



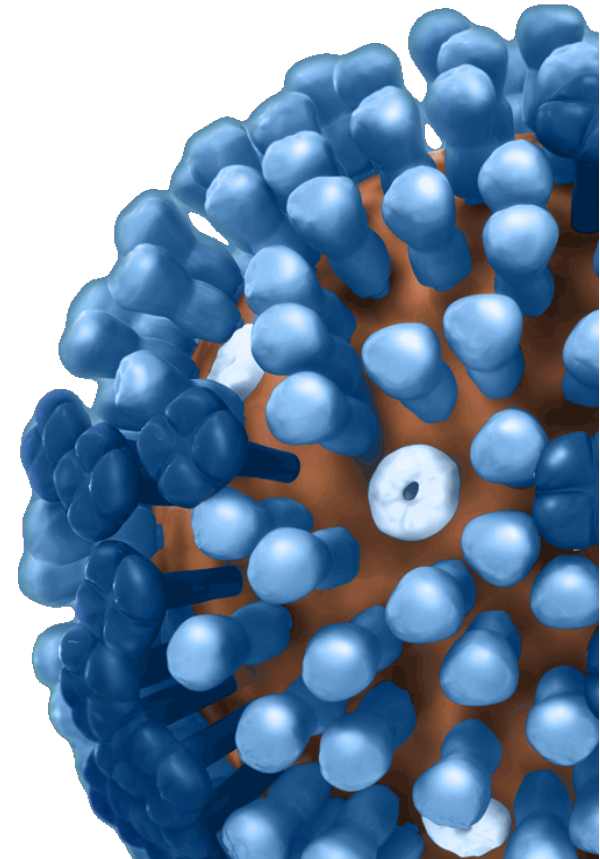
Influenza Disease Burden and Vaccine Impact Estimates, 2019-20 Season

Carrie Reed, DSc, MPH

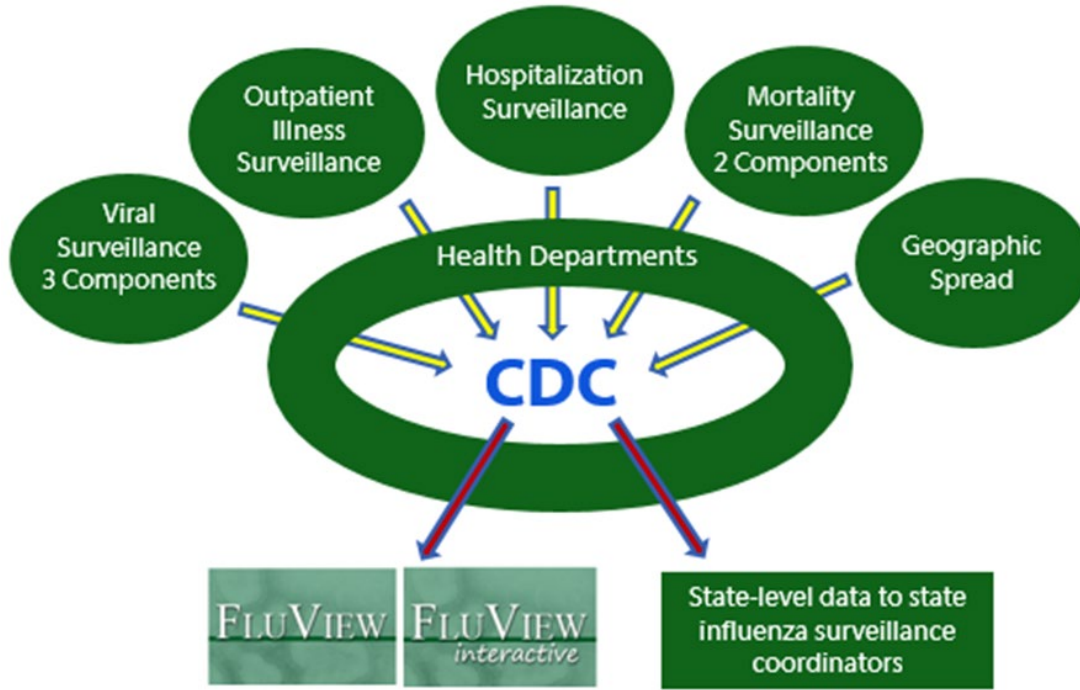
Lead, Applied Research and Modeling Team

Influenza Division, CDC

October 28, 2020



U.S. National Influenza Surveillance System

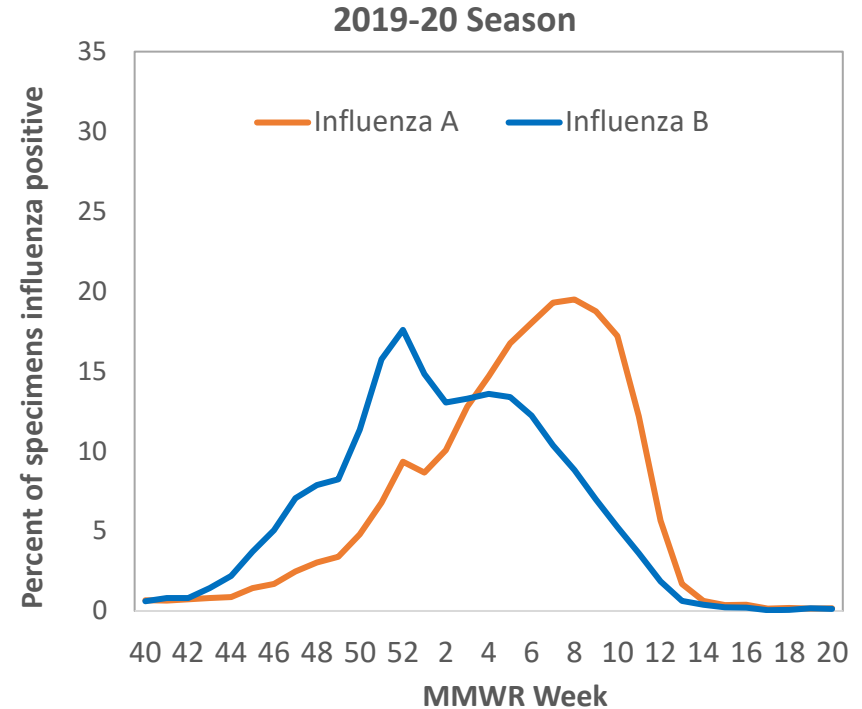
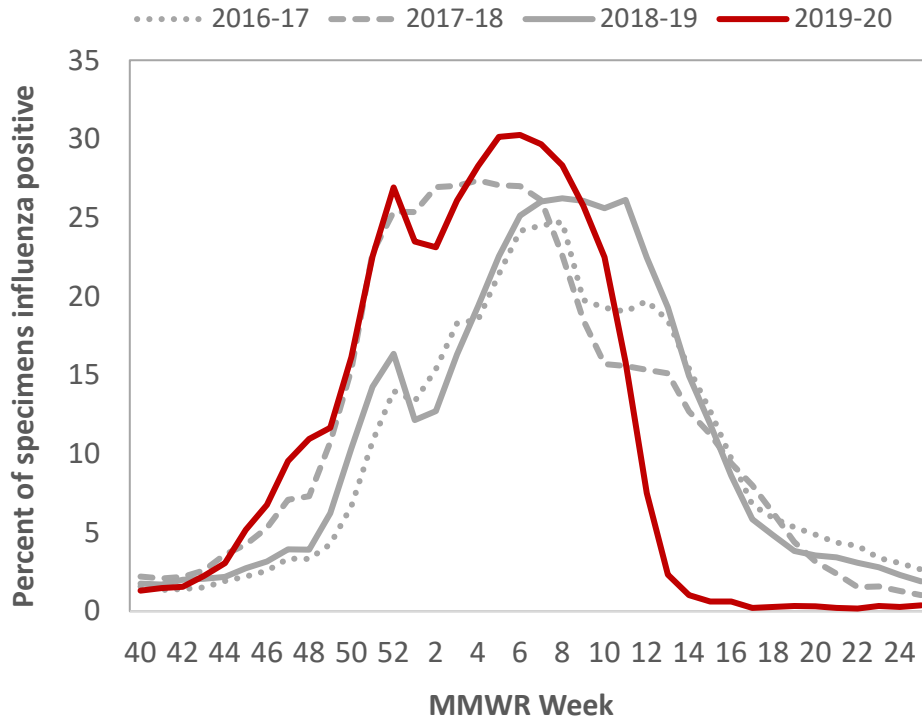


Goals:

- Find out when and where influenza activity is occurring;
- Determine what influenza viruses are circulating;
- Detect changes in influenza viruses; and
- Measure the impact influenza is having on outpatient illness, hospitalizations and deaths.

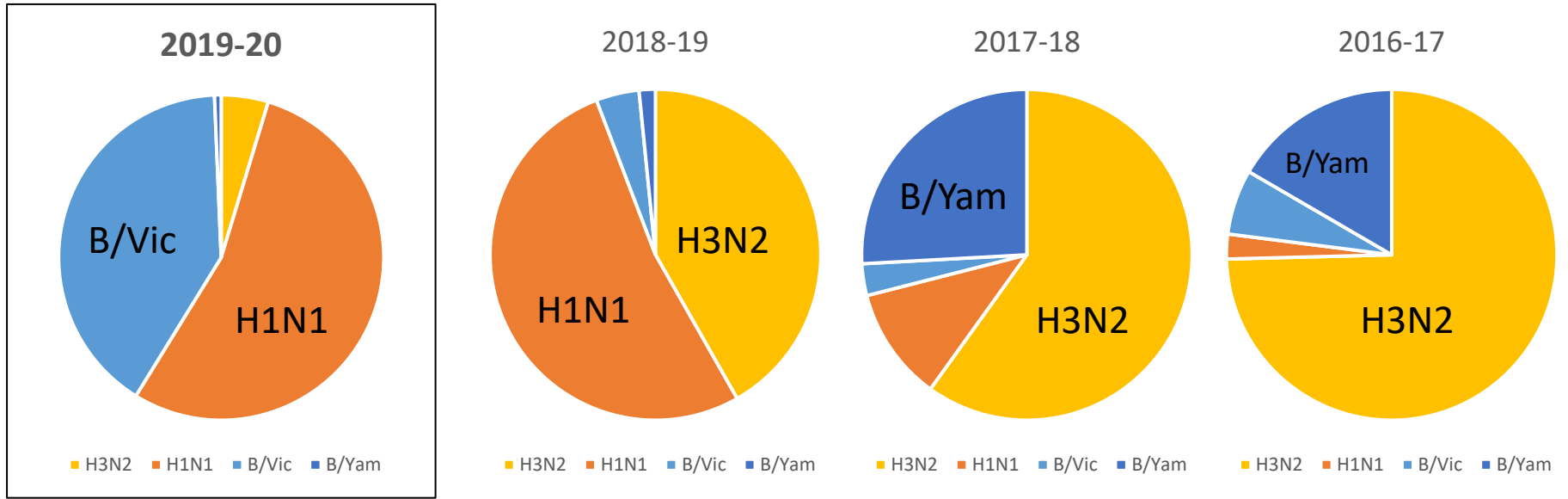
2019-20 Influenza Season Summary

*Specimens tested for influenza, reported to CDC by Clinical Laboratories, National



2019-20 Influenza Season Summary

*Influenza positive tests reported to CDC by Public Health Laboratories, National



Extended uses of surveillance data



Disease Burden: Estimate national disease burden (numbers of illnesses, medically-attended illnesses, hospitalizations, deaths) annually using data available during a season



Averted Burden: Combine data on disease burden, vaccine effectiveness, and vaccine coverage to estimate reductions in disease due to influenza vaccine use

**“How many people
get the flu every
year?”**

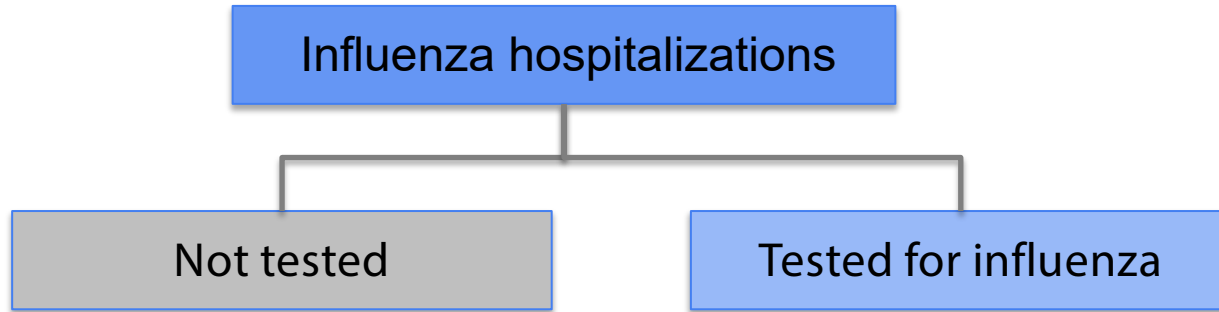


Challenges to Measuring Disease Burden

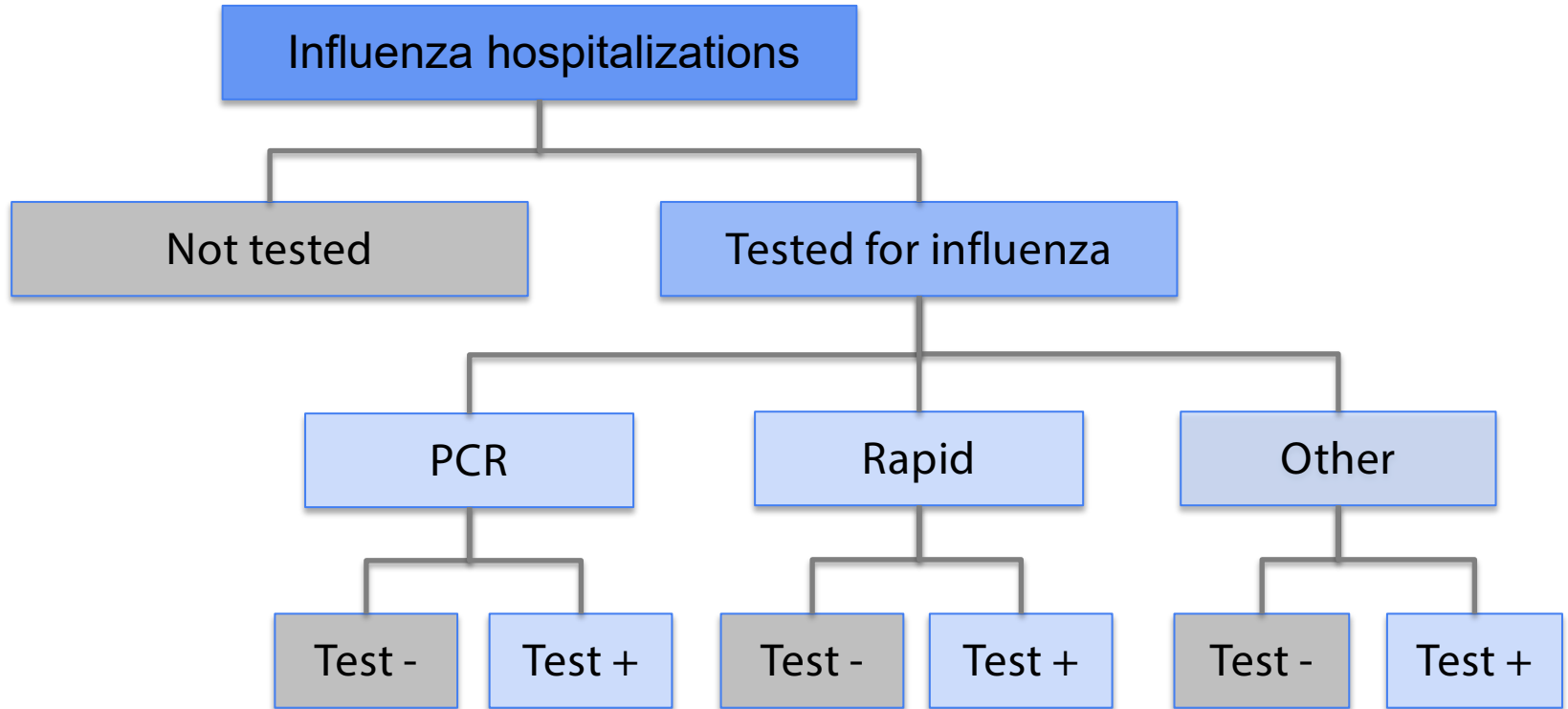


- Many sick people do not seek medical attention
- Symptoms similar among respiratory pathogens
- Illnesses not often confirmed with laboratory testing
- Many adults no longer shedding virus when tested
- Complications can be broader than respiratory illness
- Influenza rarely recorded on death certificates
- Surveillance not conducted everywhere

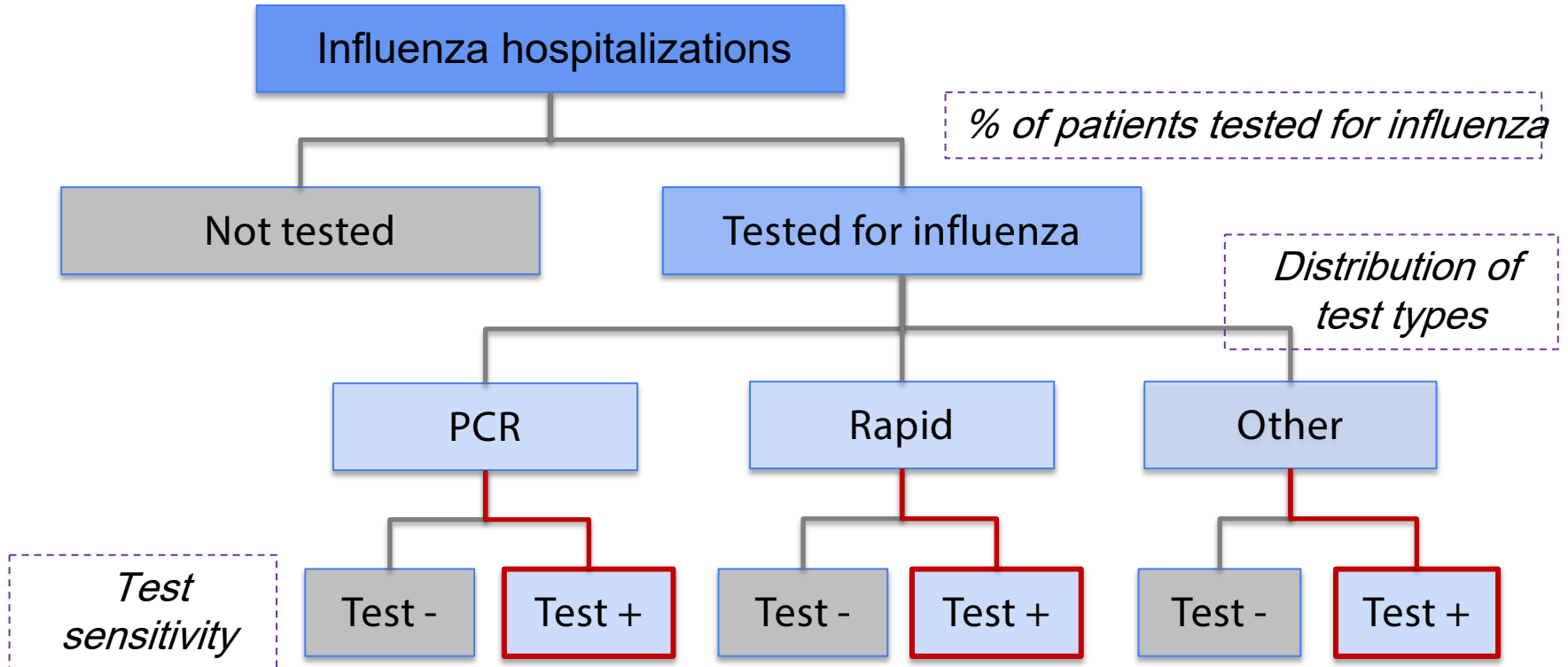
Not all influenza cases are detected



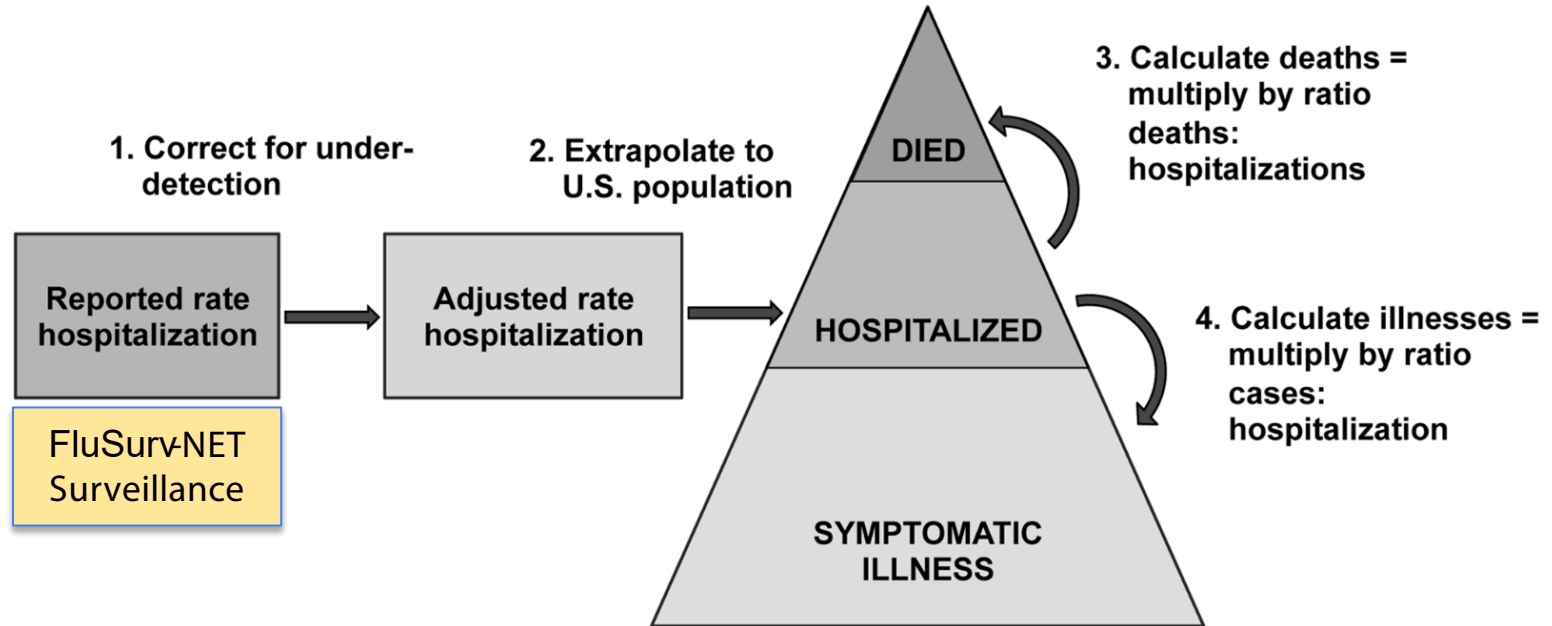
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Not all influenza cases are detected

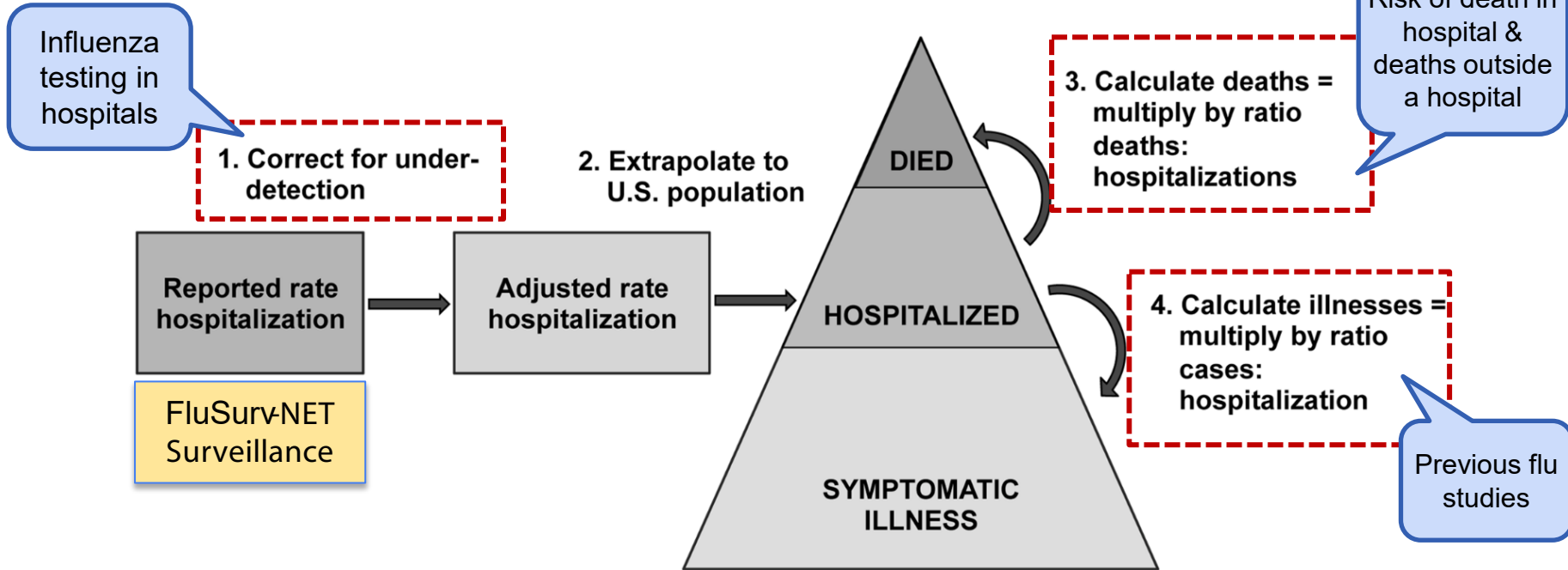


Using routine influenza surveillance to estimate disease burden



Reed et al. PLoS One. 2015
Rolfes et al. IoRV. 2018

Using routine influenza surveillance to estimate disease burden



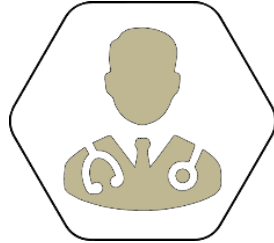
Influenza Disease Burden Estimates



2019–20 season*



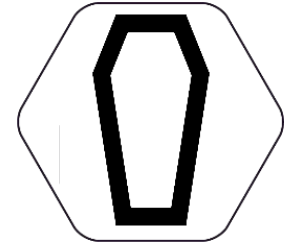
**38.2 million
illnesses**



**17.5 million
medical visits**



**400,000
hospitalizations**



**22,000
deaths**

Estimated by 5 age groups: 0-4, 5-17, 18-49, 50-64, 65+ years

For all seasons since 2010-11: <https://www.cdc.gov/flu/about/burden/index.html>

*Some data inputs are lagged and estimates are updated when more complete data are available

Influenza (Flu)

Seasonal Influenza (Flu) > About Flu



🏠 Seasonal Influenza (Flu)

About Flu

What You Need to Know

When is Flu Season

How Flu Spreads

Understanding Influenza Viruses +

Burden of Influenza

2019-2020 Preliminary In-Season Burden Estimate

How CDC Estimates Burden

Why CDC Estimates the Burden of Flu

Past Seasons

Frequently Asked Questions

Disease Burden of Influenza

[Español](#) | [Other Languages](#)

Each year CDC estimates the burden of influenza in the U.S. CDC uses modeling to estimate the number of influenza illnesses, medical visits, flu-associated hospitalizations, and flu-associated deaths that occur in the U.S. in a given season. The methods used to calculate these estimates are described on CDC's webpage, [How CDC Estimates the Burden of Seasonal Influenza in the U.S.](#)

CDC uses the estimates of the burden of influenza in the population and the impact of influenza vaccination to inform policy and communications related to influenza.



How CDC Estimates the Burden of Flu



Why CDC Estimates the Burden of Flu



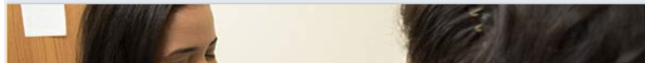
Past Season Estimates



Frequently Asked Questions about Estimated Flu Burden

Preliminary In-Season Disease Burden Estimates

Flu Burden Averted from Vaccination



“What impact can our interventions have?”



Annual Influenza Vaccine Impact






- Influenza vaccination is the primary strategy to prevent influenza illness and its complications
- Vaccine coverage, vaccine effectiveness, and rates of influenza can all vary between seasons, between age groups, and between different types and subtypes of influenza viruses
- At the end of each flu season, CDC uses data available on those factors from that season to estimate the burden of flu prevented by vaccination to better describe the population impact of influenza vaccination

Tokars et al. Vaccine. 2018

Rolfes et al. CID. 2019; Chung et al. CID. 2020



2019-2020 season

Disease Burden	Vaccine Coverage	Vaccine Effectiveness
 <p>38 million illnesses</p>  <p>400,000 hospitalizations</p>  <p>22,000 deaths</p>	 <p>Coverage</p> <p>38–75%</p> <p>(Varies by age group)</p>	 <p>Effectiveness</p> <p>22–57%</p> <p>(Varies by age group and flu type)</p>

Estimated, by age group and influenza type/subtype

From CDC's FluVaxView
<http://www.cdc.gov/flu/fluview/>

From the US Flu VE Network

the benefits of flu vaccination **2019-2020**



2019-20 Influenza Averted Burden

Nearly **52%** of the U.S. population aged 6 months and older got a flu vaccine during the 2019-2020 flu season, and this prevented an estimated:

7.5
million
flu illnesses

105,000
flu hospitalizations

6,300
flu deaths

More than the
combined population of
Kentucky and Kansas



Enough people to fill
Michigan Stadium at the
University of Michigan



Equivalent to saving
about 17 lives per day
over the course of a year



get vaccinated
www.cdc.gov/flu

the benefits of flu vaccination 2019-2020



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Equivalent to saving
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21%
prevented
fraction, all
ages

28%
prevented
fraction, ages
0-4 years



get vaccinated
www.cdc.gov/flu

Summary

- During the 2019–2020 season an estimated **38 million** people were sick with flu, resulting in **18 million visits** to a health care provider, **400,000 hospitalizations**, and **22,000 deaths**
- The estimated influenza illnesses, hospitalizations, and deaths were lower than some recent seasons and similar to other seasons where influenza A(H1N1)pdm09 viruses dominated
- Persons aged <50 years had rates of illnesses, hospitalizations, and deaths similar to or greater than during the 2017-18 season, a recent season with high severity
- Vaccination prevented the greatest proportion of outcomes among children aged 6 months to 4 years, an age group with high vaccine uptake and the greatest vaccine effectiveness

Thank you

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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FluSurv-NET sites
VE Network sites

