolling one year window to calculate an adjusted utilization rate, TURN. TURN is overlaid with ILI and legacy GoogleFlu data to show differences in the metrics nationally and regionally.

**Results**

TURN is a broader indicator of respiratory illness compared to ILI. TURN upticks in specific regions can indicate outbreaks of respiratory illness that ILI cannot identify, specifically outbreaks of non-Polio Enterovirus (EV-D68). TURN is reported in near real time, allowing better anticipation of the onset of seasonal respiratory disease compared to ILI.

**Conclusion**

Healthcare professionals typically refer to seasonal respiratory disease as influenza season due to use of ILI. TURN may be a better metric to monitor respiratory disease more broadly in the US, both nationally and regionally.