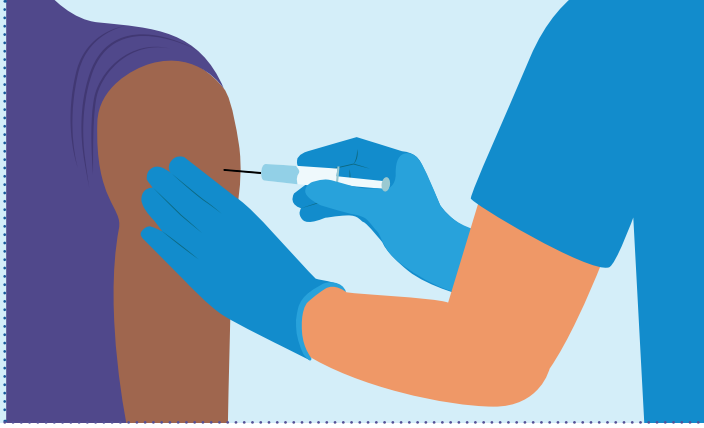
Preventing RSV:
Providing OLDER PATIENTS With the Information They Need



KEY TAKEAWAYS

Learning Objectives

After participating in this activity, learners should be better able to:

- Describe the mechanism of respiratory syncytial virus (RSV) illness in adults, as well as its overall incidence in this population
- Summarize the disease burden of RSV illness in US adults, with a focus on hospitalizations, comorbidities, and health disparities
- Evaluate the data on performance of RSV vaccines to assess their potential role in prevention strategies for older adults

RSV Illness in Adults

RSV Pathology in Adults

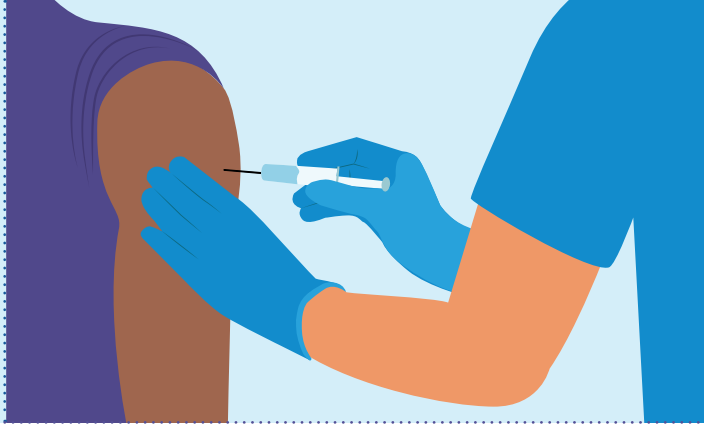
- The ability of RSV to establish infection is similar to that of influenza virus and human coronavirus[1]
- By the age of 2 years, 97% of children have been infected with RSV, but infection can recur throughout life[2-4]
- Each year, RSV infection develops in 3%-7% of healthy community-dwelling adults (i.e., not living in long-term care facilities) aged 65 years and over and in 4%-10% of adults with chronic heart or lung disease who are at high risk for severe RSV illness[5]
- Symptoms of RSV illness are indistinguishable from respiratory diseases caused by other viruses[4,6]
- Illness is usually limited to the upper respiratory tract in healthy adults[3]
- Factors such as older age (> 60-65 years of age), chronic heart or lung disease, weakened immune system, and residence in a long-term care facility are associated with increased risk of severe illness, including lower respiratory tract disease (LRTD)[3,7,8]
- RSV may exacerbate existing chronic conditions[6]
- Symptoms of LRTD include cough, sputum production, dyspnea, wheezing, and tachypnea[4]
- Pathological changes that may accompany RSV LRTD and contribute to severe disease include: epithelial cell sloughing, syncytia formation, lumenal debris accumulation, airway obstruction and plugging, inflammation, increased mucus production, and impaired mucociliary transport[3]

Impact of RSV in Older Adults

- Similar or worse outcomes have been reported for older adults hospitalized with RSV compared with COVID-19 or influenza, including greater oxygen requirement, risk of ICU admission, and likelihood of invasive mechanical ventilation or death[9]
- Hospitalization of adults with RSV is more likely in communities where more people live below poverty level[10]
- Nearly 20% of RSV hospitalizations in adults ≥ 60 years old occur in residents of long-term care facilities[11]

Provided by ATS American Thoracic Society, AAPA American Academy of PAs, The France Foundation

Preventing RSV:
Providing OLDER PATIENTS With the Information They Need



KEY TAKEAWAYS

Higher Numbers of RSV-Associated Hospitalizations and Deaths Among Older Adults Than Young Children in the U.S.[5,12-15]

Outcome	Older Adults, ≥ 65 years of age	Young Children, < 5 years of age
Hospitalizations/year	≈177,000	58,000–80,000
Deaths/year	≈14,000	100–300

Preventing RSV in Older Adults: Focus on the Role of Vaccination

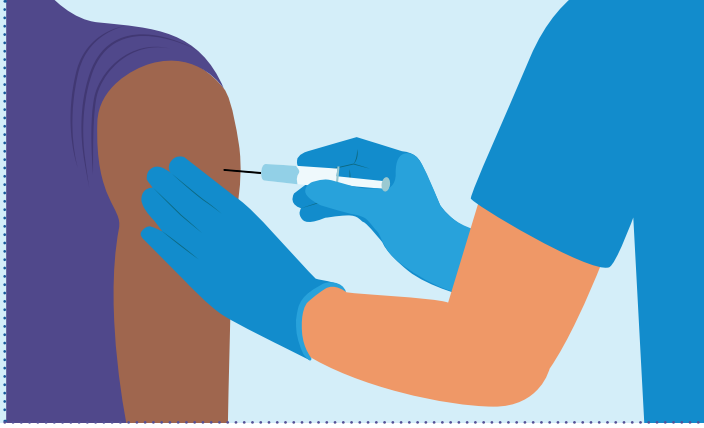
Three RSV Vaccines Currently Approved by the U.S. Food and Drug Administration

Characteristic/ Indication	RSV vaccine, adjuvanted (GSK)[16]	RSV vaccine, bivalent (Pfizer)[17]	RSV vaccine, mRNA (Moderna)[18]
Composition/ How Supplied[16-18]	• Lyophilized recombinant RSV F protein antigen (based on RSV-A subtype), stabilized in prefusion conformation • Adjuvant suspension for reconstitution	• Lyophilized, recombinant RSV F protein antigen (based on RSV-A and RSV-B subtypes) stabilized in prefusion conformation • Sterile water for reconstitution	• Injectable suspension of RSV vaccine consisting of nucleoside modified mRNA encoding the RSV F glycoprotein stabilized in prefusion conformation
Mechanism of Action[16-18]	Induces an immune response against RSV F protein[a], in prefusion conformation (preF), that protects against LRTD caused by RSV		
Indication(s)[16-18]	Active immunization for prevention of LRTD cause by RSV in individuals: • ≥ 60 years of age • 50-59 years of age who are at increased risk for LRTD caused by RSV	Active immunization for prevention of LRTD cause by RSV in individuals ≥ 60 years of age Active immunization of pregnant individuals at 32-36 weeks gestational age for prevention of LRTD caused by RSV in infants from birth through 6 months of age[b]	Active immunization for the prevention of LRTD caused by RSV in individuals 60 years of age and older

[a]RSV F protein mediates fusion of virus and host cell membranes[3]
[b]Only one RSV vaccine is currently approved for use in pregnant individuals to prevent LRTD in infants

Provided by ATS American Thoracic Society, AAPA American Academy of PAs, The France Foundation

Preventing RSV:
Providing OLDER PATIENTS With the Information They Need



KEY TAKEAWAYS

Effectiveness of FDA-Approved RSV Vaccines in U.S. Adults ≥ 60 Years of Age

Outcome in Adults ≥60 years old	GSK RSVPreF3 OA	Pfizer RSVpreF	Moderna mRNA-1354
Efficacy against LRTD	82.6%[19]	66.7%[20,a]	83.7%[21,a]
Efficacy against severe LRTD	94.1%[19]	85.7%[20,b]	82.4%[21,b]
Number to vaccinate to prevent 1 RSV outpatient visit	90[22]	103[22]	NA
Number to vaccinate to prevent 1 RSV hospitalization	1,348[22]	1,567[22]	NA
Number to vaccinate to prevent 1 RSV death	27,284[22]	31,171[22]	NA
Data from a trial of the GSK vaccine also showed attenuation of severe RSV breakthrough illness.[23]			

NA, not available; [a]2 or more signs/symptoms; [b]3 or more signs/symptoms

Additional Information on RSV Vaccine Efficacy and Safety

- The vaccine indicated for individuals 50-59 years of age was approved based on its ability to induce an immune response noninferior to the response in adults 60 years of age and older[16]
- FDA-approved vaccines are generally well-tolerated with an acceptable safety profile[8]
- A few inflammatory neurologic events (e.g., Guillain-Barré syndrome) have been reported in clinical trials and post-marketing surveillance for some of the vaccines, but it is unclear whether they were caused by the vaccines, so there is continued monitoring to clarify whether the vaccines increase the risk of these events[16-18,19,24,25]

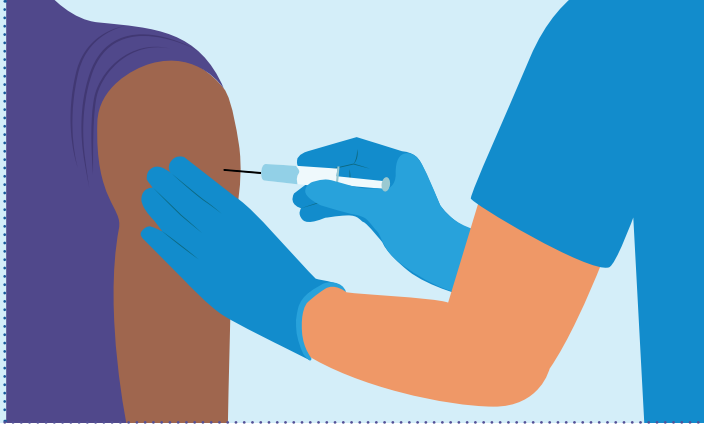
Centers for Disease Control and Prevention Recommendation on RSV Vaccination for Adults[26,27]

- Everyone ≥ 75 years of age should receive RSV vaccination
- People 60-74 years of age who are at increased risk of severe RSV illness, such as those with certain chronic medical conditions (e.g., lung or heart disease) or living in nursing homes, should receive RSV vaccination
- The RSV vaccine is not currently an annual vaccine, so people do not need a dose every season
- RSV vaccination will provide the most benefit if given in late summer to early fall, but it may be given year-round
- Coadministration with other vaccines is acceptable

Provided by ATS American Thoracic Society · AAPA American Academy of PAs · The France Foundation

Preventing RSV:

Providing OLDER PATIENTS With the Information They Need



Key Takeaways

- Impact of RSV illness in older adults and adults at risk for severe RSV-related illness can be serious, including hospitalization or death
- All available RSV vaccines are approved for adults ≥ 60 years old, and one is also approved for adults 50-59 years of age who are at risk for severe RSV-related illness
- Risk factors for severe RSV illness include older age (especially age ≥ 75 years), heart disease, lung disease, and weakened immune system, as well as other chronic conditions
- Available RSV vaccines are effective in preventing serious RSV illness in adults ≥ 60 years old
- The CDC recommends that all people 75 years of age and older and people 60 to 74 years old who are at risk for severe RSV-related illness should receive RSV vaccination
- People aged 50 and over should ask their healthcare provider about their risk for severe RSV-related disease and getting an RSV vaccine

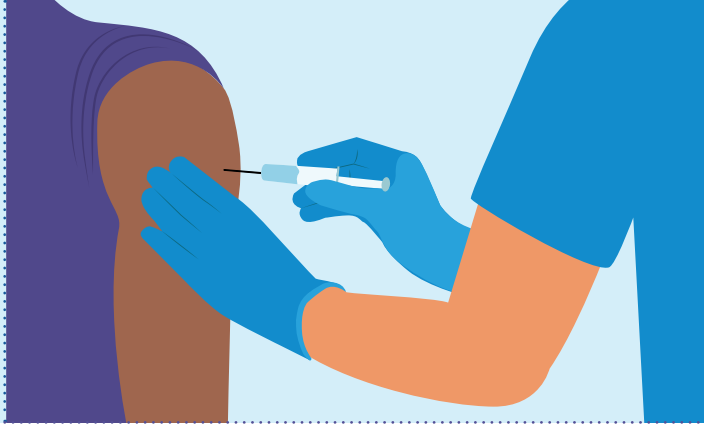
References

1. Leung NHL. Transmissibility and transmission of respiratory viruses. *Nat Rev Microbiol.* 2021;19(8):528-545.
2. Glezen WP, Taber LH, Frank AL, Kasel JA. Risk of primary infection and reinfection with respiratory syncytial virus. *Am J Dis Child.* 1986;140(6):543-546.
3. Hu M, Bogoyevitch MA, Jans DA. Impact of respiratory syncytial virus infection on host functions: implications for antiviral strategies. *Physiol Rev.* 2020;110:1527-1594.
4. Kenmoe S, Nair H. The disease burden of respiratory syncytial virus in older adults. *Curr Opin Infect Dis.* 2024;37(2):129-136.
5. Falsey AR, Hennessey PA, Formica MA, Cox C, Walsh EE. Respiratory syncytial virus infection in elderly and high-risk adults. *N Engl J Med.* 2005;352(17):1749-1759.
6. Kaler J, Hussain A, Patel K, Hernandez T, Ray S. Respiratory syncytial virus: a comprehensive review of transmission, pathophysiology, and manifestation. *Cureus.* 2023;15(3):e36342.
7. U.S. Centers for Disease Control and Prevention. RSV in older adults and adults with chronic medical conditions. Accessed May 20, 2024. https://www.cdc.gov/rsv/high-risk/older-adults.html.
8. Melgar M, et al. Use of respiratory syncytial virus vaccines in older adults: recommendations of the Advisory Committee on Immunization Practices–United States, 2023. *MMWR Morb Mortal Wkly Rep.* 2023;72(29):793-801.
9. Surie D, et al. Disease severity of respiratory syncytial virus compared with COVID-19 and influenza among hospitalized adults aged ≥ 60 years–IVY Network, 20 U.S. states, February 2022-May 2023. *MMWR Morb Mortal Wkly Rep.* 2023;72(40):1083-1088.
10. Holman JE, et al. Relationship between neighborhood census-tract level socioeconomic status and respiratory syncytial virus-associated hospitalizations in U.S. adults, 2017-2017. *BMC Infect Dis.* 2021;21(1):293.
11. Havers FP, et al.; RSV-NET Surveillance Team. Characteristics and outcomes among adults aged ≥60 years hospitalized with laboratory-confirmed respiratory syncytial virus–RSV-NET, 12 states, July 2022-June 2023. *MMWR Morb Mortal Wkly Rep.* 2023;72(40):1075-1082.
12. Havers F. Epidemiology and burden of respiratory syncytial virus in older adults in the U.S. Presented at the Advisory Committee on Immunization Practices meeting on June 23, 2022. Accessed May 20, 2024. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2022-06-22-23/04-RSV-Havers-508.pdf.
13. Hall CB, et al. The burden of respiratory syncytial virus infection in young children. *N Engl J Med.* 2009;360(6):588-598.
14. McLaughlin JM, et al. Respiratory syncytial virus-associated hospitalization rates among US infants: a systematic review and meta-analysis. *J Infect Dis.* 2022;225(6):1100-1111.

Provided by ATS American Thoracic Society, AAPA American Academy of PAs, The France Foundation

Preventing RSV:

Providing OLDER PATIENTS With the Information They Need



References

15. Thompson WW, et al. Mortality associated with influenza and respiratory syncytial virus in the United States. *JAMA*. 2003;289:179-186.
16. GSK. Arexvy (Respiratory Syncytial Virus Vaccine, Adjuvanted) prescribing information. Accessed May 20, 2024. https://gskpro.com/content/dam/global/hcpportal/en_US/Prescribing_Information/Arexvy/pdf/AREXVY.PDF.
17. Pfizer. Abrysvo (Respiratory Syncytial Virus Vaccine) prescribing information. Accessed May 20, 2024. https://labeling.pfizer.com/ShowLabeling.aspx?id=19589.
18. Moderna. MResvia (Respiratory syncytial virus vaccine) prescribing information. Accessed June 7, 2024. https://static.modernatx.com/pm/6cef78f8-8dad-4fc9-83d5-d2fbb7cff867/36130c97-6fb0-4bea-9f2e-fb5be7a90729/36130c97-6fb0-4bea-9f2e-fb5be7a90729_viewable_rendition__v.pdf
19. Papi A, et al.; AReSVi-006 Study Group. Respiratory syncytial virus prefusion F protein vaccine in older adults. *N Engl J Med*. 2023;388(7):595-608.
20. Walsh EE, et al.; RENOIR Clinical Trial Group. Efficacy and safety of a bivalent RSV prefusion F vaccine in older adults. *N Engl J Med*. 2023;388(16):1465-1477.
21. Wilson E, et al.; ConqueRSV Study Group. Efficacy and safety of an mRNA-based RSV preF vaccine in older adults. *N Engl J Med*. 2023;389(24):2233-2244.
22. Melgar M. Evidence to recommendations framework - respiratory syncytial virus in adults: GSK adjuvanted RSVpreF3 vaccine in older adults, Pfizer bivalent RSVpreF vaccine in older adults. Presented at the Advisory Committee on Immunization Practices meeting on February 23, 2023. Accessed May 20, 2024. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-02/slides-02-23/rsv-adults-04-melgar-508.pdf.
23. Curran D, et al. The respiratory syncytial virus prefusion F protein vaccine attenuates the severity of respiratory syncytial virus-associated disease in breakthrough infections in adults ≥60 years of age. *Influenza Other Respir Viruses*. 2024;18(2):e13236.
24. Hause AM, et al. Early safety findings among persons aged ≥60 years who received a respiratory syncytial virus vaccine—United States, May 3, 2023-April 14, 2024. *MMWR Morb Mortal Wkly Rep*. 2024;73(21):489-494.
25. U.S. Centers for Disease Control and Prevention. Vaccines and preventable diseases. Healthcare providers: RSV vaccination for adults 60 years of age and over. Accessed May 23, 2024. https://www.cdc.gov/vaccines/vpd/rsv/hcp/older-adults.html.
26. U.S. Centers for Disease Control and Prevention. CDC updates RSV vaccination recommendation for adults. Accessed July 3, 2024. https://www.cdc.gov/media/releases/2024/s-0626-vaccination-adults.html.
27. Melgar M, Britton A. ACIP adult RSV Work Group clinical considerations – respiratory syncytial virus (RSV) in adults 60 and older. Presented at the Advisory Committee on Immunization Practices meeting on June 26, 2024. Accessed July 3, 2024. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2024-06-26-28/12-RSV-Adult-Melgar-508.pdf.

Provided by ATS American Thoracic Society, AAPA American Academy of PAs, The France Foundation