Influenza Surveillance Update

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Advisory Committee on Immunization Practices
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Outline

- International influenza activity update
- Recent U.S. influenza activity
- Southern Hemisphere vaccine recommendations
Southern Hemisphere Influenza Activity, 2018-19 Season
Global Influenza Surveillance and Response System, WHO

Number of specimens positive for influenza by subtype

- B (Lineage not determined)
- A (Not subtyped)
- A(H1)
- A(H3)
- A(H5)
- B (Victoria lineage)
- B (Yamagata lineage)
- A(H1N1)pdm09
Southern Hemisphere Influenza Activity, Select Countries: November 2018 – October 2019
Southern Hemisphere Influenza Activity, Select Countries: November 2018 – October 2019

Brazil

Chile
Influenza Positive Tests Reported to CDC by Public Health Laboratories and ILI Activity, by HHS Region, 2019-20 Season, week ending Oct 12, 2019
Reported by: U.S. WHO/NREVSS Collaborating Laboratories and ILINet

Map Legend
- ILI Elevated
- ILI Normal
- No Data

Pie Chart Legend
 cooked data from most recent 3 weeks of season
- A (H1) - 0
- A (Unable to Subtype) - 0
- A (H3) - 6
- A (H1N1)pdm09 - 13
- A (Subtyping not Performed) - 6
- B (Lineage Unspecified) - 3
- H3N2v - 0
- B (Victoria Lineage) - 24
- B (Yamagata Lineage) - 3
- No Data/Small Data Sample
Genetic and Antigenic Characterization of Influenza Viruses Collected May 19 – September 28, 2019

- Data includes viruses submitted by US and international laboratories and tested at CDC
- A (H1N1)pdm09: all viruses tested belong to genetic subclade 6B.1A and 96% are similar to the cell-culture propagated 2019-20 Northern Hemisphere vaccine virus component (A/Brisbane/02/2018)
- B/Yamagata lineage: All viruses tested belonged to Y3 genetic clade and all are similar to the cell-culture propagated 2019-20 Northern Hemisphere vaccine virus component (B/Phuket/3073/2013)
Recently tested A(H3N2) viruses (n=427) belong to either clades 3C.2a (83%) or 3C.3a (17%)

There are multiple subclades within the 3C.2a clade circulating
  – The majority belong to subclade 3C.2a1

3C.2a1 viruses predominated in Australia but 3C.3a viruses predominated among H3 viruses in South America

70% of antigenically characterized H3 viruses are similar to the cell-culture propagated 2019-20 Northern Hemisphere vaccine virus component (A/Kansas/14/2017 – 3C.3a)

While ferret antisera clearly distinguish antigenic differences between 3C.2a and 3C.3a viruses, there is some cross reactivity
Genetic and Antigenic Characterization of Influenza B/Victoria Viruses Collected May 19 – September 28, 2019

- B/Victoria lineage viruses belong to either clade V1A (4%), or subclades V1A.1 (24%) and V1A-3Del (72%)
- V1A.1 viruses antigenically characterized were similar to the cell culture-propagated 2019-20 Northern Hemisphere vaccine component (B/Colorado/06/2017)
- Ferret antisera raised against recent V1A.1 viruses had reduced reactivity with V1A and V1A-3Del viruses indicating some antigenic differences between the B/Victoria lineages subclades
  - However, sera from humans vaccinated with V1A.1 virus cross reacted well with V1A-3Del viruses
ILI Activity Level Indicator Determined by Data Reported to ILINet
Weekly Influenza Activity Estimates Reported by State & Territorial Epidemiologists*
Week ending October 12, 2019 - Week 41

* This map indicates geographic spread & does not measure the severity of influenza activity.
Epidemic Threshold
Seasonal Baseline

Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System
Data through the week ending October 5, 2019, as of October 17, 2019
Influenza-Associated Pediatric Deaths by Week of Death, 2016-2017 season to 2019-2020 season

2016-2017
Number of Deaths = 110

2017-2018
Number of Deaths = 187

2018-2019
Number of Deaths = 138

2019-2020
Number of Deaths = 0
Recommendation for 2020 Southern Hemisphere Influenza Vaccine

- It is recommended that the following viruses be used for trivalent influenza vaccines in the 2020 Southern Hemisphere influenza season:
  - A/Brisbane/02/2018 (H1N1)pdm09-like virus
  - A/South Australia/34/2019 (H3N2)-like virus
  - B/Washington/02/2019-like virus (B/Victoria lineage)

- For quadrivalent vaccines containing 2 B components:
  - Above 3, plus B/Phuket/3073/2013-like virus (B/Yamagata lineage)
Summary

- Influenza activity remains low in the US overall
- Numbers are small, but so far, influenza A(H3N2) viruses are predominant in the US overall but this varies by region
  - Too early to tell what viruses will be predominant for the season
- While 2 of the 4 vaccine components were updated for the Southern Hemisphere, the components selected for the 2019-20 Northern Hemisphere vaccine, at this time, look appropriate for our season