

## **Title: Laboratory confirmed influenza attributable proportion of influenza like illness in Maine during the 2017-2018 influenza season**

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**Background:** Understanding the incidence of influenza is important because it allows for disease burden comparisons across influenza seasons and geographic regions, alerts public health officials of increases beyond usual seasonal activity and improves interpretation of syndromic measures of disease. Incidence of influenza is estimated using the influenza-like illness (ILI) case definition due to its high positive predictive value during periods of influenza virus circulation, but influenza illness is often clinically indistinguishable from illness due to other respiratory pathogens therefore the true incidence is unknown. Maine Center for Disease Control and Prevention (Maine CDC) worked with federal Centers for Disease Control and Prevention (federal CDC) to determine the influenza attributable proportion of ILI during each week of the flu season by coordinating laboratory testing for a proportion of patients with ILI.

**Methods:** Maine CDC collaborated with HealthReach community health centers (HealthReach) a group of private non-profit community health centers serving Maine, to enroll their sites in an U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) expansion project. Maine CDC offered eleven sites the opportunity to enroll in the project and participation was voluntary. Ultimately, six sites elected to participate. Providers swabbed patients who met the surveillance case definition for ILI and submitted the specimen for influenza testing at Maine's Health and Environmental Testing Laboratory (HETL). Specimens arrived at HETL by Wednesday of each week and they completed influenza testing within 24 hours of receiving the specimens. HETL reflexed all specimens negative for influenza to the respiratory panel according to study protocol to determine the incidence of other respiratory pathogens in the population.

**Results:** Providers submitted 283 specimens that met the surveillance case definition for ILI. Overall, 100 out of 283 specimens tested positive for influenza at HETL. Providers submitted specimens for 15 weeks and on average providers submitted 17 samples per week with a range of 2 to 35. The influenza attributable proportion of ILI illness varied by week over the course of the flu season; it ranged from 13% to 63%. Age specific rates of influenza attributable proportion of ILI illness were similar to the overall numbers, but higher in the >65 age group.

**Conclusion:** Obtaining specimens on patients presenting to outpatient clinics across Maine with ILI symptoms was feasible and did not put undue burden on patients or providers as evidenced by their commitment to voluntarily participate in the program again for the 2018-2019 season. Understanding the influenza attributable percent of ILI is important for public health because it can influence messaging and recommendations. The overall proportion of ILI that was truly

influenza was 35%. Other causes of ILI symptoms included parainfluenza, rhinovirus, adenovirus and respiratory syncytial virus. These viruses represented 2%, 3.5%, 4% and 8.5% of the ILI visits respectively. These diagnosis were helpful for providers and patients and provides a new educational opportunity for Maine CDC during influenza season.