Preliminary Estimates of 2021–22 Seasonal Influenza Vaccine Effectiveness against Medically Attended Influenza

For the US Flu VE Network

June 22, 2022
2021–22 Northern Hemisphere influenza vaccine components

<table>
<thead>
<tr>
<th>Strain</th>
<th>Reference Virus</th>
</tr>
</thead>
<tbody>
<tr>
<td>A(H1N1)pdm09</td>
<td>A/Victoria/2570/2019</td>
</tr>
<tr>
<td>A(H3N2)</td>
<td>A/Cambodia/e0826360/2020*</td>
</tr>
<tr>
<td>B Victoria</td>
<td>B/Washington/02/2019</td>
</tr>
<tr>
<td>B Yamagata</td>
<td>B/Phuket/3073/2013</td>
</tr>
</tbody>
</table>

*Reference virus from A(H3N2) genetic clade 3C.2a1b, subclade 2a.1.
US Flu VE Network sites and principal investigators

Kaiser Permanente
- Washington
  - Karen Wernli

Kaiser Permanente
- Southern California
  - Sara Tartof

Baylor Scott & White Health
- Manju Gaglani

Marshfield Clinic Research Institute
- Ed Belongia
- Huong McLean

University of Michigan
- Arnold Monto
- Emily Martin

Vanderbilt University
- Keipp Talbot
- Carlos Grijalva

University of Pittsburgh
- Rick Zimmerman
- Tricia Nowalk
US Flu VE Network Methods

**Enrollees:** Ambulatory patients aged ≥6 months with acute respiratory illness with fever or cough ≤7 days duration

**Dates of enrollment:** October 4, 2021–April 30, 2022

**Design:** Test-negative design

- Comparing vaccination odds among influenza RT-PCR positive cases and influenza RT-PCR negative controls, excluding persons testing positive for SARS-CoV-2
- Vaccination status: receipt of at least one dose of any 2021–22 seasonal flu vaccine according to medical records, immunization registries, and/or self-report

**Analysis:** VE = (1 – adjusted OR) x 100%

- Adjustment for study site, age, self-rated general health status, race/ethnicity, and month of onset
Preliminary Results

- 6,782 enrolled at 7 sites between Oct 4, 2021–Apr 30, 2022
- 502 (7%) influenza RT-PCR positive
- 6,280 (93%) influenza RT-PCR negative
- 2,046 (30%) SARS-CoV-2 positive

**Influenza cases enrolled by (sub)type, N=487**

- A/H3N2 (456) 94%
- A, unsubtyped (29) 6%
- A(H1N1)pdm09 (2) 2%

*All genetically characterized A/H3N2 viruses belonged to clade 3C.2a1b, subclade 2a.2*
Number of enrolled participants by influenza RT-PCR result and percent positivity by week of onset
Preliminary vaccine effectiveness against medically attended influenza A and A/H3N2, 2021–22

<table>
<thead>
<tr>
<th>Influenza positive</th>
<th>Influenza negative¹</th>
<th>Vaccine Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unadjusted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VE %</td>
</tr>
<tr>
<td>Any influenza A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All ages ≥6 mos</td>
<td>210/487 43%</td>
<td>2501/4249 59%</td>
</tr>
<tr>
<td>Influenza A/H3N2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All ages ≥6 mos</td>
<td>191/456 42%</td>
<td>2501/4249 59%</td>
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¹ Persons testing negative for both influenza and SARS-CoV-2 using molecular assays.
² Multivariable logistic regression models adjusted for site, age, month of onset, self-rated general health status, and race/ethnicity.
## Preliminary vaccine effectiveness against medically attended influenza A/H3N2 by age group, 2021–22

<table>
<thead>
<tr>
<th>Influenza A/H3N2</th>
<th>Influenza positive</th>
<th>Influenza negative(^1)</th>
<th>Vaccine Effectiveness</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N vaccinated /Total (%)</td>
<td>N vaccinated /Total (%)</td>
<td>Unadjusted</td>
<td>Adjusted(^2)</td>
</tr>
<tr>
<td>All ages ≥6 mos</td>
<td>191/456 42</td>
<td>2501/4249 59</td>
<td>50 (39 to 59)</td>
<td>35 (19 to 47)</td>
</tr>
<tr>
<td>6 mos – 17 years</td>
<td>76/221 34</td>
<td>650/1266 51</td>
<td>50 (33 to 63)</td>
<td>44 (22 to 60)</td>
</tr>
<tr>
<td>18 – 49 years</td>
<td>71/168 42</td>
<td>998/1815 55</td>
<td>40 (17 to 56)</td>
<td>27 (-3 to 48)</td>
</tr>
<tr>
<td>≥ 50 years</td>
<td>44/67 66</td>
<td>853/1168 73</td>
<td>29 (-19 to 58)</td>
<td>-- --</td>
</tr>
</tbody>
</table>

\(^1\) Persons testing negative for both influenza and SARS-CoV-2 using molecular assays.

\(^2\) Multivariable logistic regression models adjusted for site, age, month of onset, self-rated general health status, and race/ethnicity.
Summary

- Preliminary results for 2021–22 season indicate vaccination reduced acute respiratory illness due to influenza A(H3N2) virus by 35% (95% CI: 19–47) based on enrollment through April 30, 2022
  - >99% of sequenced A(H3N2) viruses nationally were clade 3C.2a1b, subclade 2a.2

- Lowest influenza prevalence (7%) observed in US Flu VE Network

- 2022–23 Northern Hemisphere influenza vaccines will include updated reference viruses for A(H3N2) (clade 3C.2a1b, subclade 2a.2) and B/Victoria (B/Austria/1359417/2021)
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US Flu VE Network

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US Flu VE Network


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For more information, contact CDC
1-800-CDC-INFO (232-4636)

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