Recognizing and Managing Adult Viral Respiratory Infections

Adult viral illnesses are a common cause of respiratory tract disease, with severity ranging from a mild cold to life-threatening influenza. The mechanisms by which respiratory viruses spread from person to person are variable and include combinations of contact, droplet, and aerosol transmission. Respiratory viruses can lead to secondary bacterial infection of the lungs or sinuses by impeding host defenses. Respiratory syncytial virus (RSV), Influenza, and COVID-19 are viral infections associated with significant morbidity and mortality.

Respiratory Syncytial Virus (RSV)

- Although mostly associated with infants and children, RSV can infect and sicken adults as well.
- Healthy adults infected with RSV have acute respiratory tract infection (RTI) symptoms, such as runny nose and cough.
- In adults over 50 years of age and those with comorbidities (such as immunocompromised host and advanced age), RSV is often an oversight when patients present with lower RTI symptoms.
- Mortality in hospitalized adults over 50 years of age is 6-8%.
- The traditional season for RSV in the United States usually occurs from October to April, with a peak during the winter months.
- RSV is highly contagious. The virus can survive on surfaces for several hours, making handwashing critical to preventing transmission.
- Risk factors for severe illness include:
    - Cardiopulmonary disease
    - Immunocompromised status
    - History of persistent asthma
    - Residence of altitude greater than 2500 meters elevation
    - Institutionalized individuals
    - Older adults with chronic pulmonary disease or functional disability

Influenza (the “Flu”)

- Serious infection can occur with influenza A or influenza B. Influenza C causes mild illness and influenza D primarily infects cattle.
- The traditional season for influenza in the United States is the winter months.
- Older adults and immunocompromised patients may present with milder symptoms and may be afebrile but are at greater risk for progression to serious illness.
- Annual vaccination is the most important preventive measure.
- Symptoms may differ with various strains as the virus mutates from one season to the next.
- Risk factors for severe illness include:
    - Unvaccinated status
    - Underlying pulmonary conditions
    - Underlying central nervous system (CNS) conditions
    - Extremes of age
    - Institutionalized individuals

- Obesity
- Immunocompromised status

Coronavirus Disease-2019 (COVID-19)

- Infection is caused by one of multiple variants of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
- Although mitigation policies are no longer in place, the virus continues to circulate and mutate into new variants.
- Vaccines are continuously being upgraded to include as many variants as possible.
- Different variants have different symptoms and variable incubation periods.
- Risk factors for severe illness include:
  - Advanced age
  - Asthma and chronic lung disease
  - Cancer
  - Chronic kidney disease
  - Chronic liver disease
  - Diabetes
  - Disabilities
  - Human immunodeficiency virus (HIV)
  - Mental health disorders
  - Obesity
  - Pregnancy
  - Smoking
  - Immunosuppression

The following table summarizes information about each viral illness. Many features are similar among them, making diagnosis difficult based on clinical presentation.

Adult Viral Respiratory Illnesses			
	RSV	**Influenza**	**COVID-19**
Transmission	Spread through respiratory droplets when an infected person coughs, sneezes, or talks, and direct contact with infected surfaces. RSV can survive on surfaces for several hours, making hand hygiene important for prevention.	Primarily spread through respiratory droplets. It can also spread by touching surfaces contaminated with the virus and then touching the face.	Primarily through respiratory droplets and aerosols. It can also spread via contact with contaminated surfaces, although this is less common. Airborne transmission can occur in enclosed spaces with poor ventilation.
Incubation	4-6 days	1-4 days	Varies depending on variant

Presentation	• Cough, rhinorrhea, conjunctivitis, sinusitis, otitis, tracheobronchitis, wheezing • Exacerbation of chronic pulmonary diseases • Acute respiratory failure in severe cases	• Abrupt onset of fever, nonproductive cough, body aches, malaise, nausea, congestion, sore throat, headache • Vomiting and diarrhea rare in adults	• Fever, chills, cough, fatigue, shortness of breath, headache, body aches, congestion, runny nose, loss of taste or smell, vomiting or diarrhea
Testing	Multipathogen PCR, rapid antigen testing, viral culture	Molecular assay, multipathogen PCR, antigen detection assay	Nucleic acid amplification testing (NAAT), antigen testing
Treatment	Supportive care: oxygen, bronchodilators, antipyretics, hydration	Supportive care: antipyretics, analgesics, hydration Antiviral treatment may be indicated	Outpatient • Supportive care: Antipyretics, analgesics • Antivirals: Paxlovid if within 5 days of positive test Inpatient • Supportive care: oxygen, fluids, antipyretics, analgesics, bronchodilators • Antivirals: IV Remdesivir • Steroids: For hypoxemic patients, Dexamethasone 6 mg IV daily for 10 days or until hospital discharge
Prevention	• Vaccination • Handwashing, masking, social distancing	• Vaccination • Handwashing, masking, social distancing	• Vaccination • Handwashing, masking, social distancing
Precautions	Airborne	Droplet	Airborne

Conclusion

RSV, Influenza, and COVID-19 are viral respiratory pathogens with the potential to cause significant morbidity and mortality. With the ending of COVID mitigation restrictions, adult viral illnesses are more common than ever. Preventive measures include annual vaccination, as well as handwashing and social

distancing. Treatment is largely supportive. Antiviral treatment may lessen disease severity in select groups if started early in the disease process.

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