Vaccination in Airway disease

16 July 2026

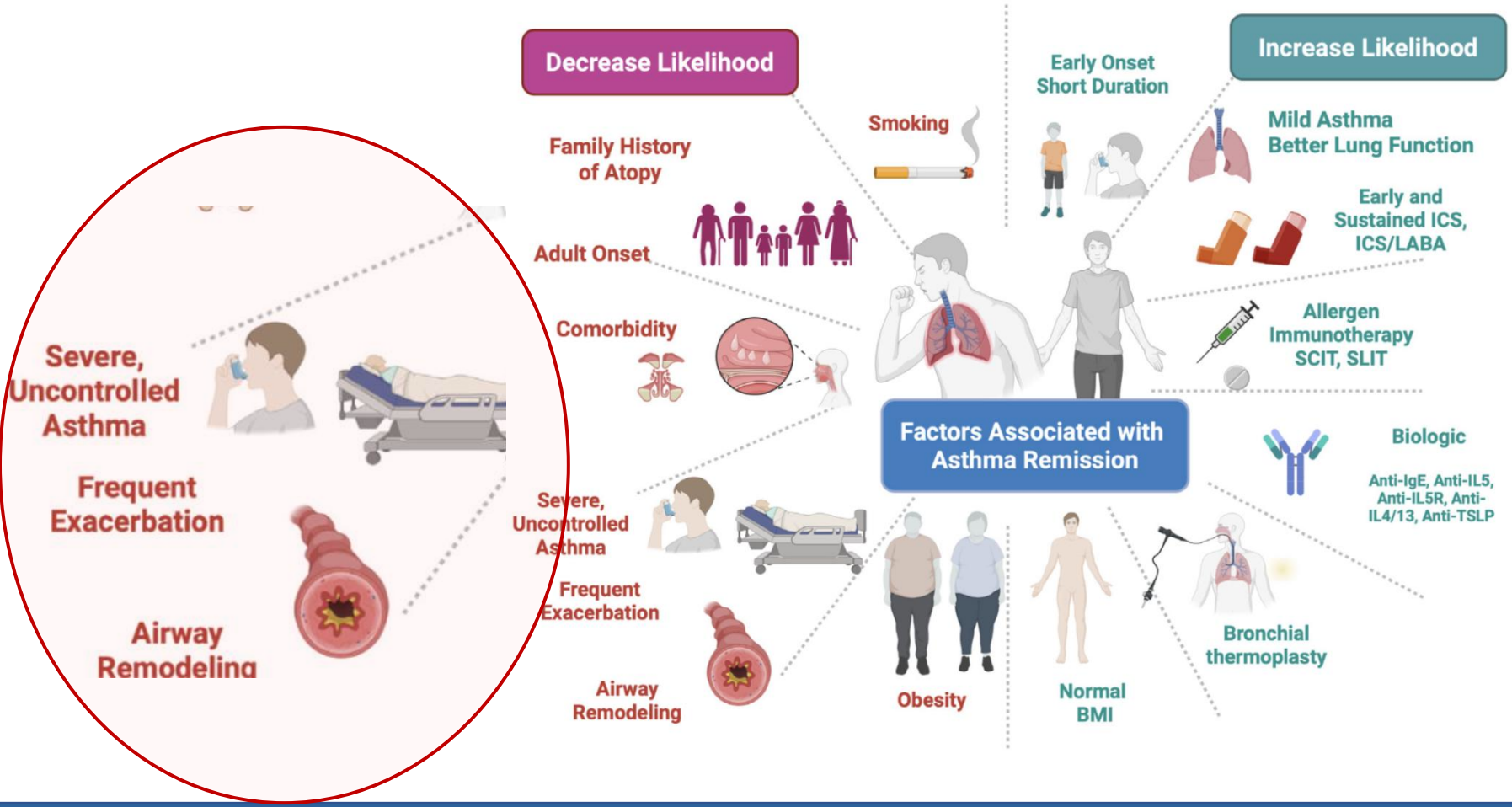
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Internal Medicine department, Allergy Asthma Immunology and Respiratory Center

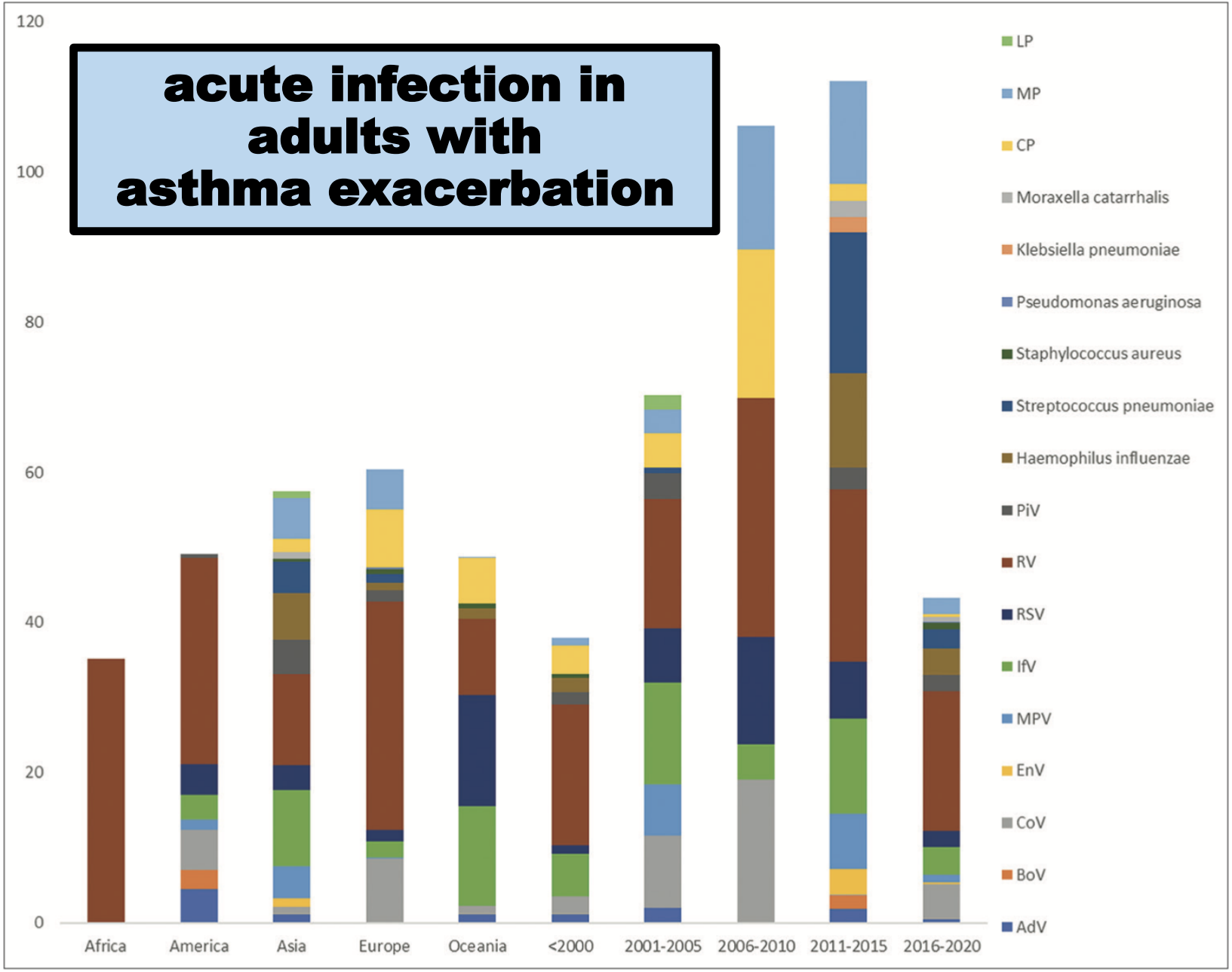
Panyananthaphikkhu Chonprathan medical center, Srinakharinwirot university

Vaccination in Airway diseases



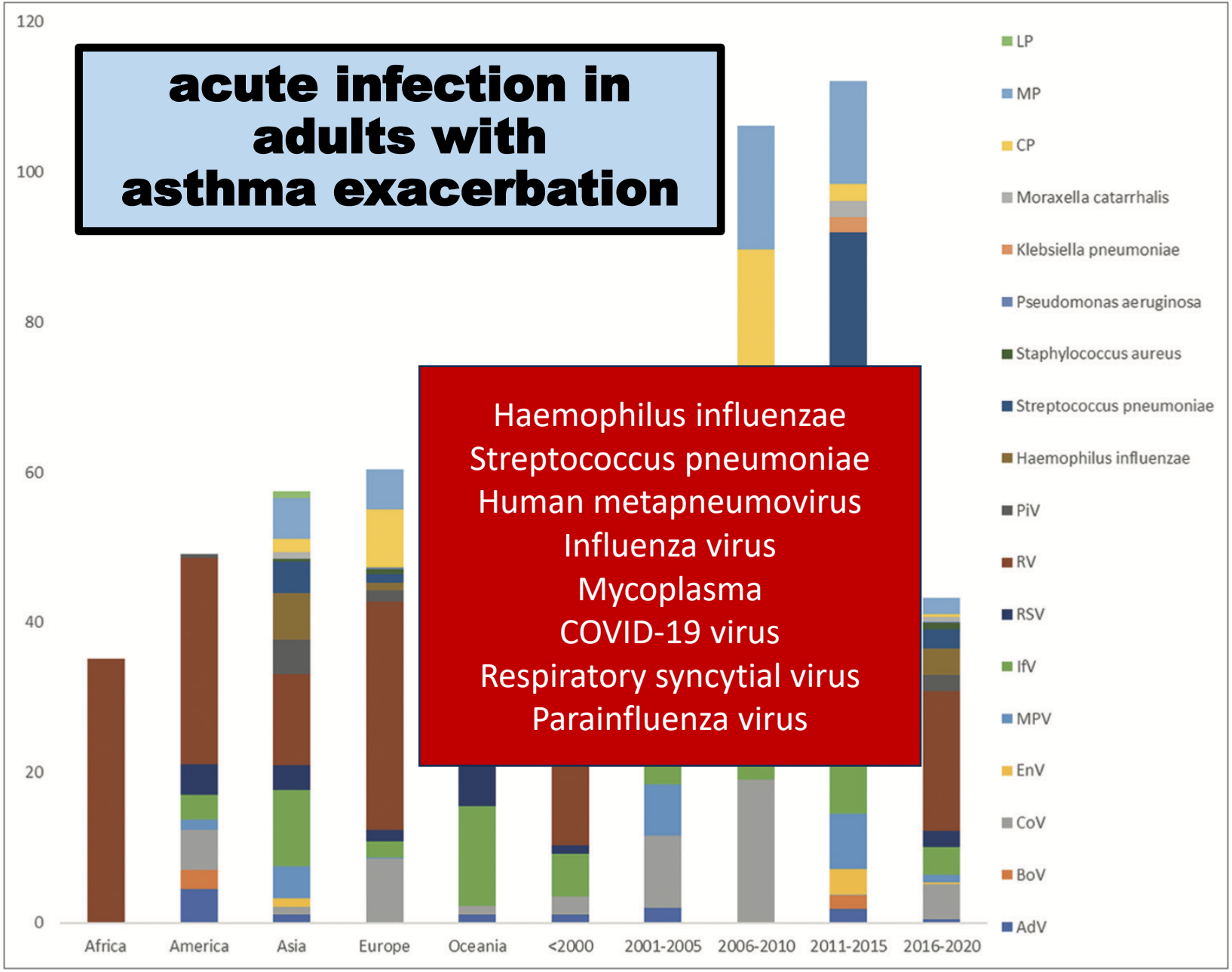
Chiewchalermsri C, Kanjanawasee D, Saiphoklang N, et al. Asthma remission: A path to cure?. *Asian Pac J Allergy Immunol*. 2025;43(2):135-150.

acute infection in adults with asthma exacerbation



Chen X, Zhang P, Ma Y. Prevalence of acute infection in adults with asthma exacerbation: A systematic review and meta-analysis. Ann Thorac Med. 2023 Jul-Sep;18(3):132-151.

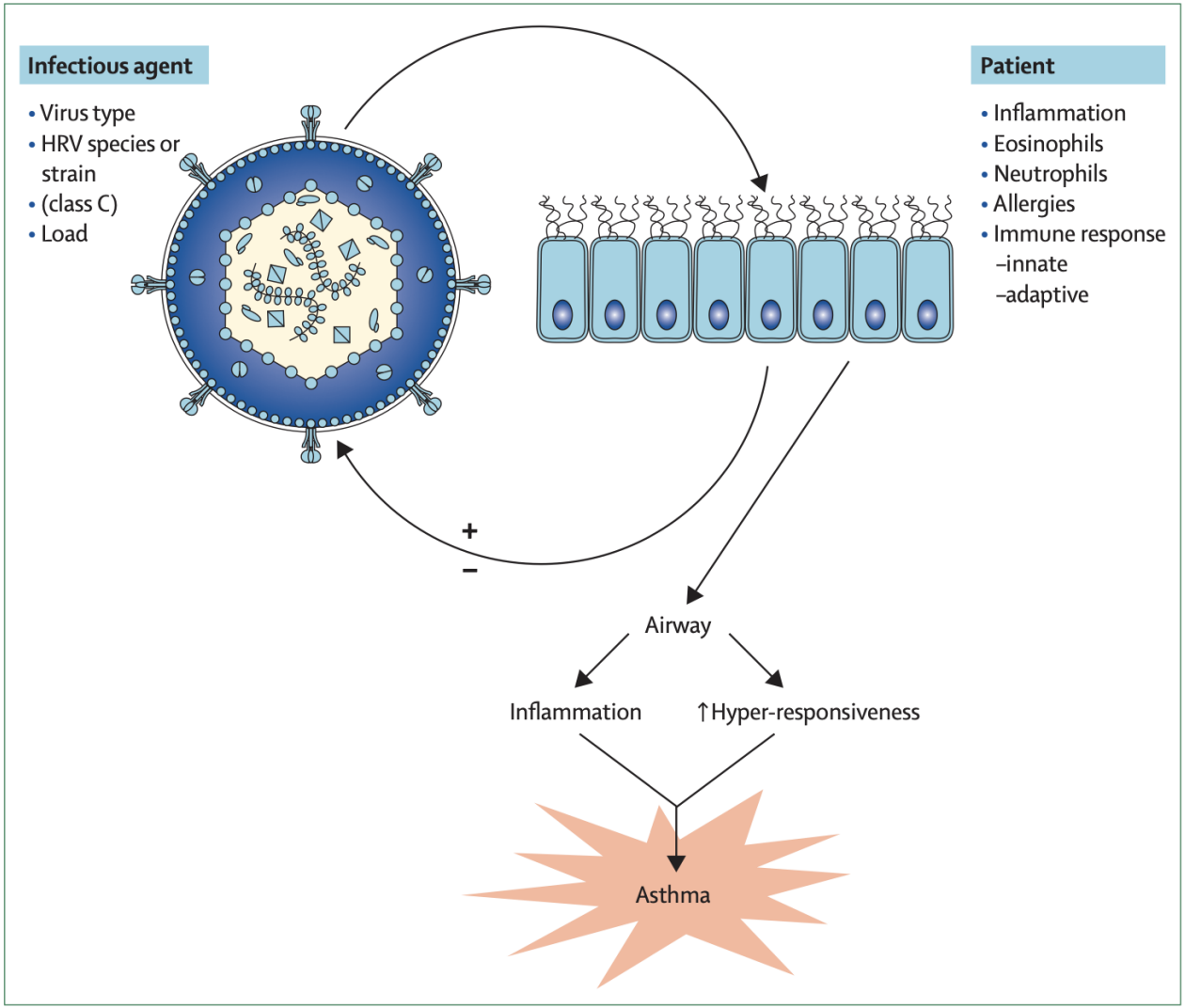
acute infection in adults with asthma exacerbation



Haemophilus influenzae
Streptococcus pneumoniae
Human metapneumovirus
Influenza virus
Mycoplasma
COVID-19 virus
Respiratory syncytial virus
Parainfluenza virus

Chen X, Zhang P, Ma Y. Prevalence of acute infection in adults with asthma exacerbation: A systematic review and meta-analysis. Ann Thorac Med. 2023 Jul-Sep;18(3):132-151.

Factors determine whether a respiratory infection provoke asthma



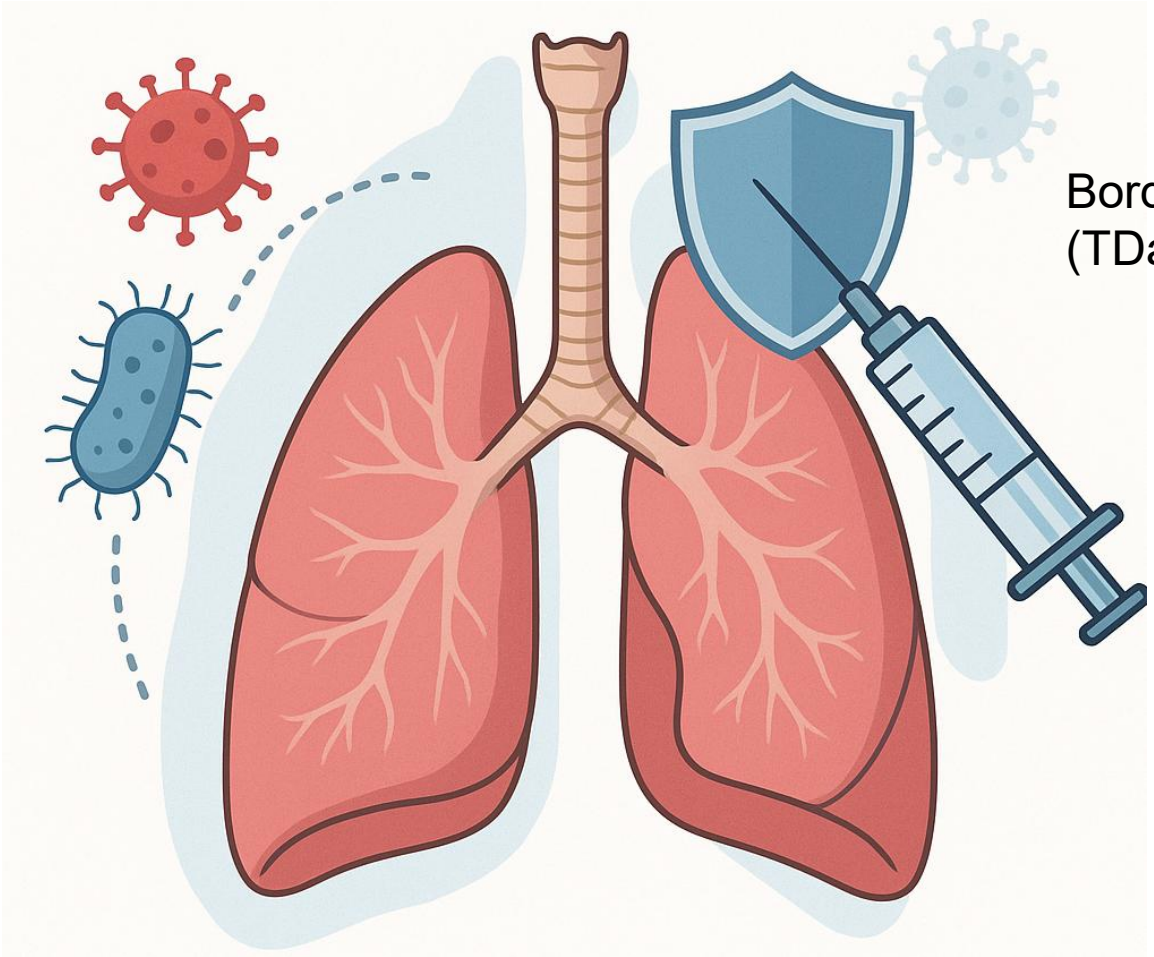
Busse WW, Lemanske RF Jr, Gern JE. Role of viral respiratory infections in asthma and asthma exacerbations. *Lancet*. 2010;376(9743):826-834.

Vaccination in Airway diseases

Influenza

Pneumococcal

COVID-19



Bordetella Pertussis (TDaP)

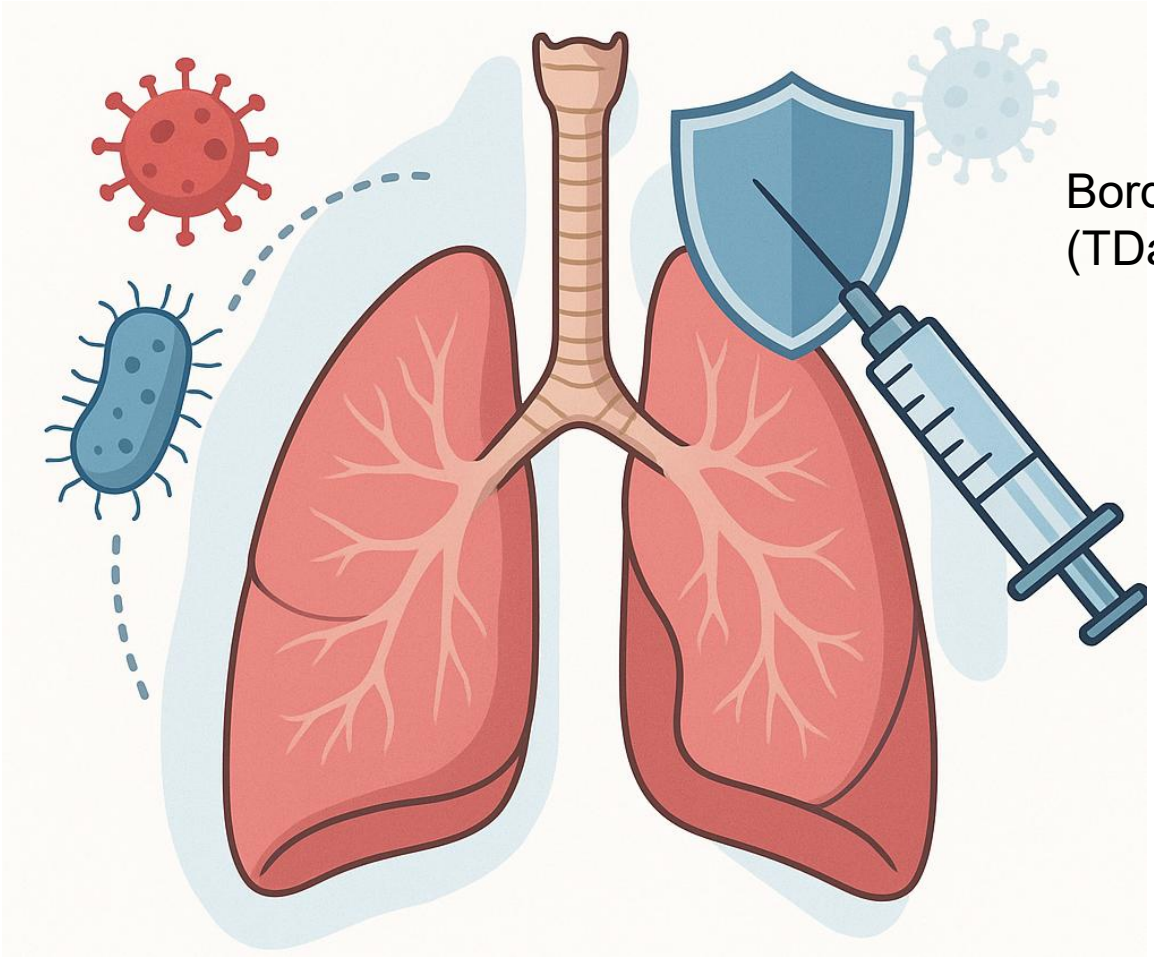
RSV

Vaccination in Airway diseases

Influenza

Pneumococcal

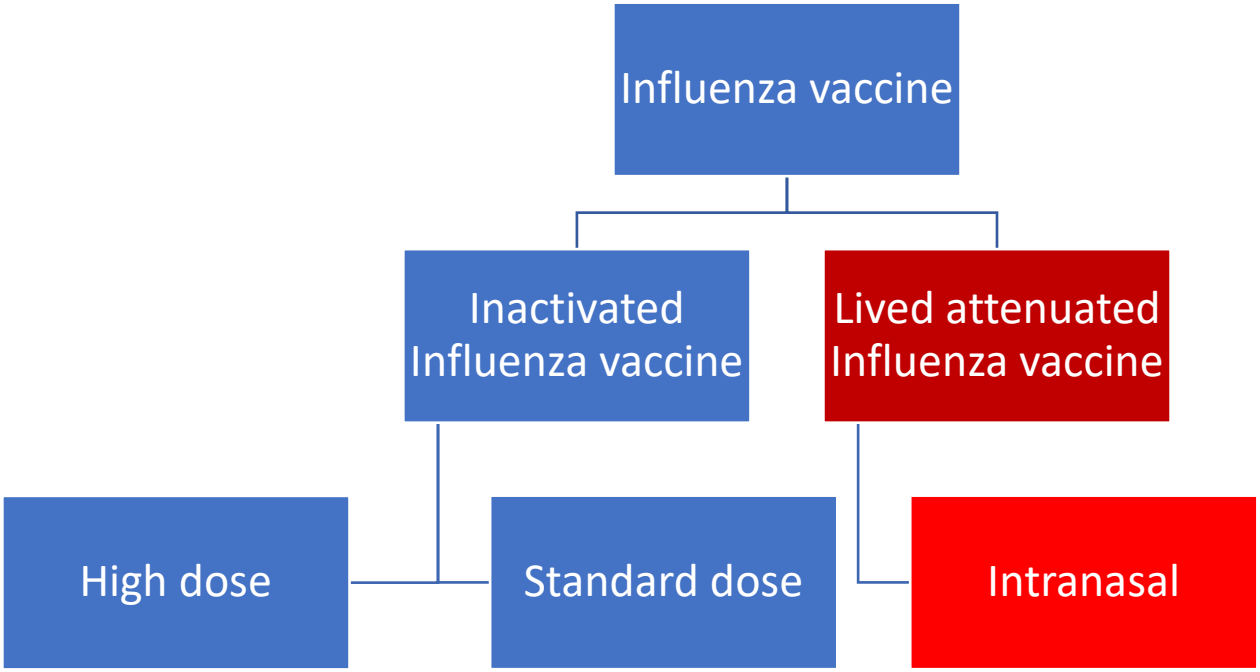
COVID-19



Bordetella Pertussis (TDaP)

RSV

Influenza vaccine



CDC. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)* — United States, 2023–24 Influenza Season. MMWR Recomm Rep. 2023.
Grohskopf LA, et al. *Prevention and control of seasonal influenza with vaccines: recommendations of the ACIP—United States, 2021–22 influenza season.* MMWR Recomm Rep. 2021;70(5):1–28.
American Academy of Pediatrics. *Influenza* (Red Book: 2021 Report of the Committee on Infectious Diseases).

FluMist: Nasal Spray Vaccine Eligibility

Reference: CDC Guidelines (May 8, 3036) & FDA Administration Standards

Approved Population

- **Age:** Approved for healthy individuals 2 through 49 years old.
- **Type:** Contains weakened live influenza viruses.

Administration (2025-2026 Season)

Self-Administration

- Ages 18-49 years.
- FDA Approved Sept 20, 2024.

Caregiver Admin

- Recipients aged 2-17 years.
- Caregiver must be 18+ years.

Medical Precautions

- Asthma (ages 5 and older).
- Chronic lung or heart disease.
- Kidney or liver disorders.
- Neurologic/metabolic disorders.
- Guillain-Barré Syndrome.
- Moderate/severe acute illness.

NOT ELIGIBLE (Contraindicated)

- Children younger than 2 years old
- Adults 50 years and older
- Pregnant women
- People with severe allergic reactions
- People with weakened immune systems
- People with cochlear implants or CSF leaks
- Children (2-17y) receiving aspirin medications
- Children (2-4y) with asthma/recent wheezing
- People with no or non-functioning spleen
- Recent use of flu antiviral drugs

*FluMist contains the same vaccine virus components as other flu vaccines.

Source: CDC Reference May 8, 3036

Live attenuated Influenza vaccine (LAIV)

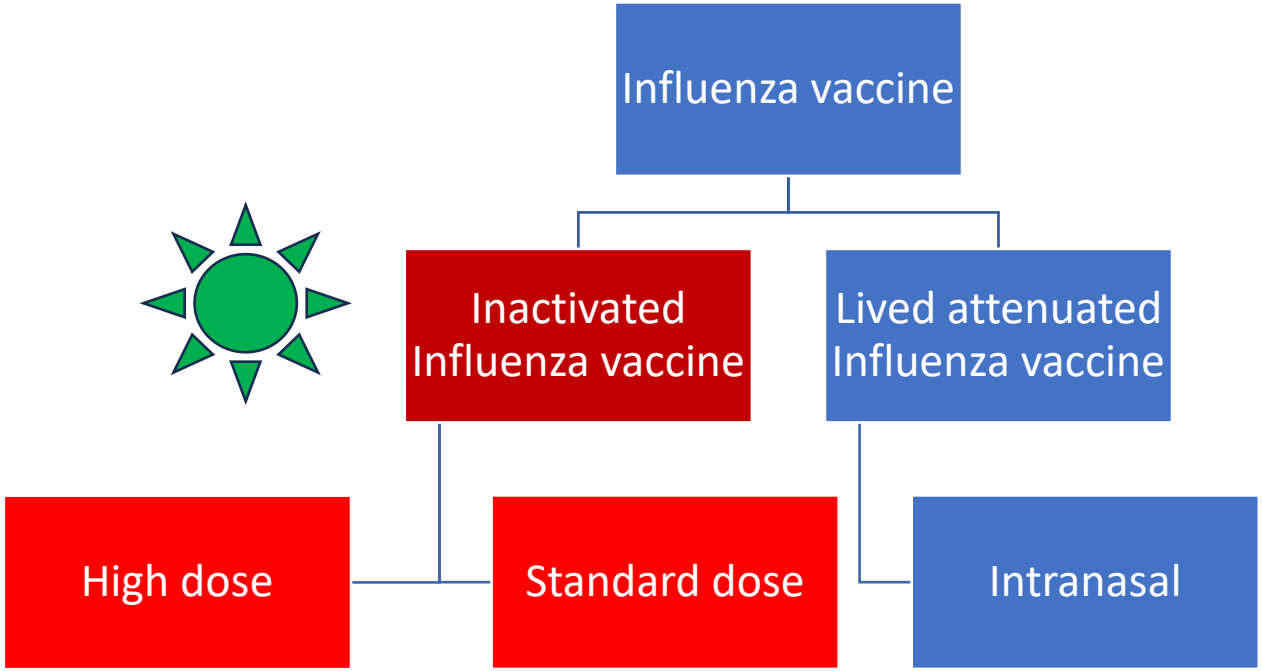
- Intranasal
- not recommended in individuals with asthma/COPD or a history of wheezing
- Not under 2 years of age (approve 2-49 years)
- increased risk of wheezing and asthma exacerbations following vaccination
- Adv eff: Runny nose, mild URI symptoms

https://www.fda.gov/news-events/press-announcements/fda-approves-nasal-spray-influenza-vaccine-self-or-caregiver-administration CDC. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)* — United States, 2023–24 Influenza Season. MMWR Recomm Rep. 2023.

Grohskopf LA, et al. *Prevention and control of seasonal influenza with vaccines: recommendations of the ACIP—United States, 2021–22 influenza season.* MMWR Recomm Rep. 2021;70(5):1–28.

American Academy of Pediatrics. *Influenza* (Red Book: 2021 Report of the Committee on Infectious Diseases).

Influenza vaccine



CDC. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)* — United States, 2023–24 Influenza Season. MMWR Recomm Rep. 2023.
Grohskopf LA, et al. *Prevention and control of seasonal influenza with vaccines: recommendations of the ACIP—United States, 2021–22 influenza season.* MMWR Recomm Rep. 2021;70(5):1–28.
American Academy of Pediatrics. *Influenza* (Red Book: 2021 Report of the Committee on Infectious Diseases).

Inactivated Influenza vaccine (IIV)

- recommended annually ≥ aged 6 months, particularly for patients with airway disease
- Influenza infection is associated with increased risk of asthma exacerbations and respiratory complications

CDC. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)* — United States, 2023–24 Influenza Season. MMWR Recomm Rep. 2023.
Grohskopf LA, et al. *Prevention and control of seasonal influenza with vaccines: recommendations of the ACIP—United States, 2021–22 influenza season.* MMWR Recomm Rep. 2021;70(5):1–28.
American Academy of Pediatrics. *Influenza* (Red Book: 2021 Report of the Committee on Infectious Diseases).

High-dose influenza vaccine (HD-IIV)

- **High-dose influenza vaccine (HD-IIV)**
- Higher amount of hemagglutinin antigen (60 µg per strain) compared to the standard-dose IIV (15 µg per strain)
- Stronger immune response, particularly in older adults who may have a reduced immunologic response to vaccination

CDC. *People with Asthma and Influenza.* https://www.cdc.gov/flu/highrisk/asthma.htm
Hanania NA et al. *The safety and immunogenicity of inactivated influenza vaccine in patients with moderate-to-severe asthma.* Chest. 2004;125(6):2012–2021.
DiazGranados CA, et al. *Efficacy of high-dose versus standard-dose influenza vaccine in older adults.* N Engl J Med. 2014;371(7):635–645.

High-dose influenza vaccine (HD-IIV)

- **Asthma patients, particularly those with moderate-to-severe or poorly controlled asthma**, are at higher risk for complications from influenza, including exacerbations, hospitalization, and lower respiratory tract infections
- **Immunogenicity:** Studies in older adults with chronic conditions (including asthma and COPD) show that HD-IIV induces **higher antibody titers and better seroprotection** compared to standard-dose IIV

CDC. *People with Asthma and Influenza.* https://www.cdc.gov/flu/highrisk/asthma.htm

Hanania NA et al. *The safety and immunogenicity of inactivated influenza vaccine in patients with moderate-to-severe asthma.* Chest. 2004;125(6):2012–2021.

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Izurieta HS, et al. *Relative effectiveness of influenza vaccines among the United States elderly, 2012–2013.* J Infect Dis. 2015;212(8):1210–1218.

Gravenstein S, et al. *Comparative effectiveness of high-dose versus standard-dose influenza vaccination in community-dwelling veterans.* Clin Infect Dis. 2017;65(12):2000–2007.

HD-IIV Effectiveness

- ⬇️ influenza-related hospitalizations
- ⬇️ all-cause respiratory complications
- ⬆️ Effectively in high-risk populations (e.g., those with chronic lung diseases such as asthma and COPD) than standard-dose vaccine

CDC. *People with Asthma and Influenza.* https://www.cdc.gov/flu/highrisk/asthma.htm

Hanania NA et al. *The safety and immunogenicity of inactivated influenza vaccine in patients with moderate-to-severe asthma.* Chest. 2004;125(6):2012–2021.

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HD-IIV safety

- Well tolerated in patients with asthma
- Local and Systemic side effects (e.g., myalgia, injection site pain) may be slightly more frequent than with standard-dose IIV
- No significant increase in asthma exacerbations has been reported following HD-IIV

CDC. *People with Asthma and Influenza.* https://www.cdc.gov/flu/highrisk/asthma.htm

Hanania NA et al. *The safety and immunogenicity of inactivated influenza vaccine in patients with moderate-to-severe asthma.* Chest. 2004;125(6):2012–2021.

DiazGranados CA, et al. *Efficacy of high-dose versus standard-dose influenza vaccine in older adults.* N Engl J Med. 2014;371(7):635–645.

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HD-IIV recommendation

- **ACIP and CDC** recommend **HD-IIV for adults ≥65 years**, including those with chronic airway diseases like asthma or COPD, due to improved protection in this age group
- In **younger asthma patients (<65 years)**, **standard-dose IIV** remains the primary recommendation

Grohskopf LA, et al. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices—United States, 2023–24.* MMWR Recomm Rep. 2023.

HD-IIV and IIV

Feature	Standard Dose (IIV)	High Dose (HD-IIV)
Antigen content	15 mcg HA per strain	60 mcg HA per strain (4x)
Target population	All high-risk adults incl. asthma/COPD	Older adults / immunocompromised
COPD-specific efficacy	WMD -0.37 exacerbations (Cochrane RCTs)	Limited direct RCT evidence in COPD
Evidence quality	Moderate — multiple Cochrane RCTs	Limited — DANFLU-1 prespecified analysis
Current recommendation	Routine annual — all asthma/COPD	Consider in selected older COPD patients
Route	Intramuscular injection	Intramuscular injection

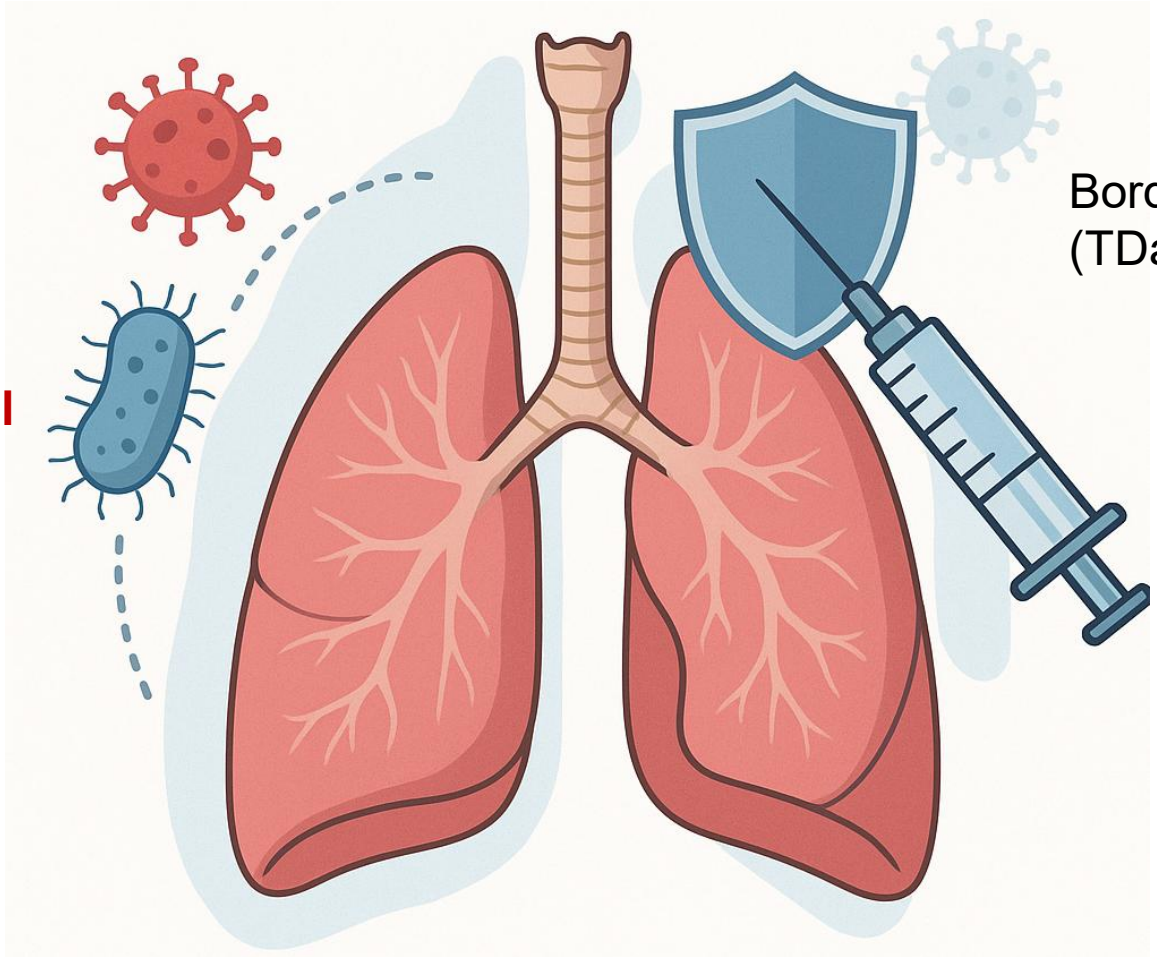
Poole et al., 2006 | Duus et al., 2025 | Simon et al., 2023

Vaccination in Airway diseases

Influenza

Pneumococcal

COVID-19



Bordetella Pertussis (TDaP)

RSV

Pneumococcal vaccine



Pneumococcal Conjugated Vaccine (PCVs)



Pneumococcal polysaccharide vaccine (PPSV)

Centers for Disease Control and Prevention (CDC). *Pneumococcal Vaccination: Summary of Who and When to Vaccinate.* Updated 2023. Available at: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html

Kobayashi M, et al. *Use of 15-Valent and 20-Valent Pneumococcal Conjugate Vaccines Among U.S. Adults: Updated ACIP Recommendations — United States, 2022.* MMWR Morb Mortal Wkly Rep. 2022;71(4):109–117.

Bonten MJ, et al. *Polysaccharide conjugate vaccine against pneumococcal pneumonia in adults.* N Engl J Med. 2015;372(12):1114–1125.

Jackson LA, et al. *Immunogenicity and safety of a 20-valent pneumococcal conjugate vaccine in adults 18 years and older.* J Infect Dis. 2021;224(9):1501–1510.

Moberley SA, et al. *Vaccines for preventing pneumococcal infection in adults.* Cochrane Database Syst Rev. 2013;(1):CD000422.

Pneumococcal Conjugated vaccine (PCV)

- Vaccines link (conjugate) capsular polysaccharides to a protein carrier, which enhances **T-cell–dependent immune response**, resulting in:
  - **Stronger immunogenicity**
  - **Immune memory formation**
  - **Effective in young children (<2 years old)**
  - **Common PCVs:**
    - **PCV13**: Covers 13 serotypes
    - **PCV15**: Covers 15 serotypes (PCV13 + serotypes 22F, 33F)
    - **PCV20**: Covers 20 serotypes (PCV15 + 8 additional serotypes)

Centers for Disease Control and Prevention (CDC). *Pneumococcal Vaccination: Summary of Who and When to Vaccinate.* Updated 2023. Available at: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html

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Pneumococcal polyscacharide vaccine (PPSV)

- **Pneumococcal polysaccharide vaccine (PPSV)** :This vaccine contains **purified capsular polysaccharides** from 23 serotypes but is **not conjugated to a protein**, leading to:
  - **T-cell–independent immune response**
  - **No immune memory**
  - **Less effective in children <2 years old**
  - Broader serotype coverage than PCVs but **shorter duration of protection**

Centers for Disease Control and Prevention (CDC). *Pneumococcal Vaccination: Summary of Who and When to Vaccinate.* Updated 2023. Available at: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html

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Pneumococcal vaccine in Airway disease

- Patients with **Asthma / COPD** especially those on **long-term corticosteroids or immunomodulators**, are at increased risk for **pneumococcal infections**.
- **ACIP** recommends pneumococcal vaccination in certain adults with chronic lung disease, including asthma and COPD.

Centers for Disease Control and Prevention (CDC). *Pneumococcal Vaccination: Summary of Who and When to Vaccinate.* Updated 2023. Available at: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html

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Moberley SA, et al. *Vaccines for preventing pneumococcal infection in adults.* Cochrane Database Syst Rev. 2013;(1):CD000422.

Pneumococcal vaccine

Start with PCV13, PCV15

follow with **PPSV23** after a minimum interval of **8 weeks to 1 year**, depending on individual risk and clinical judgment

Start with PCV20

no further PPSV23 dose is needed, as PCV20 provides broad serotype coverage.

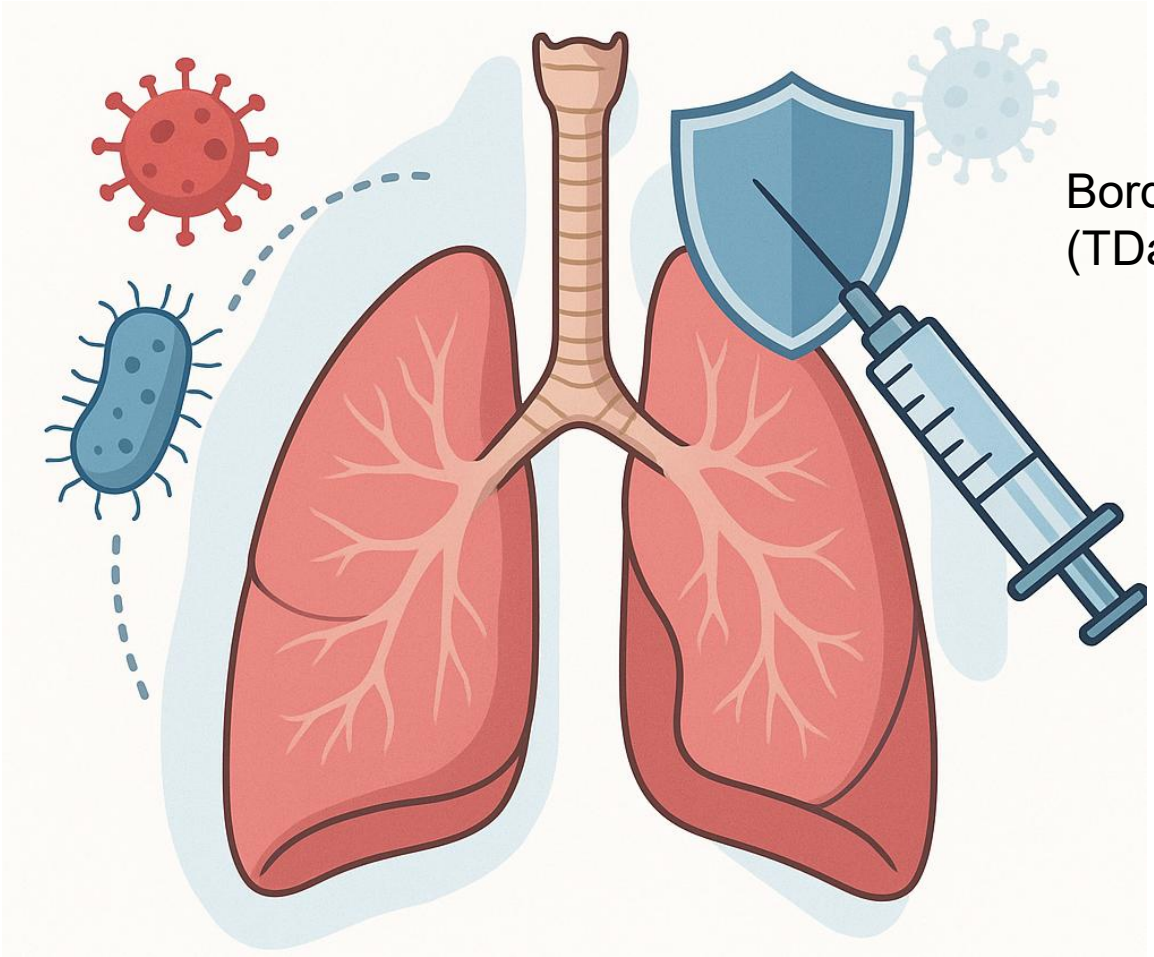
CDC. Pneumococcal Vaccination: *Summary of Who and When to Vaccinate.* Updated 2023. https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html
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ACIP Recommendations for Pneumococcal Vaccines in Adults. Advisory Committee on Immunization Practices (ACIP), CDC, 2022.

Vaccination in Airway diseases

Influenza

Pneumococcal

COVID-19



Bordetella Pertussis (TDaP)

RSV

COVID-19 vaccination

- **Both Asthma and COPD** linked to worse COVID-19 outcomes
- COPD patients face **2–3x higher risk** of COVID-19 hospitalization and ICU admission compared to the general population
- Impaired mucociliary clearance and chronic airway inflammation increase SARS-CoV-2 susceptibility and severity
- Systemic corticosteroids and immunosuppressants used in management may blunt vaccine-induced immune responses

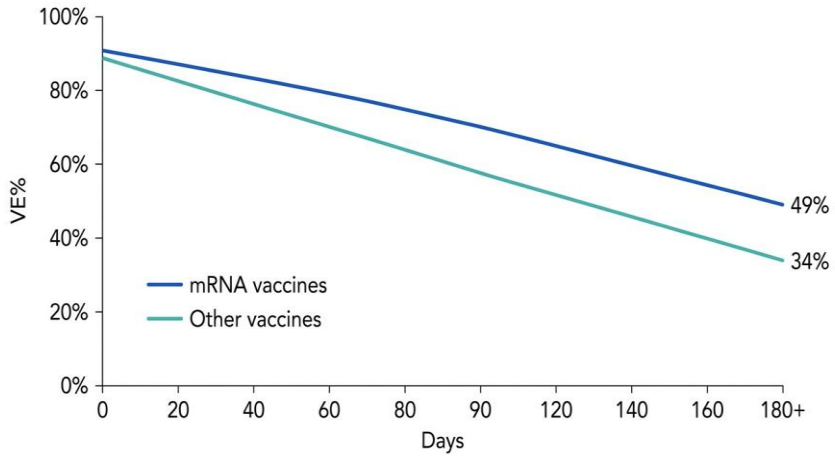
Kirui et al., 2023 | Qin et al., 2023

COVID-19 vaccination

- **All patients with airway diseases** (including asthma and COPD) are recommended to receive **COVID-19 vaccination** to reduce the risk of severe illness, hospitalization, and death
- **Moderate-to-severe or uncontrolled asthma**, those on **oral corticosteroids or biologics**, or with **COPD and other chronic lung conditions**
  - **high-risk groups** and should be prioritized for vaccination and booster doses

CDC. *COVID-19 Vaccines for People with Underlying Medical Conditions.* Updated 2023.https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/underlying-conditions.html
Global Initiative for Asthma (GINA). *GINA 2026 Report: COVID-19 and Asthma.*https://ginasthma.org
WHO. *Interim recommendations for use of COVID-19 vaccines.* Updated 2023.https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines
Jackson DJ, et al. *COVID-19 risk and outcomes in patients with asthma: A systematic review and meta-analysis.* J Allergy Clin Immunol. 2021;147(6):2021–2030.
British Thoracic Society. *Advice for people with respiratory disease on COVID-19 vaccination.* 2023.

COVID-19 vaccination



- mRNA VE against hospitalization declined from **~90% to ~49%** by ~180 days during the Delta wave
- COPD patients showed higher hazards for infection (**HR 1.09**) and hospitalization (**HR 1.87**) after immunity waned
- Revaccination strategies are essential — waning immunity in COPD patients creates a window of vulnerability

Polivka et al., 2023 | Southworth et al., 2023

COVID-19 vaccine type

- **mRNA vaccines (preferred):** Pfizer-BioNTech (Comirnaty), Moderna (Spikevax) Shown to be highly effective and well-tolerated in individuals with asthma and COPD.
  - Recommended as the **primary series and booster** in most guidelines.
- **Protein subunit vaccines (e.g., Novavax):**
  - An alternative for individuals who cannot receive mRNA vaccines.
  - Safe and immunogenic in people with chronic respiratory disease.
- **Viral vector vaccines (e.g., AstraZeneca, Johnson & Johnson):**
  - Less commonly used due to rare thrombotic complications.
  - Acceptable if mRNA vaccines are not available or contraindicated

CDC. *COVID-19 Vaccines for People with Underlying Medical Conditions.* Updated 2023.https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/underlying-conditions.html
Global Initiative for Asthma (GINA). *GINA 2024 Report: COVID-19 and Asthma.*https://ginasthma.org
WHO. *Interim recommendations for use of COVID-19 vaccines.* Updated 2023.https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines
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British Thoracic Society. *Advice for people with respiratory disease on COVID-19 vaccination.* 2023.

COVID-19 vaccination

- **Primary series**: As recommended by local health authorities (typically 2 doses for mRNA vaccines).
- **Booster doses**:
  - For **high-risk individuals** (e.g., chronic lung disease), boosters are **strongly recommended**, including updated **bivalent or monovalent XBB.1.5-adapted vaccines**.
  - Boosters should be administered **at least 6 months after the last dose** or COVID-19 infection

CDC. *COVID-19 Vaccines for People with Underlying Medical Conditions.* Updated 2023.https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/underlying-conditions.html
Global Initiative for Asthma (GINA). *GINA 2024 Report: COVID-19 and Asthma.*https://ginasthma.org
WHO. *Interim recommendations for use of COVID-19 vaccines.* Updated 2023.https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines
Jackson DJ, et al. *COVID-19 risk and outcomes in patients with asthma: A systematic review and meta-analysis.* J Allergy Clin Immunol. 2021;147(6):2021–2030.
British Thoracic Society. *Advice for people with respiratory disease on COVID-19 vaccination.* 2023.

COVID-19 Vaccine Safety in Asthma & COPD

01

No Increase in Severe Exacerbations

Self-controlled case series (n=555 COPD/asthma recipients) found **0** increased incidence of severe respiratory outcomes within 28 days post-vaccination

02

Mild or No Side Effects Predominate

In 660 severe asthma patients across 12 countries:

43.8% reported no side-effects, **48.2%** reported only mild side-effects

03

Asthma Control Preserved

88.8% of severe asthma patients reported no change in asthma control after vaccination;

98% would recommend vaccination to peers

Note: Isolated case reports of post-vaccination COPD or asthma exacerbations exist, but these are single cases or small studies and do not demonstrate population-level increased risk.

Qin et al., 2023 | Bossios et al., 2023

CDC recommendation 2025

Legend

- Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of immunity
- Recommended vaccination for adults with an additional risk factor or another indication
- Recommended vaccination based on shared clinical decision-making
- No Guidance/Not Applicable

Vaccine	19-26 years	27-49 years	50-64 years	≥65 years
COVID-19	1 or more doses of 2024–2025 vaccine (See Notes)			2 or more doses of 2024-2025 vaccine (See Notes)
Influenza inactivated (IIV3, ccIIV3) Influenza recombinant (RIV3)	1 dose annually			1 dose annually (HD–IIV3, RIV3, or aIIV3 preferred)
Influenza inactivated (aIIV3; HD–IIV3) Influenza recombinant (RIV3)	Solid organ transplant (See Notes)			
Influenza live, attenuated (LAIV3)	1 dose annually			

https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html

COVID-19 vaccination

- Studies show **no increased risk of asthma exacerbation** or COPD flare-up post-vaccination.
- **Transient side effects** (e.g., fever, fatigue) may occur but are generally mild.
- Vaccination **reduces the risk of respiratory viral co-infection and exacerbations**.

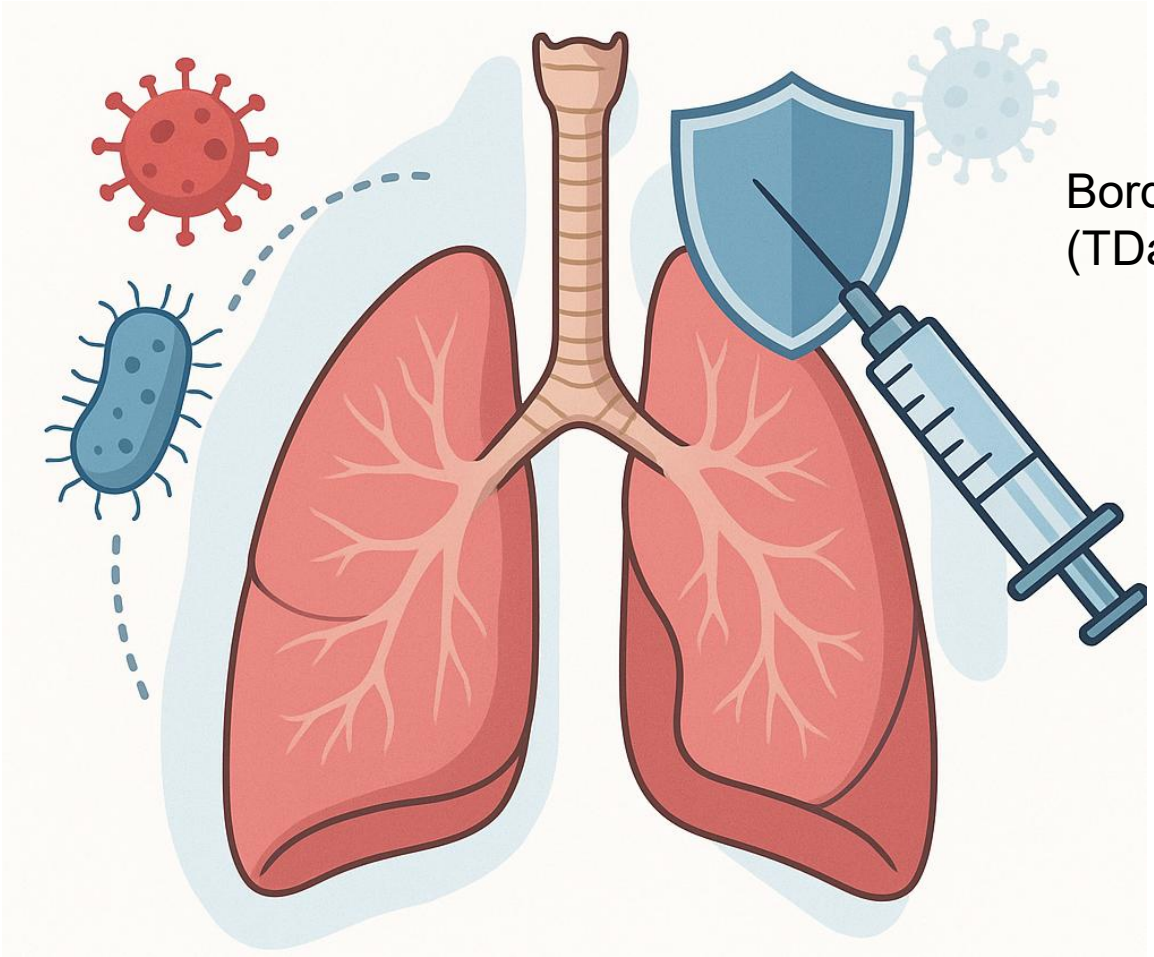
CDC. *COVID-19 Vaccines for People with Underlying Medical Conditions.* Updated 2023.https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/underlying-conditions.html
Chiewchalermsri C, Hengkrawit K, Srinithiwat P, Kiatsermkachorn W, Luecha O. Risk of Adverse Events of Live-Attenuated COVID-19 Vaccination Among Atopic Patients. J Asthma Allergy. 2022 Nov 10;15:1605-1621. WHO. *Interim recommendations for use of COVID-19 vaccines.* Updated 2023.https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines
Jackson DJ, et al. *COVID-19 risk and outcomes in patients with asthma: A systematic review and meta-analysis.* J Allergy Clin Immunol. 2021;147(6):2021–2030.
British Thoracic Society. *Advice for people with respiratory disease on COVID-19 vaccination.* 2023.

Vaccination in Airway diseases

Influenza

Pneumococcal

COVID-19



Bordetella Pertussis (TDaP)

RSV

RSV vaccine

- **Respiratory Syncytial Virus (RSV)**: respiratory infections in young children.
- Recent years have brought increased awareness of RSV as a significant cause of respiratory illness in **older adults**
- Those with **chronic diseases**, such as **asthma**, **chronic obstructive pulmonary disease (COPD)**, and **immunocompromised conditions**.
- RSV infection can trigger **exacerbations** and lead to **hospitalization**.

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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CDC. *RSV Vaccination for Adults 60 Years and Older.* Updated 2023.
ACIP. *RSV vaccine recommendations.* Advisory Committee on Immunization Practices (2023).

RSV vaccine

- RSV infection is associated with **bronchiolitis**, **wheezing**, and **asthma exacerbations**, particularly in older adults with poorly controlled asthma.
- **increased hospitalization rates and disease severity** in elderly asthma patients

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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RSV: A Significant Burden in Older Adults

Epidemiology and risk factors in adults with chronic airway disease

+

60,000–160,000

Hospitalizations / year

RSV-associated in US adults aged 65 years and older

+

6,000–10,000

Deaths / year

RSV-attributable mortality in older US adults annually

~

7%

of Acute Respiratory Illness

RSV proportion in elderly with cardiopulmonary disease during surveillance

!

COPD & Asthma

Top Risk Factors

Chronic airway diseases are among the highest risk factors for severe RSV disease

Ref: Kotton CN. Ann Intern Med. 2023.

RSV vaccine

- RSV vaccines approved by the **U.S. FDA** include:
  - **Arexvy** : A **recombinant protein subunit vaccine (RSVPreF3)** approved for individuals aged **≥60 years**.
  - **Abrysvo** : A **bivalent pre-fusion F protein vaccine** approved for **adults aged ≥60 years** and **pregnant women (32–36 weeks gestation)** to protect newborns from RSV infection via maternal immunization
  - **mRNA-1345 (mRESVIA)**: mRNA-LNP encoding RSV preF protein, approved adults age > 60 years

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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CDC. *RSV Vaccination for Adults 60 Years and Older.* Updated 2023.
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RSV Vaccine Guidance for Adults

CDC Guidance (Feb 24, 2026) – For Health Care Providers

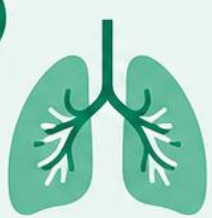
WHO SHOULD RECEIVE RSV VACCINE?

1



All people 75 years and above

2



People age 50 years and above with increased risk

e.g. airway disease (asthma, COPD)

Increased risk includes chronic lung disease / chronic respiratory disease (e.g., COPD, asthma) and other medical conditions associated with higher risk of severe RSV illness.

KEY POINTS

- CDC recommends a **single dose** of RSV vaccine for all adults ages **75 and older** and adults ages **50 and above with increased risk** of severe RSV illness.
- There are three FDA-licensed RSV vaccines recommended for use in adults ages 50 and older: GSK's Arexvy, Moderna's mResvia, and Pfizer's Abrysvo. There is no preference for which vaccine adults 50 and older should receive.
- Eligible adults can get an RSV vaccine at any time, but the best time to vaccinate patients is in **late summer and early fall** before RSV usually starts to spread in the community.
- The RSV vaccine is **not currently an annual vaccine**. People who have already received one dose have completed their vaccination and should not receive another dose at this time.

1. Centers for Disease Control and Prevention (CDC). RSV Vaccine Guidance for Adults. For Health Care Providers. Feb 24, 2026. Available at: https://www.cdc.gov/rsv/hcp/vaccine-clinical-guidance/adults.html. Accessed May 11, 2025.

RSV vaccine

- A **Phase 3 clinical trial** of **Arexvy** demonstrated a **82.6% reduction in RSV-related lower respiratory tract disease (LRTD)** and a **94.1% reduction in severe disease** in adults aged ≥60 years
- The **Abrysvo vaccine** also showed significant efficacy in preventing **severe lower respiratory tract infections** in older adults and other high-risk populations

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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CDC. *RSV Vaccination for Adults 60 Years and Older.* Updated 2023.
ACIP. *RSV vaccine recommendations.* Advisory Committee on Immunization Practices (2023).

RSV vaccine

- For **pregnant women**, Abrysvo can be administered between **32 and 36 weeks of gestation** to reduce RSV-related complications in infants.

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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CDC. *RSV Vaccination for Adults 60 Years and Older.* Updated 2023.
ACIP. *RSV vaccine recommendations.* Advisory Committee on Immunization Practices (2023).

RSV vaccine

- Although **RSV vaccines are not specifically indicated for asthma**, individuals with **moderate-to-severe or uncontrolled asthma**, especially those aged ≥ 50 years, may **benefit from vaccination**. Approved vaccines are **non-live vaccines**, making them **safe for use in asthma patients**, with no specific contraindications reported

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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CDC. *RSV Vaccination for Adults 60 Years and Older.* Updated 2023.
ACIP. *RSV vaccine recommendations.* Advisory Committee on Immunization Practices (2023).

CDC recommendation 2025

Legend

- Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of immunity
- Recommended vaccination for adults with an additional risk factor or another indication
- Recommended vaccination based on shared clinical decision-making
- No Guidance/Not Applicable

Vaccine	19-26 years	27-49 years	50-64 years	≥65 years
COVID-19	1 or more doses of 2024–2025 vaccine (See Notes)			2 or more doses of 2024-2025 vaccine (See Notes)
Influenza inactivated (IIV3, ccIIV3) Influenza recombinant (RIV3)	1 dose annually			1 dose annually (HD–IIV3, RIV3, or aIIV3 preferred)
Influenza inactivated (aIIV3; HD–IIV3) Influenza recombinant (RIV3)	Solid organ transplant (See Notes)			
Influenza live, attenuated (LAIV3)	1 dose annually			
Respiratory Syncytial Virus (RSV)	Seasonal administration during pregnancy. (See Notes)		50 through 74 years (See Notes)	≥75 years

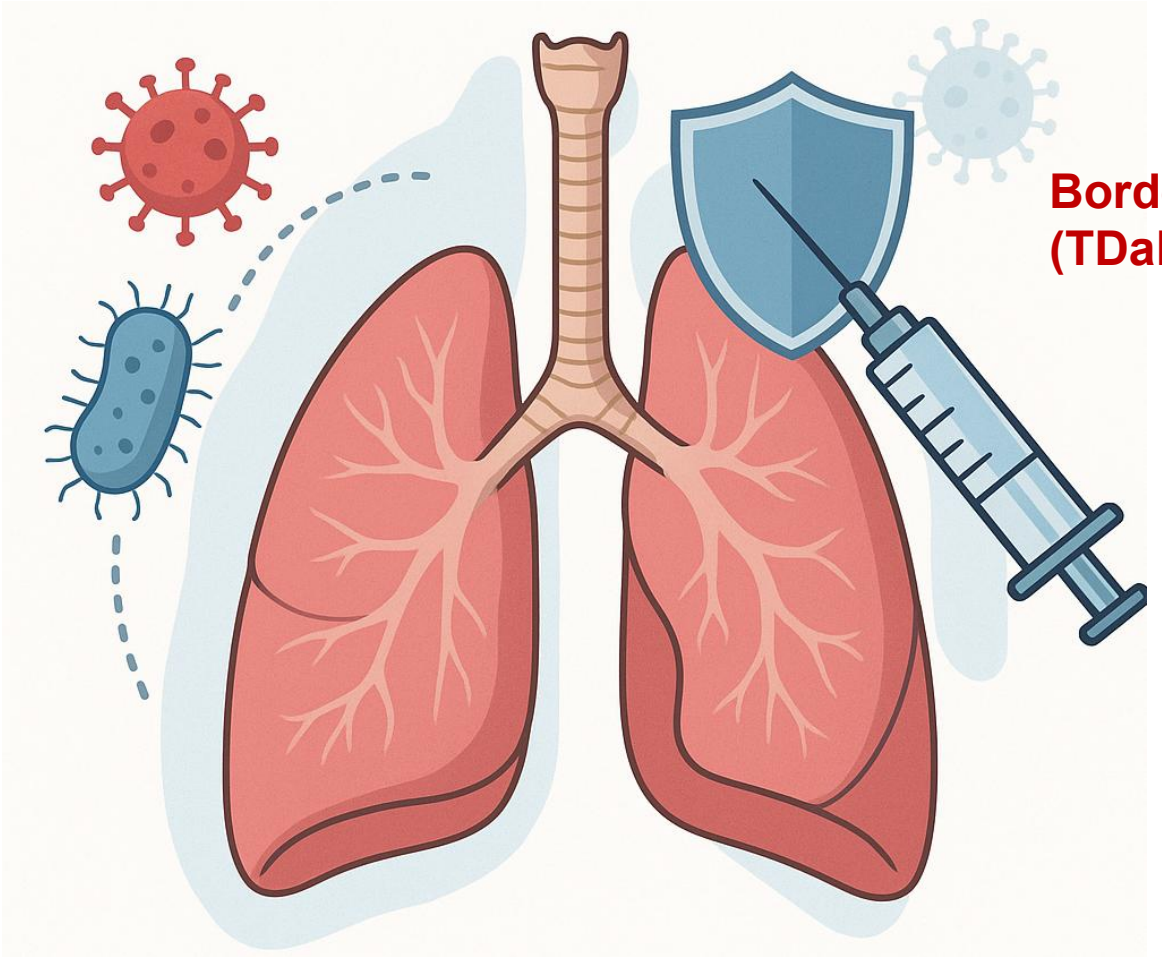
https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html

Vaccination in Airway diseases

Influenza

Pneumococcal

COVID-19



Bordetella Pertussis (TDaP)

RSV

Bordetella Pertussis (TDaP) vaccine

- *Bordetella pertussis* (the causative agent of pertussis or whooping cough), are important triggers for asthma exacerbations
- Prolonged, severe coughing episodes → increased use of asthma controller medications.
- **TDap vaccination** : preventing infections and reducing associated complications in asthma patients.

Cherry JD. The epidemiology of pertussis: a comparison of the epidemiology of the disease pertussis with the epidemiology of *Bordetella pertussis* infection. *Pediatrics.* 2005;115(5):1422–1427.
Zhang L, Prietsch SO, Axelsson I, Halperin SA. Acellular vaccines for preventing whooping cough in children. *Cochrane Database Syst Rev.* 2014;(9):CD001478.
Klein NP, Bartlett J, Rowhani-Rahbar A, Fireman B, Baxter R. Waning protection after fifth dose of acellular pertussis vaccine in children. *N Engl J Med.* 2012;367(11):1012–1019.
Healy CM, Rench MA, Baker CJ. Importance of maternal antenatal Tdap immunization: transmission of pertussis to infants. *Pediatrics.* 2014;133(6):e1475–e1481.

Bordetella Pertussis (TDaP) vaccine

- **Tdap vaccine**
  - **Tetanus toxoid**
  - **Reduced diphtheria toxoid**, and
  - **Acellular pertussis (aP)**

  Compared to DTaP, Tdap contains lower amounts of diphtheria and pertussis antigens, making it more suitable for use in adolescents and adults.
- Adults who have never received Tdap should receive a **single dose**, followed by a booster dose with **Td or Tdap every 10 years** to maintain protective immunity.

Cherry JD. The epidemiology of pertussis: a comparison of the epidemiology of the disease pertussis with the epidemiology of *Bordetella pertussis* infection. *Pediatrics.* 2005;115(5):1422–1427.
Zhang L, Prietsch SO, Axelsson I, Halperin SA. Acellular vaccines for preventing whooping cough in children. *Cochrane Database Syst Rev.* 2014;(9):CD001478.
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Bordetella Pertussis (TDaP) vaccine

- *B. pertussis* infection associated with **chronic cough lasting for several weeks**
  - provoke **asthma exacerbations** in children and adults
- A hallmark feature of pertussis is the **"paroxysmal cough"**—intense and repeated coughing fits that disrupt sleep and reduce quality of life

Cherry JD. The epidemiology of pertussis: a comparison of the epidemiology of the disease pertussis with the epidemiology of *Bordetella pertussis* infection. *Pediatrics.* 2005;115(5):1422–1427.
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Bordetella Pertussis (TDaP) vaccine

- **Tdap vaccine efficacy** is estimated at **70–85% in preventing pertussis** during the first 1–2 years post-vaccination. Although immunity wanes over time, vaccination still contributes to **reducing disease severity**
- Protect **vulnerable household contacts**, such as **infants and the elderly**
  - reducing asymptomatic transmission from vaccinated adults

Cherry JD. The epidemiology of pertussis: a comparison of the epidemiology of the disease pertussis with the epidemiology of *Bordetella pertussis* infection. *Pediatrics.* 2005;115(5):1422–1427.
Zhang L, Prietsch SO, Axelsson I, Halperin SA. Acellular vaccines for preventing whooping cough in children. *Cochrane Database Syst Rev.* 2014;(9):CD001478.
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Bordetella Pertussis (TDaP) vaccine

TDaP is **highly safe** **in asthma patients**

- no higher incidence of adverse reactions compared to the general population.
- Common side effects include **pain, swelling, or redness at the injection site**, and **low-grade fever**, which typically resolve within 1–3 days
- Prevents pertussis infection
- **Better asthma control**

Cherry JD. The epidemiology of pertussis: a comparison of the epidemiology of the disease pertussis with the epidemiology of *Bordetella pertussis* infection. *Pediatrics.* 2005;115(5):1422–1427.
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CDC recommendation 2025

Legend

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Influenza inactivated (aIIV3; HD–IIV3) Influenza recombinant (RIV3)	Solid organ transplant (See Notes)			
Influenza live, attenuated (LAIV3)	1 dose annually			
Respiratory Syncytial Virus (RSV)	Seasonal administration during pregnancy. (See Notes)		50 through 74 years (See Notes)	≥75 years
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (See Notes)			
	1 dose Tdap, then Td or Tdap booster every 10 years			

https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html

Vaccine	Recommendation (Asthma & COPD)	Age / Schedule	Key Comments	Key References
Influenza (IIV – Inactivated influenza vaccine)	Recommended	≥6 months; annually	Preferred vaccine in asthma/COPD. Avoid LAIV in active wheeze/uncontrolled asthma.	GINA 2026; GOLD 2026
Influenza High-Dose / Adjuvanted influenza vaccine	Consider in older adults	Older adults	Potential benefit in elderly patients; limited asthma evidence.	Duus et al. 2025
LAIV (Intranasal live attenuated influenza vaccine)	Not routinely preferred	Selected patients	Prefer IIV; avoid active wheeze / uncontrolled asthma.	Ambrose 2012; Bandell 2025
Pneumococcal vaccine	Recommended according to risk/age	Adults ≥19 yrs with risk factors	Preferred: PCV20. Alternative: PCV15 → PPSV23.	CDC Adult Immunization Schedule 2026
COVID-19 vaccine	Strongly recommended	≥6 months; primary + booster	Reduces severe respiratory infection and exacerbation burden.	CDC 2026
Tdap / Td booster	Recommended	Once, then Td/Tdap every 10 years	Prevents pertussis-associated cough worsening airway disease.	CDC 2026
RSV vaccine	Recommended in high-risk adults	1 dose	CDC 2026: (1) All adults ≥75 yrs; (2) Adults ≥50 yrs with increased risk including chronic lung disease / asthma / COPD. Not currently annual.	CDC RSV Guidance 2026; Mbaeyi et al. MMWR 2024

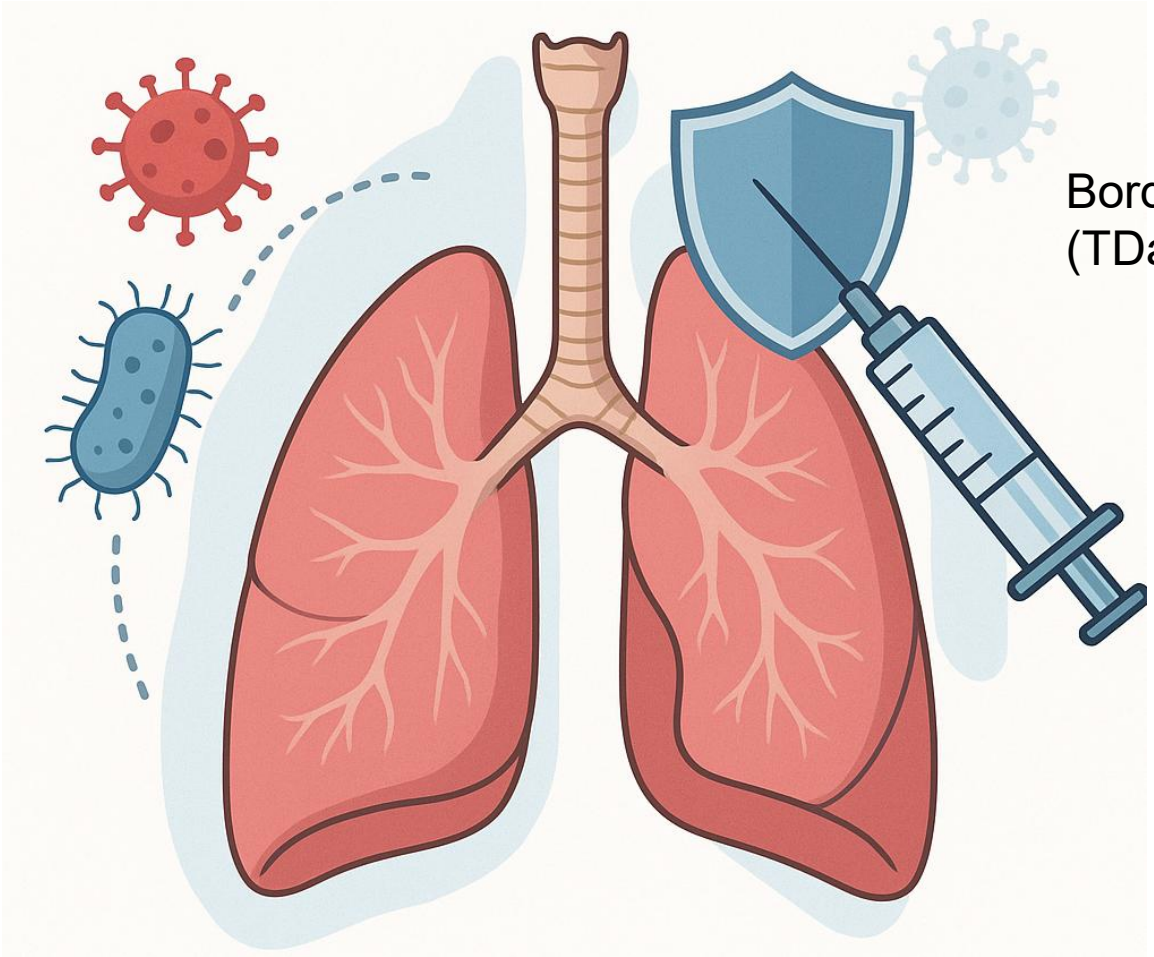


Vaccination in Airway diseases

Influenza

Pneumococcal

COVID-19



Bordetella Pertussis (TDaP)

RSV

Shingle

Shingle vaccine

- **Herpes zoster (shingles)** is caused by reactivation of latent varicella-zoster virus (VZV), typically in older adults or immunocompromised individuals.
- Patients with **chronic airway diseases** like **asthma and COPD** have a **higher risk** of herpes zoster due to underlying immune dysregulation and corticosteroid use.

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
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ACIP. *RSV vaccine recommendations.* Advisory Committee on Immunization Practices (2023).

Shingle vaccine

- Asthma is independently associated with a **significantly increased risk** of herpes zoster.
- A meta-analysis reported an **odds ratio (OR) of 1.24–1.29** for herpes zoster in individuals with asthma (Zhang et al., 2020).

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
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Shingle vaccine

- COPD is also linked to increased herpes zoster risk, particularly among older patients or those with frequent exacerbations.
- A large cohort study showed COPD patients had a **40% higher risk** of developing shingles (adjusted HR ~1.4) and higher risk of complications such as pneumonia and hospitalization (Yawn et al., 2013).

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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Shingle vaccine

- Asthma or COPD patients **≥50 years** should receive **Shingrix**, regardless of prior shingles history
- Inhaled corticosteroids (ICS) are **not a contraindication**
- Vaccination is particularly important **prior to initiating** biologics or systemic immunosuppressants
- "Patients with asthma or COPD, especially those using corticosteroids, are at higher risk and should be prioritized for vaccination."(Tseng HF, et al. *Clin Infect Dis.* 2022)

Falsey AR, et al. *Respiratory syncytial virus infection in elderly and high-risk adults.* N Engl J Med. 2005;352(17):1749–1759.
Shi T, et al. *Global and regional burden of hospital admissions for pneumonia in older adults: a systematic review and meta-analysis.* Lancet Infect Dis. 2020;20(5):538–550.
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CDC. *RSV Vaccination for Adults 60 Years and Older.* Updated 2023.
ACIP. *RSV vaccine recommendations.* Advisory Committee on Immunization Practices (2023).

Shingle vaccine in asthma and COPD

Vaccine	Type	Indication	Efficacy	Use in Asthma/COPD
Shingrix	Recombinant (non-live) with AS01B adjuvant	Adults ≥50 years or ≥19 if immunocompromised	>90% efficacy	Safe and preferred in asthma/COPD
Zostavax	Live attenuated	Discontinued in many countries	~50–70%	Not preferred due to immunosuppression risk

1. CDC. Recommendations of the ACIP for use of herpes zoster vaccines. MMWR. 2018;67(3):103–108.
2. Tseng HF, et al. Effectiveness of recombinant zoster vaccine in adults with chronic conditions. Clin Infect Dis. 2022;75(6):993–1001.
3. Lal H, et al. Efficacy of adjuvanted herpes zoster subunit vaccine. N Engl J Med. 2015;372(22):2087–2096.
4. CDC. Shingles (Herpes Zoster) Vaccination. https://www.cdc.gov/vaccines/vpd/shingles

คำแนะนำเกี่ยวกับวัคซีนในผู้ป่วยโรคหืด (ผู้ใหญ่)

ประโยชน์ของวัคซีน และคำแนะนำ

วัคซีนป้องกันโรคไข้หวัดใหญ่



แนะนำให้ฉีดวัคซีนป้องกันโรคไข้หวัดใหญ่ปีละ 1 ครั้ง

วัคซีน RSV



Adjuvanted-RSV vaccine ลดการติดเชื้อทางเดินหายใจส่วนบนและส่วนล่างจากเชื้อไวรัส RSV ในผู้ใหญ่อายุ 60 ปีขึ้นไป รวมทั้งผู้ป่วยที่อายุ 50 ปีขึ้นไปที่มีโรคร่วมอื่นๆ เช่น โรคหืด แนะนำให้ฉีดวัคซีน adjuvanted-RSV 1 โดส

วัคซีนนิวโมค็อกคัส



แนะนำให้วัคซีนชนิด PCV 13 สายพันธุ์ หรือ PCV 15 สายพันธุ์ 1 โดส และตามด้วย PPSV 23 สายพันธุ์ 1 โดส (ห่างกันอย่างน้อย 1 ปี)

วัคซีนโคโรน่าไวรัสสายพันธุ์ใหม่



แนะนำให้ฉีดวัคซีนโคโรน่าไวรัสสายพันธุ์ใหม่ เพิ่ม 1 โดส ในผู้ป่วยที่อายุมากกว่า 65 ปี โดยสามารถให้พร้อมกับวัคซีนป้องกันโรคไข้หวัดใหญ่

วัคซีนไอกรน



การฉีดวัคซีนสามารถลดอาการที่รุนแรงของโรคหอบหืดได้
แนะนำให้ฉีดวัคซีน Tdap 1 โดส ทุกๆ 10 ปี

วัคซีนป้องกันงูสวัด (อายุ 50 ปีขึ้นไป)



วัคซีนมี 2 ชนิด ได้แก่ วัคซีนชนิด Recombinant และวัคซีนชนิดเชื้อมีชีวิตอ่อนฤทธิ์ โดยประสิทธิภาพของวัคซีนชนิด Recombinant ในการป้องกันงูสวัดในกลุ่มผู้ป่วยโรคหืดที่มีอายุ 50 ปีขึ้นไป เท่ากับร้อยละ 88.8
*แนะนำวัคซีนชนิด Recombinant 2 โดส ในผู้ที่อายุตั้งแต่ 50 ปีขึ้นไป ห่าง 2-6 เดือน หรือวัคซีนชนิดเชื้อมีชีวิตอ่อนฤทธิ์ 1 โดส ในผู้ที่อายุตั้งแต่ 60 ปีขึ้นไป

RSV = Respiratory syncytial virus PCV = Pneumococcal conjugate vaccine PPSV = Pneumococcal polysaccharide vaccine

Take Home message
"Vaccination in Airway disease"

Vaccination is preventive precision care in airway disease

Influenza: Annual **IIV** for most; consider **HD-IIV** in older adults; avoid **LAIV** in uncontrolled asthma/active wheeze.

Pneumococcal: Use risk-based protection (**PCV20 preferred**).

COVID-19: Keep patients **up-to-date with boosters**, especially high-risk asthma/COPD.

Expand the vaccine mindset: RSV + Tdap + Shingrix should be considered part of modern asthma/COPD care.

Any Question...?
Thank you for your attention...

Vaccination in Airway disease

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