Evaluation of Influenza Surveillance in North Dakota

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Background

The North Dakota Department of Health (NDDoH) receives mandatory reports of laboratory confirmed cases of influenza every year, but does not receive information on clinically diagnosed cases. An evaluation of the differences among all reporting methods was needed to identify gaps and educational opportunities. Additionally, the evaluation was conducted to better understand how well influenza reporting reflects the true burden of influenza in North Dakota.

Methods

ICD-9 and ICD-10 codes for influenza for the 2014-2015 and 2015-2016 influenza seasons were provided to a selected healthcare facility (HFA). Positive laboratory reporting data from HFA for the same time period was extracted from MAVEN, North Dakota's reportable disease database. Lastly, the Biosense 2.0 influenza-like illness (ILI) syndrome data for this facility was also gathered for the same time periods.
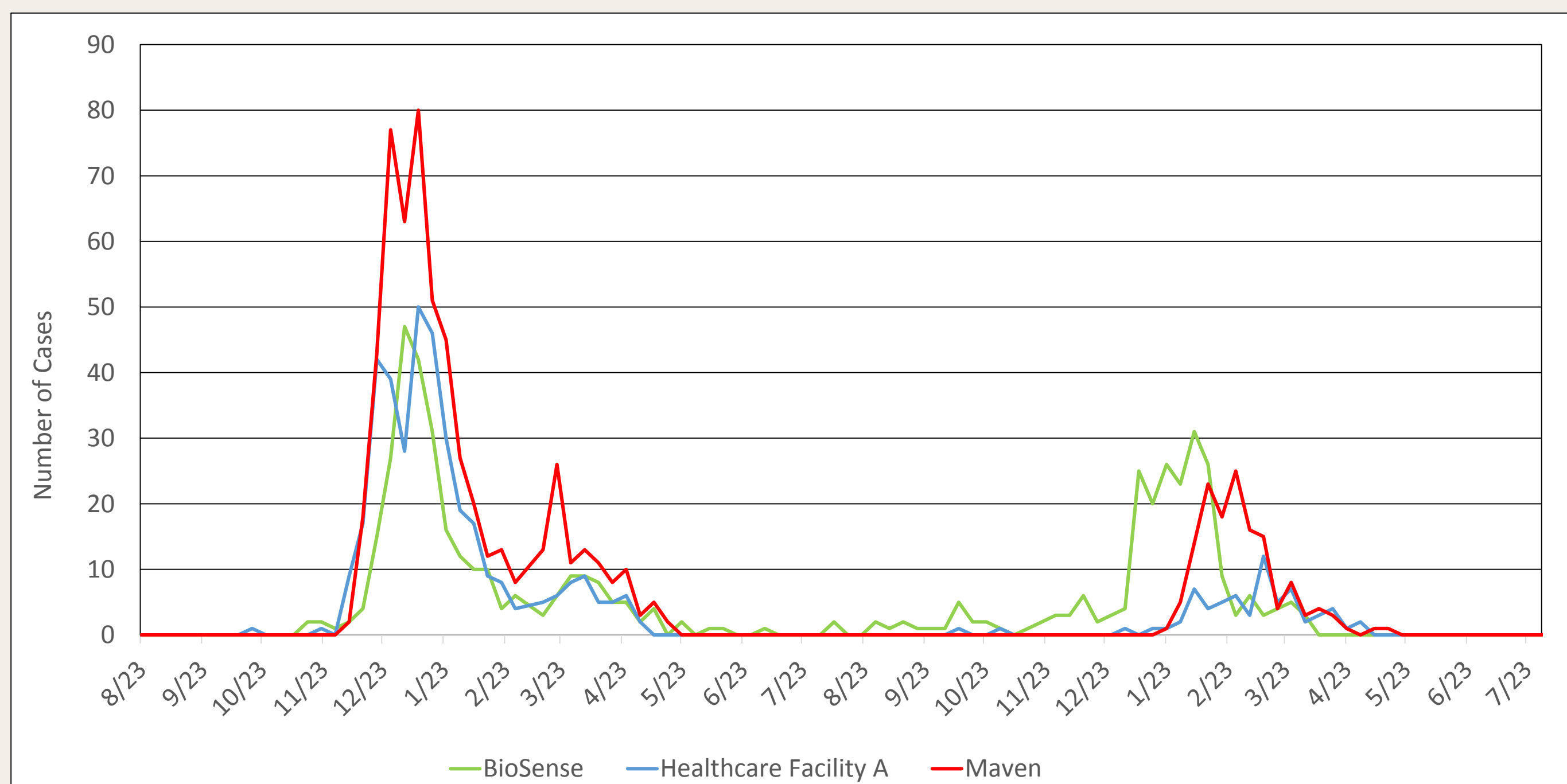
Results

The total number of ICD 9/10 identified cases of influenza provided by HFA was 440 (EMR requested line list). Seven hundred and sixteen laboratory identified cases were submitted to MAVEN from this facility and 519 ILI visits were recorded in Biosense 2.0.

Across all three data sets, females were more likely to visit a healthcare facility than males. Age distribution was similar across all three data sets and total cases reported each week showed the same trend. Most cases reported no vaccination history.

According to ICD 9/10 data, emergency department visits made up 41.6 percent of all influenza encounters followed by office visits (40.7 percent). Additionally, emergency departments were most often used among those younger than 5 years old and those older than 55 years.

Two percent of influenza cases reported by HFA included chief complaints or secondary diagnosis containing symptoms characteristic of a GI illness, not influenza. Additionally, 25 percent of ICD coded influenza cases in Biosense 2.0 had chief complaints indicating a GI illnesses.

Discussion

The original hypothesis assumed more cases would be identified via clinical diagnosis; however, this was not seen. Instead, more cases were found using the MAVEN data set. Laboratory reporting showed that 716 people were identified with flu, but, the line list provided identified only 440 people. This indicates that not even those with a positive laboratory result were being ICD coded as having influenza.

Additionally, GI illness was important to include because patients often report "stomach flu," or clinicians refer to GI illness as a "flu-like." Both HFA and Biosense 2.0 data were affected by this type of terminology, indicating that non-laboratory data is likely to contain some GI interference.

The analysis of this project suggests that using data pulled from electronic medical records based on ICD coding alone may not be as accurate as originally anticipated. It also illustrates the importance of collecting chief complaints in addition to diagnostic codes.
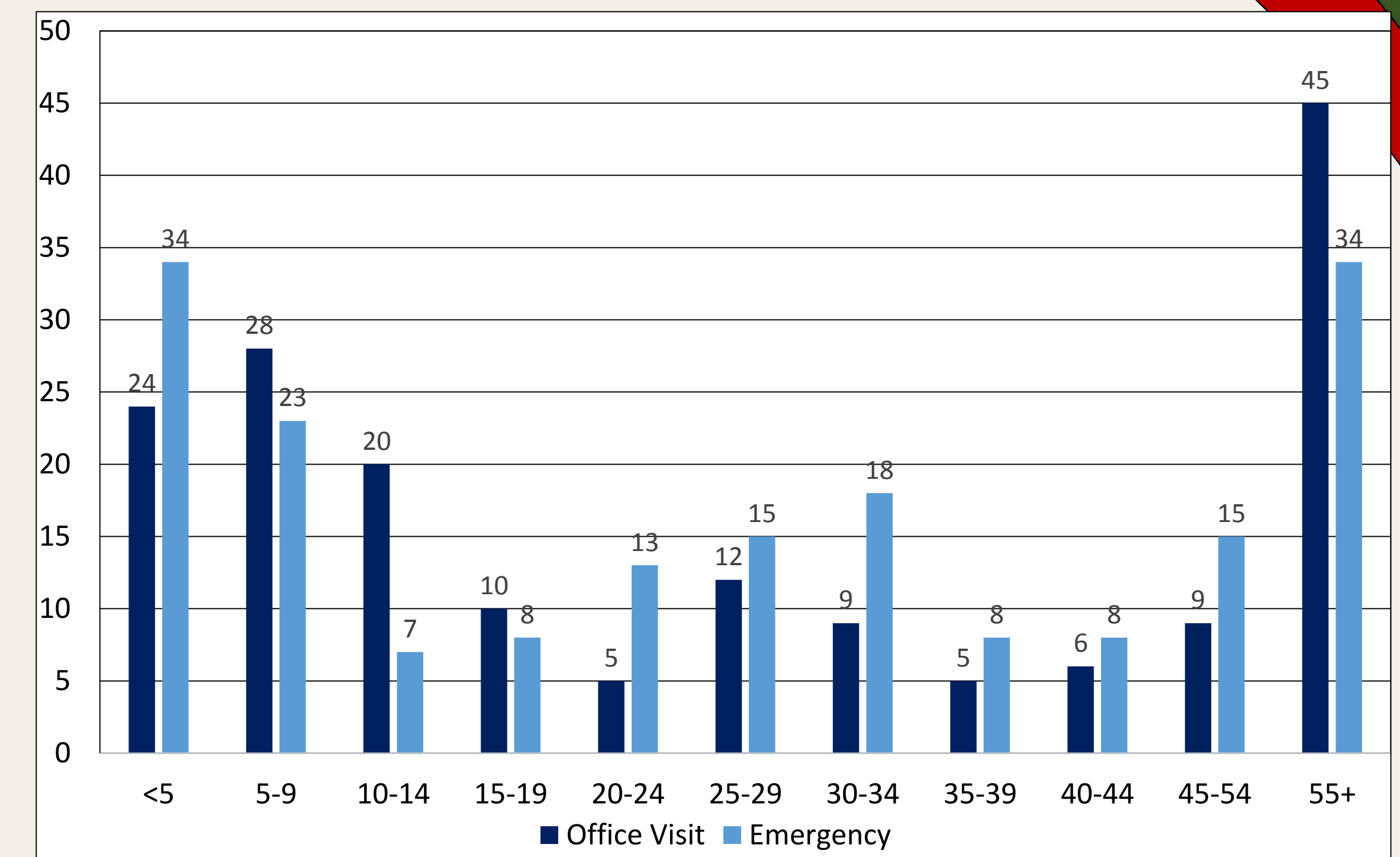
Next Steps

Vaccination history was also evaluated; however, a recent interoperable connection between MAVEN and the N.D. Immunization Information System has been made. This will allow for a more reliable vaccine history so the need for re-evaluation is necessary.

Additional facility data is needed to determine if the age of use for emergency room/office visit is present among other health facilities.

Additionally, named reporting from the hospital would allow for determination of how many of those laboratory identified cases were clinically coded as flu. For those not coded as influenza, identify the codes that were used to improve the clinical surveillance.

Total numbers of influenza cases identified each week during Influenza seasons 2014-2015 and 2015-2016 by week ending date

The top two most common Encounter Types (Office Visit and Emergency Room) stratified by age group for Healthcare Facility A

Vaccination status of all influenza cases extracted using MAVEN

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