Influenza

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Experts in pediatrics,
Advocates for children.
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Disclosure

Dr. Kristina Herndon has no relevant financial relationships to disclose.

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Learning Objectives

- Understand and describe the different strains of influenza that cause illness in children.
- Recognize signs and symptoms of influenza in different age groups.
- Identify treatment options.
- Prevention – flu vaccine options for kids.
- Addressing flu vaccine hesitancy.
- Influenza seasonality and what changed with COVID.

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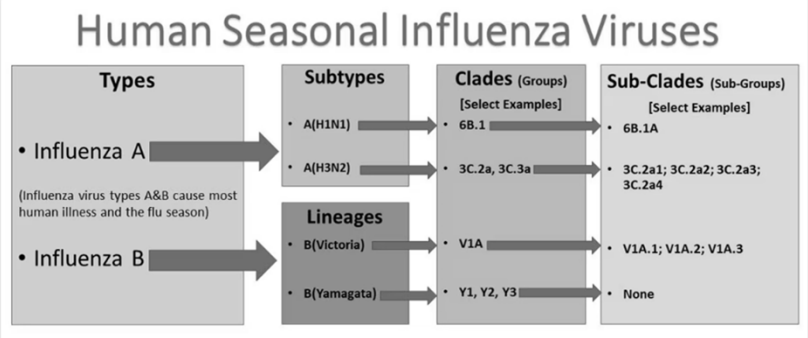
Back to the Basics

- What is the flu?
- Strains
  - A
  - B
  - C
  - D



(Types of Influenza Viruses, 2023)

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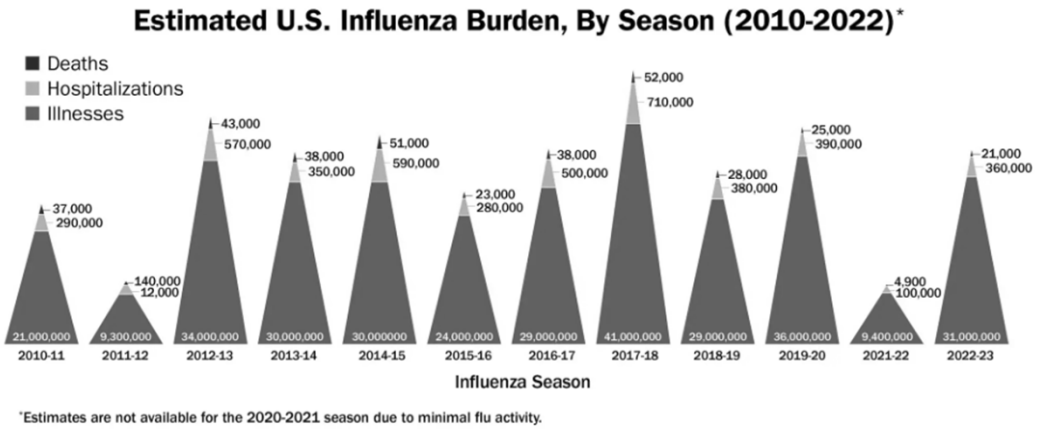

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(CDC, 2023; Tokars et al., 2017)

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How Flu is Spread

Influenza spreads through droplets that are most commonly passed through the air when a person infected with the virus coughs, sneezes, or talks.

Can survive on surfaces for up to 48 hours.

Persons with the flu can spread the virus 24 hours prior to the onset of symptoms.

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Incubation Period

- Ranges from one to four days.
  - Typically, about 2 days from exposure to onset of symptoms.

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Symptoms

- Fever *not always present
- Chills
- Cough
- Sore Throat
- Fatigue
- Rhinorrhea or congestion
- Muscle or body aches
- Headache
- Vomiting and Diarrhea *more common in children than adults

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Emergent Symptoms

- Hypercapnia
- Cyanosis
- Retractions
- Chest pain
- Severe myalgias
- Dehydration
- Somnolence or extreme fatigue
- Seizures
- Recurrence of fever or cough after a period of improvement

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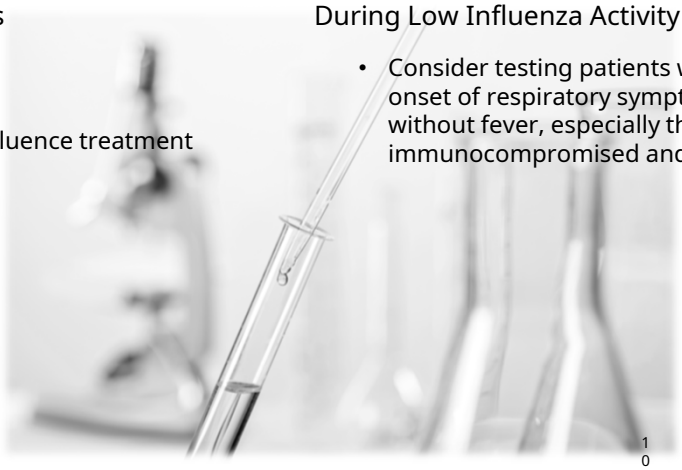
Testing - Outpatients

During Outbreaks

- Symptomatic
- High risk
- Results might influence treatment



During Low Influenza Activity

- Consider testing patients with acute onset of respiratory symptoms with or without fever, especially those that are immunocompromised and high-risk.

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(Uyeki et al., 2018)

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Testing – Hospitalized Patients

During known outbreaks:

- All patients with respiratory symptoms on admission, worsening chronic cardiopulmonary disease on admission, and anyone that develops respiratory symptoms during admission.

During low influenza activity:

- Those with respiratory symptoms and known or suspected influenza exposure.
- Consider testing patients with fever and acute respiratory symptoms that are immunocompromised or high risk if results may influence treatment.

(Uyeki et al., 2018) 11

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Treatment Options - Antivirals

- **Oseltamivir (Tamiflu)**: approved for use in children 14 days and older.
  - Oral - pills and liquid
- **Zanamivir (Relenza)**: approved for use in children 7 years and older.
  - Inhaled – special inhaler (Diskhaler)
  - Avoid use in children with underlying respiratory disease, including those with asthma
- **Peramivir (Rapivab)**: approved for use in children 6 months and older
  - Intravenous
- **Baloxavir (Xofluza)**: approved for use for early treatment of flu in children aged 5 to less than 12 years with no chronic medical conditions and for all children aged 12 and older.
  - Oral - pills

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When to Prescribe

- As soon as possible for high priority patients:
  - Hospitalized
  - Severe, complicated, or progressive illness
  - Higher risk for flu complications, including

- Children younger than 2 years old, especially those under 6 months
- Asthma
- Neurological and neurodevelopmental conditions
- Blood disorders, such as sickle cell disease
- Chronic lung disease
- Endocrine disorders
- Heart disease
- Kidney disease
- Liver disease
- Metabolic disorders
- Obesity
- Children on long term aspirin therapy or salicylate-containing medications
- Children with weakened immune systems
- Children who have had a stroke
- Pregnant people
- Children that live in long term care facilities
- Children from certain racial and ethnic minority groups including non-Hispanic black, Hispanic or Latino, and American Indian or Alaska native.

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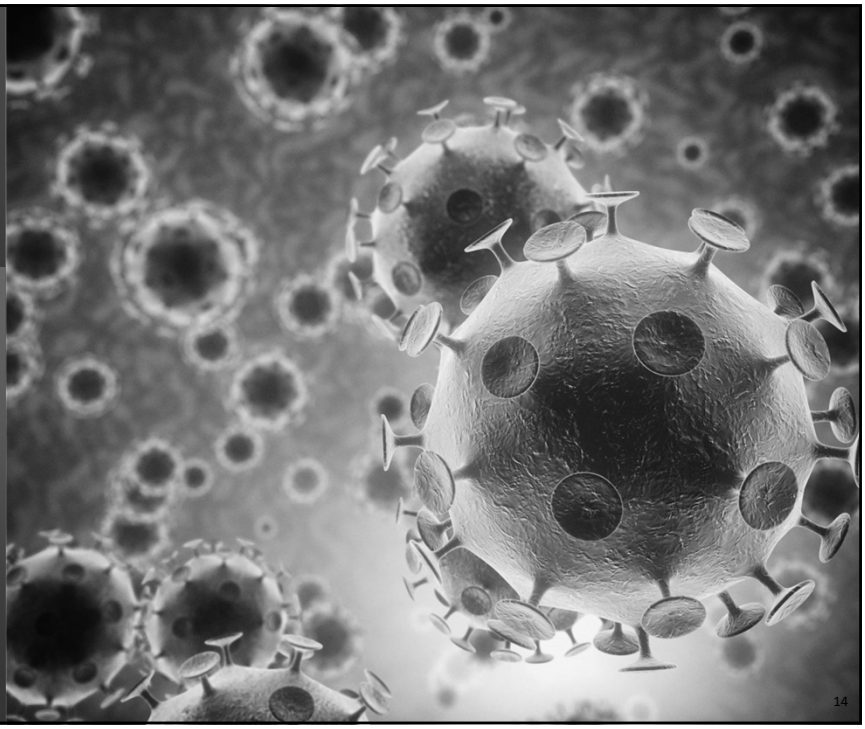
Antiviral Resistance



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- Resistance currently low but can change!
- Oseltamivir resistance in influenza A can develop during treatment, particularly in young children and immunocompromised patients.
- Keep up to date with susceptibility of circulating influenza viruses through CDC's Weekly FluView publication. Weekly FluViewFluView

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Treatment Options – Symptom Support

Symptom management	Avoid
• Fever reducers • **Cool** mist humidifier • **Fluid** replacement	• Aspirin or salicylate containing medications • Cold and cough medicines in children younger than 6 years old • Honey in infants under 12 months • Ice baths and alcohol rubs

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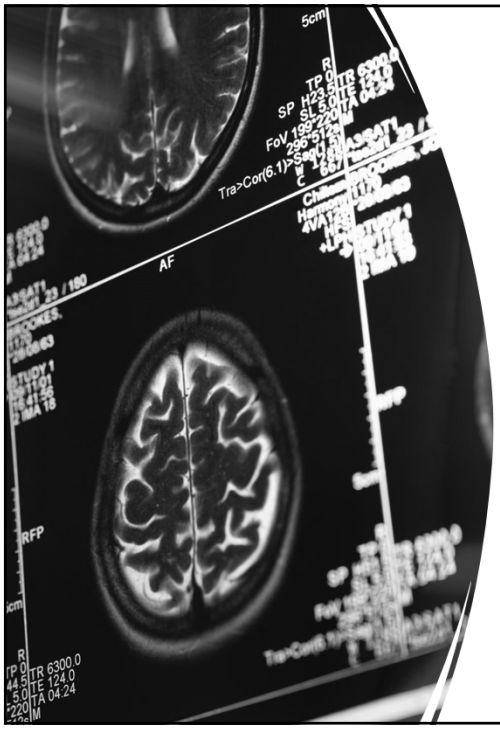

Complications

- Pneumonia
- Otitis Media
- Worsening of chronic conditions
- Myocarditis
- Encephalitis
- Myositis/Rhabdomyolysis
- Multi-organ failure
- Sepsis

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Special Considerations

Children and immunocompromised patients may be contagious for longer than others.

Return to school or activities is permitted when children are afebrile for 24 hours without the use of fever reducing medications.

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Prevention

Vaccination!

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Influenza Vaccines

APPROVED FOR EVERYONE OVER 6 MONTHS OF AGE

CHILDREN 8 AND UNDER THAT HAVE *NEVER* HAD A FLU VACCINE BEFORE **OR HAVE ONLY EVER RECEIVED ONE DOSE, WILL** NEED TWO DOSES – 4 WEEKS APART

EGG ALLERGY IS NO LONGER A CONTRAINDICATION

BEST WAY TO AVOID HOSPITALIZATION OR SERIOUS COMPLICATIONS FROM THE FLU

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Flu Vaccine Specifics

- All flu vaccines are now quadrivalent
- Some brands require a smaller dose (0.25mL vs 0.5mL) for young children. Be sure to follow manufacturer's instructions.
- Intranasal sprayed vaccine (FluMist) available for use in children 2 years and up with no history of asthma or history of wheezing in the past 12 months.
- Immunity develops about two weeks after vaccination
- Flu vaccine can be given at the same time as COVID and other childhood vaccines.

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When to Avoid Flu Vaccines

Inactivated Influenza Vaccine

- Moderate or severe illness with or without fever
- History of allergic reaction to influenza vaccine or ingredients in the vaccine (other than egg)
- History of Guillain-Barre syndrome within 6 weeks of previous influenza vaccine

Live Attenuated Influenza Vaccine

- Younger than 2 or older than 49
- Immunocompromised or lives with someone that is severely immunocompromised
- Has taken antiviral medication within the past 3 weeks
- During pregnancy
- History of Guillain-Barre syndrome within 6 weeks of previous vaccine
- History of severe allergic reaction to previous influenza vaccine or ingredients
- Asplenic
- Cochlear implant

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Addressing Flu Vaccine Hesitancy

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Objections and How to Address Them

- **"Every time we get the flu vaccine, we get the flu."**
  - Flu vaccines are incapable of causing the flu. The flu shot is a killed virus, meaning it does not have the ability to replicate and make you sick. It simply allows your immune system to see what it looks like so that your body will be able to fight it off if you are exposed to the live virus in the future.
  - The intranasal flu vaccine is a live attenuated vaccine, which means the virus is alive but it has been altered so that it is not capable of causing disease.
  - If you have been sick with the flu in the past after getting a flu vaccine, you were either exposed to the virus before the vaccine had time to mount an immune response, you had something other than influenza, or you still got the flu but it wasn't as severe as it could have been without the vaccine – which means it actually worked!

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Objections and How to Address Them

- **"We don't have any risk factors and we have good immune systems, so we don't need the flu vaccine."**
  - Nearly half of all children that die from the flu each year were previously healthy. We cannot always predict who will be severely affected by the virus and the vaccine is the best protection we have against severe illness.

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Objections and How to Address Them

- **"We don't do flu shots"**
  - Why not? Are you aware of how serious the flu can be? Thousands of children are hospitalized and hundreds of kids die each year from the flu. This simple vaccine can drastically reduce the chances of that happening to your child.

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Objections and How to Address Them

- **"I don't trust flu shots. They have too many dangerous chemicals in them."**
  - Everything in the world is technically broken down into chemical elements. Flu vaccines do not contain ingredients that are any more dangerous than the foods you eat every day and everything in the vaccine is eliminated from your body within a day. Vaccines work simply by showing your immune system what a disease looks like so that it will be able to fight it off in the future without making you sick.
  - Flu vaccines are some of the safest and most studied vaccines we have. They are updated every year with the strains of the flu virus that are most likely to make people sick but all other elements of the vaccine stay the same. Studies looking at safety and efficacy are ongoing.

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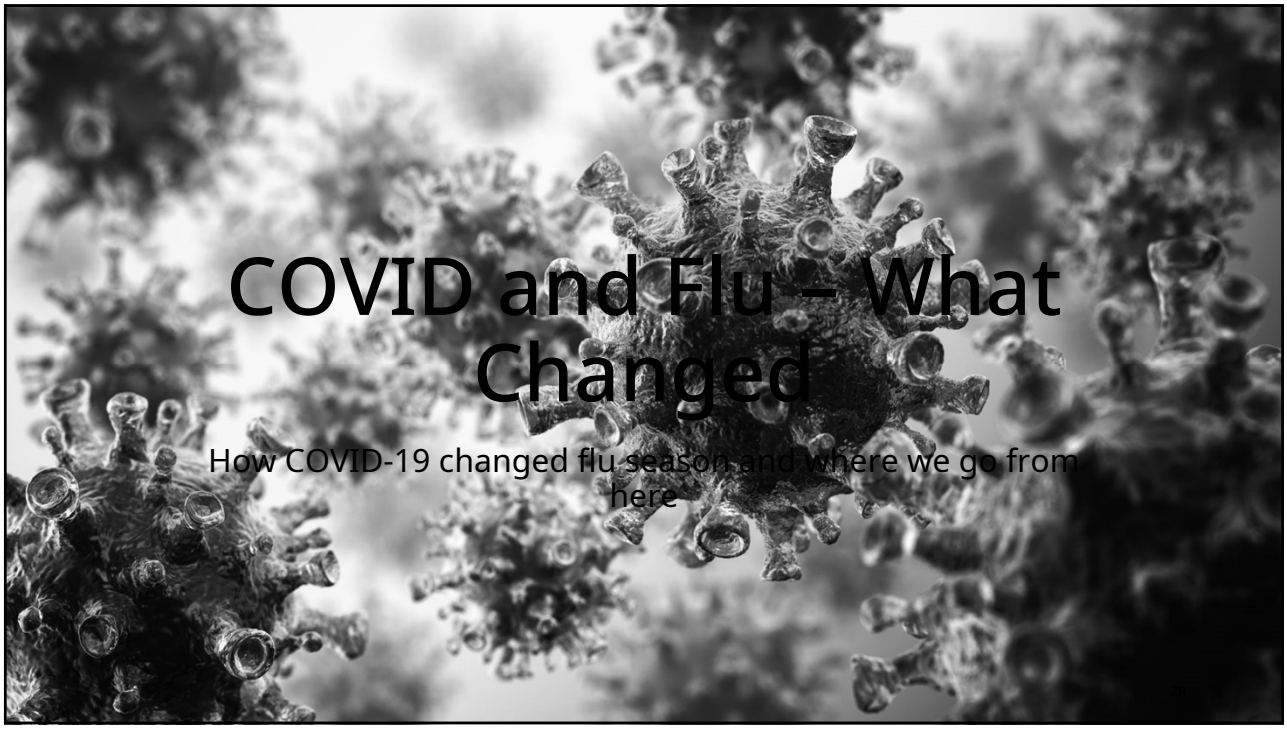

COVID and Flu – What Changed

How COVID-19 changed flu season and where we go from here

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References

Burden of influenza. (2023, November 30). Centers for Disease Control and Prevention. https://www.cdc.gov/flu/about/burden/index.html

Centers for Disease Control and Prevention. (2023a, August 25). *Quadrivalent influenza vaccine*. Centers for Disease Control and Prevention. https://www.cdc.gov/flu/prevent/quadrivalent.htm

Centers for Disease Control and Prevention. (2023b, December 15). *Weekly Flu Vaccination dashboard*. Centers for Disease Control and Prevention. https://www.cdc.gov/flu/fluvaxview/dashboard/vaccination-dashboard.html#:~:text=All%20Adults%20Flu%20Vaccination%20Coverage&text=National%20coverage%20for%20all%20adults,receive%20a%20vaccine%20this%20year.

Flu symptoms & complications. (2022, October 3). Centers for Disease Control and Prevention.

Inactivated influenza vaccine Information Statement | CDC. (n.d.). https://www.cdc.gov/vaccines/hcp/vis/vis-statements/flu.html

Live Intranasal Influenza Vaccine Information Statement | CDC. (n.d.). https://www.cdc.gov/vaccines/hcp/vis/vis-statements/flulive.html

Tokars, J. I., Olsen, S. J., & Reed, C. (2017). Seasonal incidence of symptomatic influenza in the United States. Clinical Infectious Diseases, 66(10), 1511–1518. https://doi.org/10.1093/cid/cix1060

Types of influenza viruses. (2023, March 30). Centers for Disease Control and Prevention. https://www.cdc.gov/flu/about/viruses/types.htm

Uyeki, T. M., Bernstein, H. H., Bradley, J. S., Englund, J. A., File, T. M., Fry, A. M., Gravenstein, S., Hayden, F. G., Harper, S., Hirshon, J. M., Ison, M. G., Johnston, B., Knight, S. L., McGeer, A., Riley, L. E., Wolfe, C. R., Alexander, P., & Pavia, A. T. (2018). Clinical Practice Guidelines by the Infectious Diseases Society of America: 2018 Update on Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenzaa. Clinical Infectious Diseases, 68(6), e1–e47. https://doi.org/10.1093/cid/ciy866

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