

Welcome!

Thank you for joining us! The forum will start soon.





COVID-19, Flu, and RSV - Oh My!

December 15, 2022



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A close-up photograph of a hand holding a silver compass. The compass face is green with white markings for cardinal and intercardinal directions (N, S, E, W, NE, SE, SW, NW). The hand is positioned in the lower-left quadrant of the frame, with the fingers gently gripping the compass. The background is a soft, out-of-focus landscape, possibly a beach or a field, with a warm, golden light suggesting a sunrise or sunset. The overall image conveys a sense of direction, guidance, and purpose.

MISSION STATEMENT

The Immune Deficiency Foundation improves the diagnosis, treatment, and quality of life of people affected by primary immunodeficiency through fostering a community empowered by advocacy, education, and research.



IDF provides accurate and timely information, resources, and support for individuals with PI and their families.

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COVID, Flu and RSV

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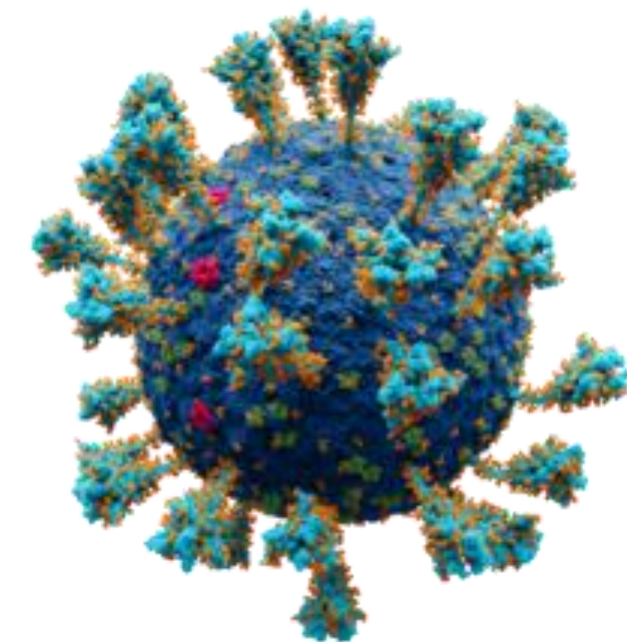
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Today's agenda: COVID, Flu, RSV

- What is COVID, influenza, and RSV?
- What are the symptoms of COVID, influenza, and infection?
- How are COVID, influenza, and RSV transmitted?
- How can you prevent COVID, influenza, and RSV transmission?
- What vaccines are available and when should you get them? Other treatments?
- Does IgG replacement therapy protect against COVID, influenza, and RSV?
- How do you differentiate COVID, influenza, and RSV?
- What do I need to know about COVID variants/subvariants and the “triple-demic”?

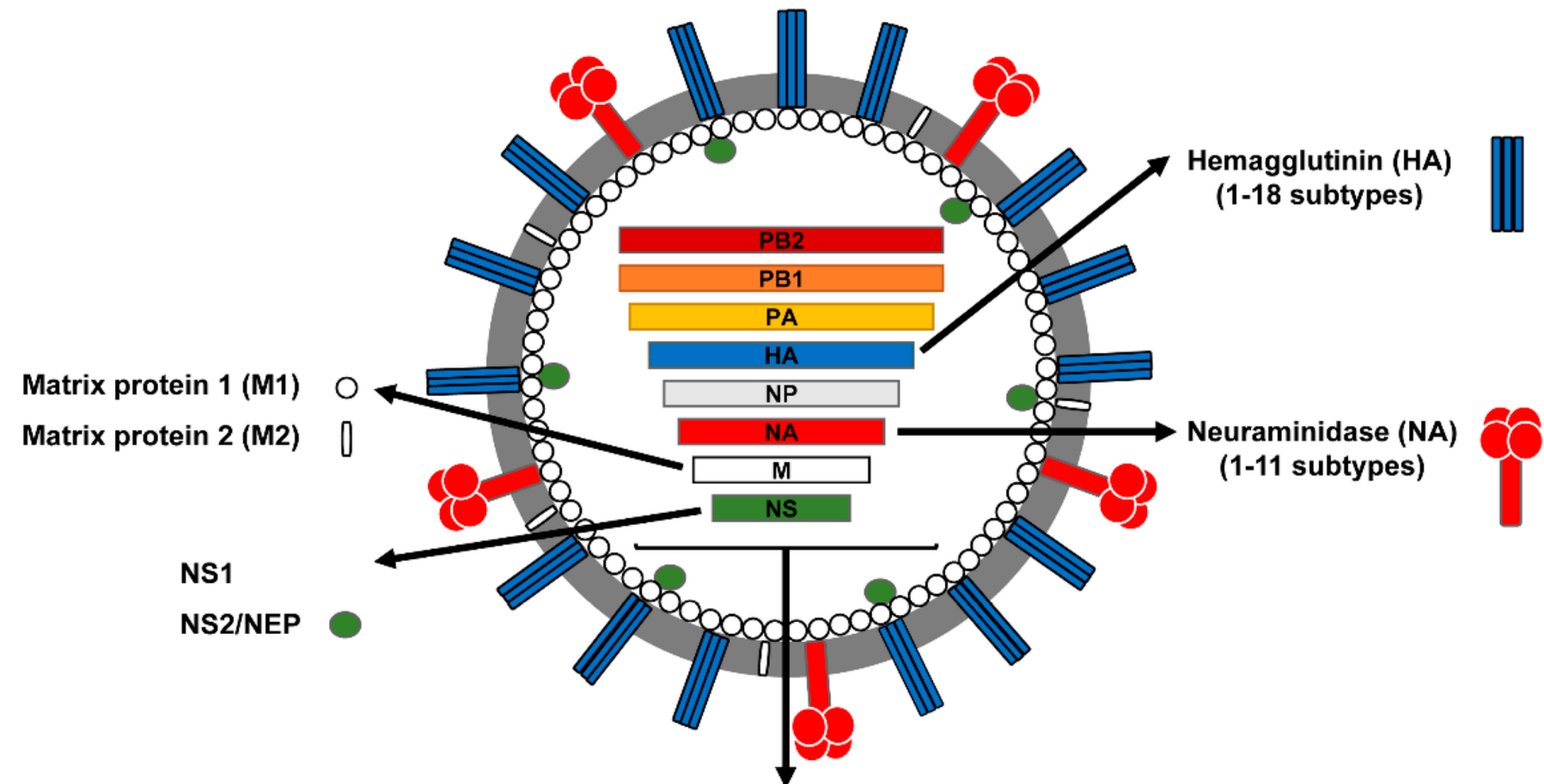
What is COVID?

- COVID or COVID-19 stands for coronavirus disease 2019 and it is caused by SARS-CoV-2, a positive sense single strand RNA virus.
- SARS-CoV-2 is severe acute respiratory syndrome coronavirus 2. SARS-CoV-1 was responsible for 2002-2004 SARS outbreak.
- As of 11 December 2022, there have been 649,010,068 total confirmed cases of SARS-CoV-2 infection in the ongoing pandemic. The total number of deaths attributed to the virus is 6,652,733.



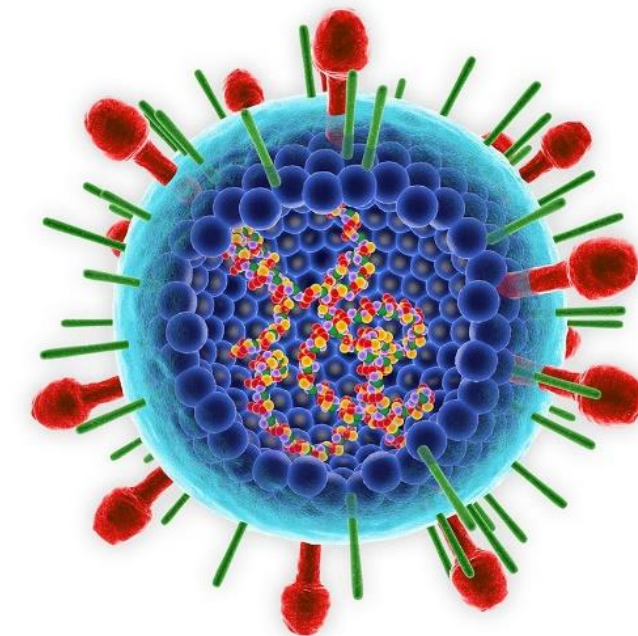
What is influenza?

- A negative sense single strand RNA virus
- Notorious for its ability to alter its genome every year
- CDC estimates that influenza causes between 140,000 – 810,000 hospitalizations and 12,000 – 61,000 deaths annually.



What is RSV?

- RSV is respiratory syncytial virus, a negative sense single strand RNA virus.
- Notorious for its ability to alter its genome every year
- Most common cause of respiratory hospitalization in infants, an important pathogen in all ages. Typically causes bronchiolitis in infants and a cold in adults, and but more serious respiratory illnesses occur in the elderly and immunocompromised.



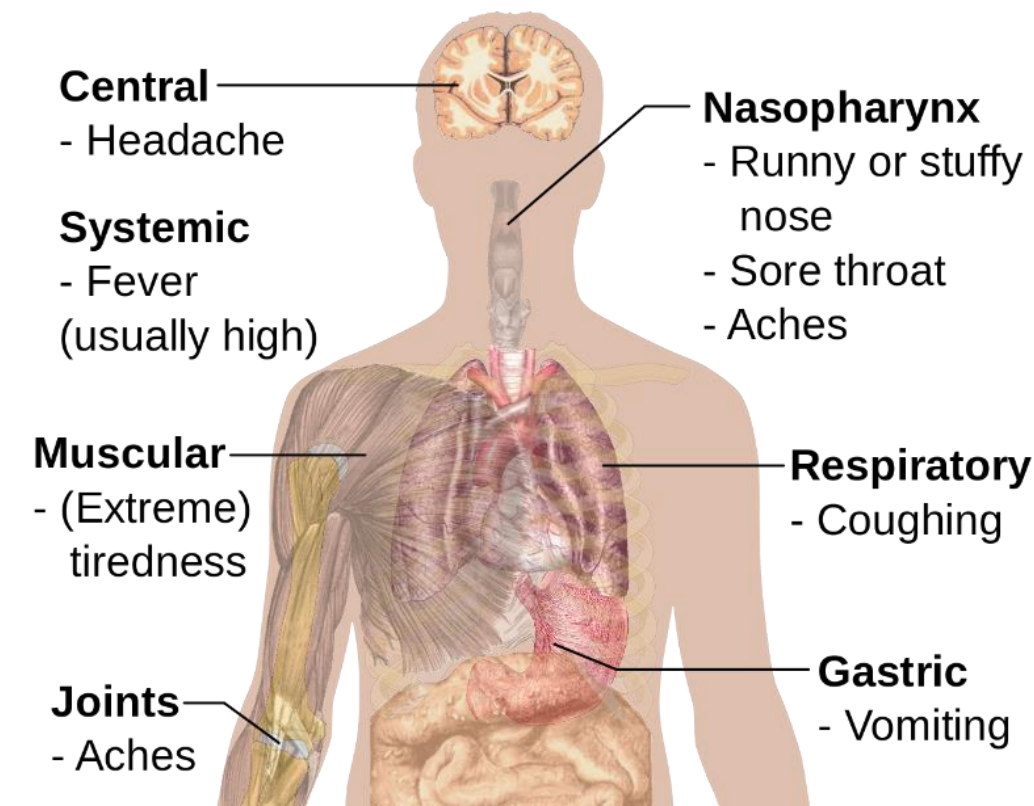
What symptoms occur in COVID?

Possible symptoms include (not an exhaustive list):

- Fever or chills
 - Cough
 - Shortness of breath or difficulty breathing
 - Fatigue
 - Muscle or body aches
 - Headache
 - **New loss of taste or smell**
 - Sore throat
 - Congestion or runny nose
 - Nausea or vomiting
 - Diarrhea
-
- Symptoms **may appear 2-14 days after exposure** to the virus.

What symptoms does influenza cause?

- Fever, runny nose, sore throat, myalgias, headache, cough and other respiratory symptoms, and malaise are most typical.
- Other potential complications include myositis and myocarditis, complications in the central nervous system, and bacterial **superinfection** of the lung. This superinfection, which may occur simultaneously with influenza or follow it by days to weeks, may be responsible for much of the disease burden associated with influenza.
- In most persons, recovery from these symptoms occurs in 5 to 7 days, but even in healthy persons symptoms of fatigue and malaise may not completely resolve for several weeks.



What symptoms does RSV cause?

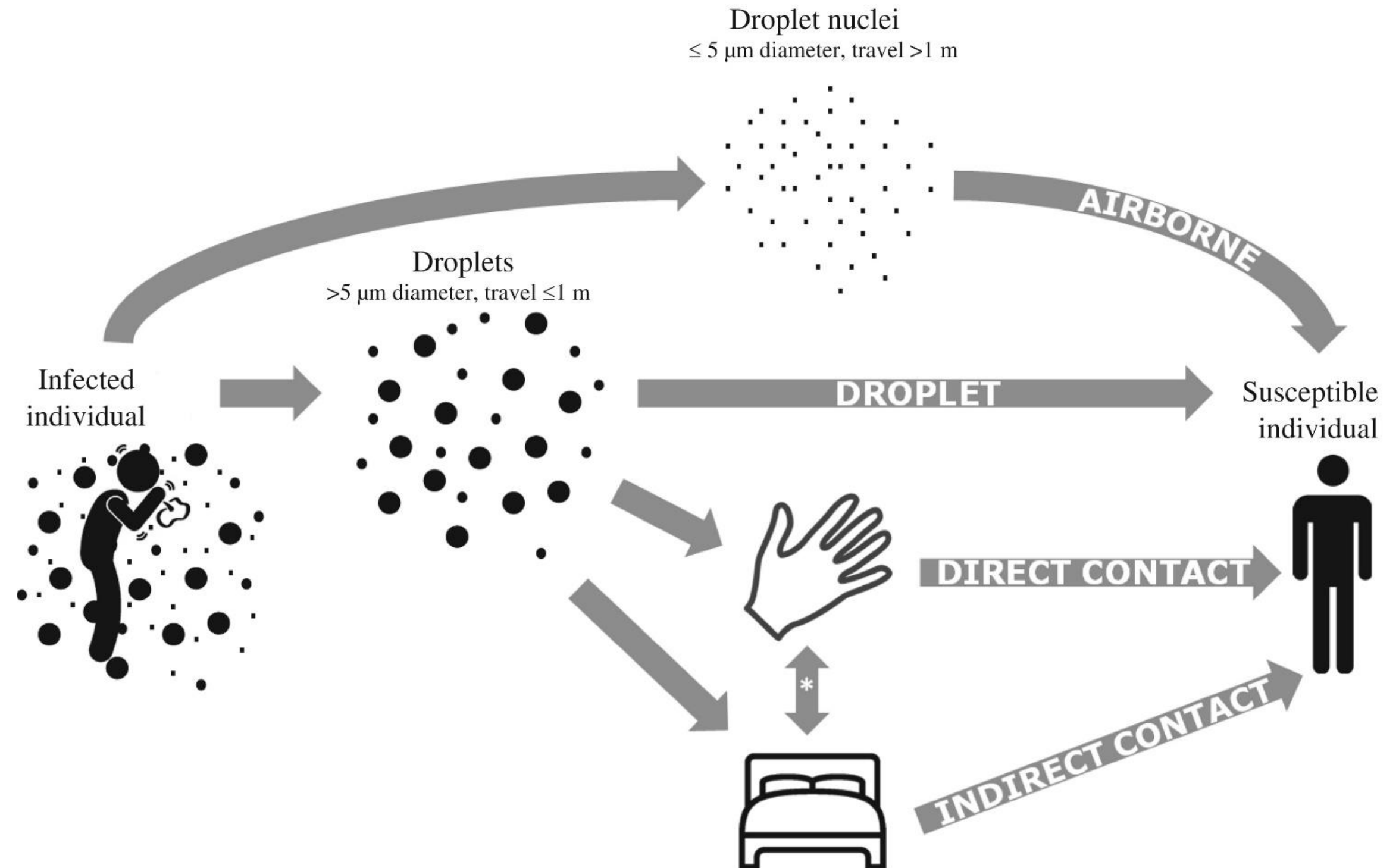
- RSV can cause severe infections such as bronchiolitis, an inflammation of the small airways, and pneumonia, particularly in **children younger than 1 year** (in whom it is the most common cause) and the elderly or immunocompromised (generally those with significant T cell defects).
 - Healthy adults, children, and infants infected with RSV do not usually need to be hospitalized.
- Symptoms of RSV infection usually include:
- Runny nose
 - Decrease in appetite
 - Coughing
 - Sneezing
 - Fever
 - Wheezing
 - In very young infants, the only symptoms may be irritability, decreased activity, and breathing difficulties.
- Almost all children will have had an RSV infection by their second birthday.
 - People infected with RSV usually **show symptoms within 4 to 6 days after getting infected.**

How is SARS-CoV-2 transmitted?

- Current evidence suggests that the virus **spreads mainly between people who are in close contact with each other**, for example at a conversational distance. The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe (short-range aerosol transmission).
- The virus can also spread **in poorly ventilated and/or crowded indoor settings**. This is because aerosols can remain suspended in the air or travel farther than conversational distance (this is often called long-range aerosol transmission).
- People may also become infected when touching their eyes, nose or mouth after touching surfaces or objects that have been contaminated by the virus (droplet transmission). However, we do not believe this to be the major mode of transmission.

How is influenza transmitted?

- Viruses are expelled in “respiratory droplets” that are circulated via coughing or sneezing.
- Quite contagious – approx. 30% household transmission, schools.



* Transmission routes involving a combination of hand & surface = indirect contact.

How is RSV transmitted?

RSV spreads via **droplet transmission**

- virus droplets from a cough or sneeze
- kissing the face of a child with RSV
- touch a surface that has the virus on it and then touch your face

- People infected with RSV are **usually contagious for 3 to 8 days** and may become contagious a day or two before they start showing signs of illness. However, some infants, and people with weakened immune systems, can continue to spread the virus even after they stop showing symptoms, for as long as 4 weeks.

- **RSV can survive for many hours on hard surfaces** such as tables and crib rails. It typically lives on soft surfaces (like tissues or hands) for shorter amounts of time.

How can you prevent viral transmission?

- Avoid contact with sick people and stay home if you are sick
- Good hand hygiene - washing hands, do not touch face, especially eyes, nose, mouth
- Routinely clean frequently touched objects and surfaces, including doorknobs, keyboards, and phones, to help remove germs.
- Make sure your workplace has an adequate supply of tissues, soap, paper towels, alcohol-based hand rubs, and disposable wipes.
- Surgical masks are more effective against droplet transmission. N/KN95 masks for aerosol transmission.

What are the vaccines for COVID?

Vaccines (available starting at age 6 months)

- Pfizer-BioNTech and Moderna (mRNA vaccines)
- Johnson & Johnson Janssen (adenoviral vector) [limited use]
- Novavax (protein subunit vaccine)

- Bivalent booster (Pfizer or Moderna), >5 years, at least 2 months after last dose, provide added protection against the recent Omicron subvariants that are more contagious than the previous ones. The recent subvariants, BA.4 and BA.5, are very closely related to the original variant, Omicron.

Recommended administration in the immunocompromised:

- 3 primary series, each dose at least 4 weeks apart
- Bivalent booster, at least 8 weeks since completing the primary series

May consider delaying a COVID booster by 3 months if you had COVID infection (discuss with your doctor, may depend how immunocompromised you are)

What are the therapies for COVID?

Evusheld

- combination of two monoclonal antibodies to prevent COVID-19
- at least 2 weeks after COVID vaccination, vaccines may be administered at any time
- likely ineffective against BA.2.75.2, BA.4.6, BA.5.2.6, BF.7, BQ.1, and BQ.1.1. BQ1, BQ1.1, BF.7 are responsible for almost 75% of cases as per CDC data (12/10/2022)

Immunoglobulin replacement therapy

- COVID antibodies from thousands of donors and may provide benefit

nirmatrelvir/ritonavir (Paxlovid) (age 12 and over), molnupiravir (Lagevrio) (adults)

- must begin within 5 days of when symptoms start

remdesivir (adults and children), given intravenously

- Must begin within 7 days of symptom onset

What are the vaccines and treatment for flu?

- Live attenuated or (dead) inactivated vaccines
- Live nasal attenuated flu vaccine, not recommended with patients for immunodeficiency.
- Quadrivalent flu vaccine – protect against 4 different flu viruses (2A & 2B)
- High dose vaccine (4X the antigen), adjuvanted vaccine -> for 65 years and older
- Rest and fluids
- If severe or at higher risk, antiviral (Tamiflu). Most likely to provide benefit if administered in the first 48 hours, but may be some benefit even after 48 hours.

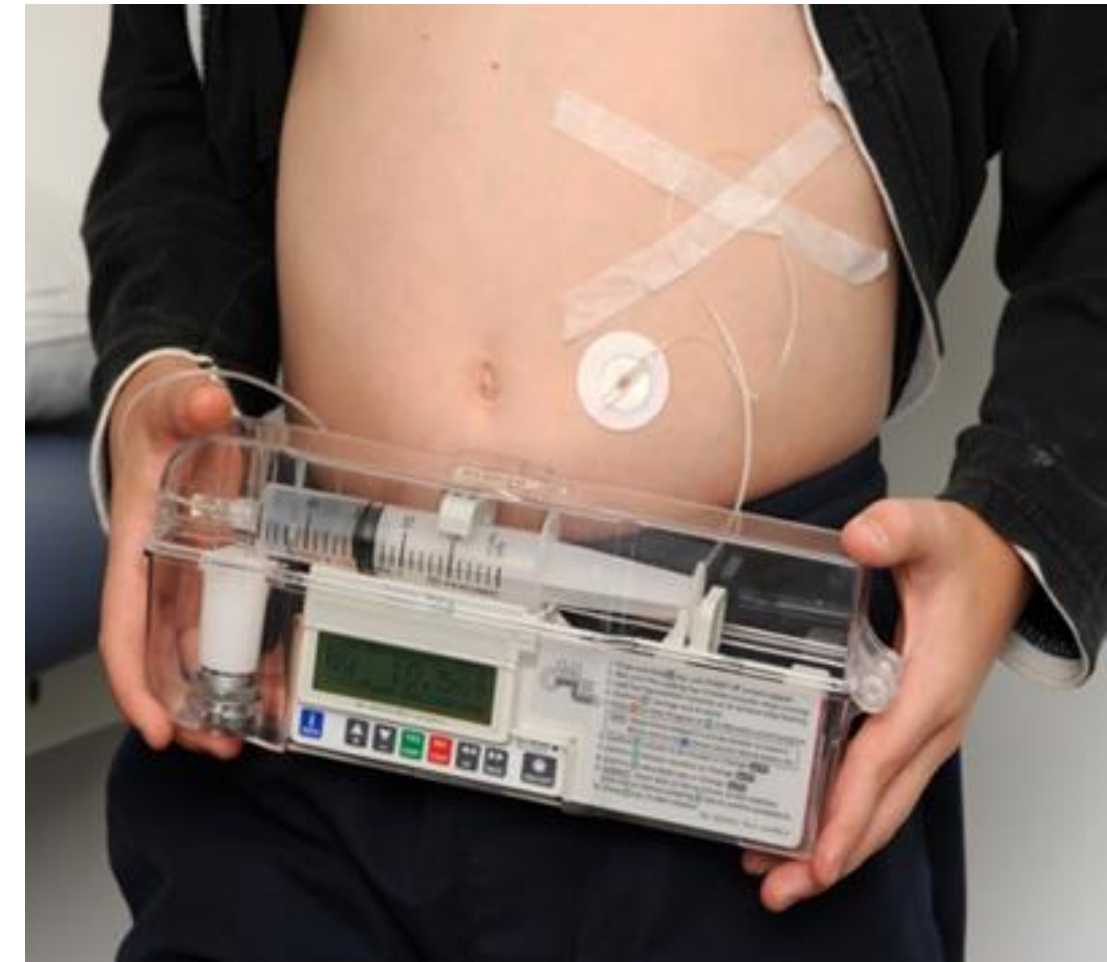
When should you get the flu shot?

- Early in fall (before flu season begins), CDC recommends by the end of October
- Early vaccination (July or August) may lead to reduced protection later in the flu season
- You need to get the flu shot every year



Does IgG replacement therapy protect against the flu?

- Antibodies against the current influenza strain are not typically present in the IgG replacement product at the time when they are most needed
- IgG replacement may help prevent superinfection
- Possible benefit of cross-reactive antibodies, but this has not been demonstrated



Therapy for RSV (beyond symptomatic management)

Palivizumab (Synagis), is a monoclonal antibody to prevent severe RSV disease.

- Limited to high risk infants (severely immunocompromised under the age of 2)
- Dosed monthly via intramuscular injection administered during the RSV season

Ribaviran can be used to treat severe RSV, should be initiated early in infection

IgG replacement enriched for anti-RSV antibodies (Asceniv)

- Remains to be proven to provide enhanced protection against RSV

How do you differentiate flu/RSV vs. COVID?

- COVID – airborne transmission, influenza/RSV – larger droplet transmission
- COVID tends to be more serious, although influenza/RSV (in adults) can be quite serious and COVID with very little or symptoms
- COVID -> change in loss of taste and smell
- Flu comes on faster -> flu typically symptoms within 4 days of infection, RSV in 4-6 days, COVID typically 5 days after infection, can take as long as 14 days
- COVID appears to be contagious longer – 10 days since onset of symptoms as opposed to 3-4 days for flu, up to 8 days for RSV
- COVID is more prone to superspreader events (aerosol transmission)

The “Tripledemic”

- Highest influenza hospitalization rates (USA) in a decade.
- 1-2% of children < 6 months with RSV infection need hospitalization (58,000-80,000/yr), record levels of RSV in 2022. However, the spike in cases started earlier than usual and appears to be decreasing as COVID and flu cases increase.
- BQ 1 and BQ 1.1 variants evade immunity and antibody therapy. However, they are derived from BA.5, which is contained in the bivalent booster (BA.4 and BA.5).
- Even the original COVID vaccines provide protection against the new “Scrabble variants”.



Gathering for the holidays

- Have discussions with those you will be seeing. Try to get on the same page – plan around the highest risk person! The elderly are particularly at risk to these viruses.
- Consider mini-quarantine before holidays – spend about a week minimizing your interactions
- Use testing!!
- Masking – maybe targeted usage, like transportation to and from an event, maybe part of the time during the most high risk moments
- Sick people should stay home (consider even if COVID negative for immunocompromised)
- Vaccinations for COVID and flu
- Spacing and ventilation
- Nothing will be certain

COVID, Flu and RSV

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THANK YOU!

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From all of us at IDF

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