



Vaccination in Airway disease

17 July 2025

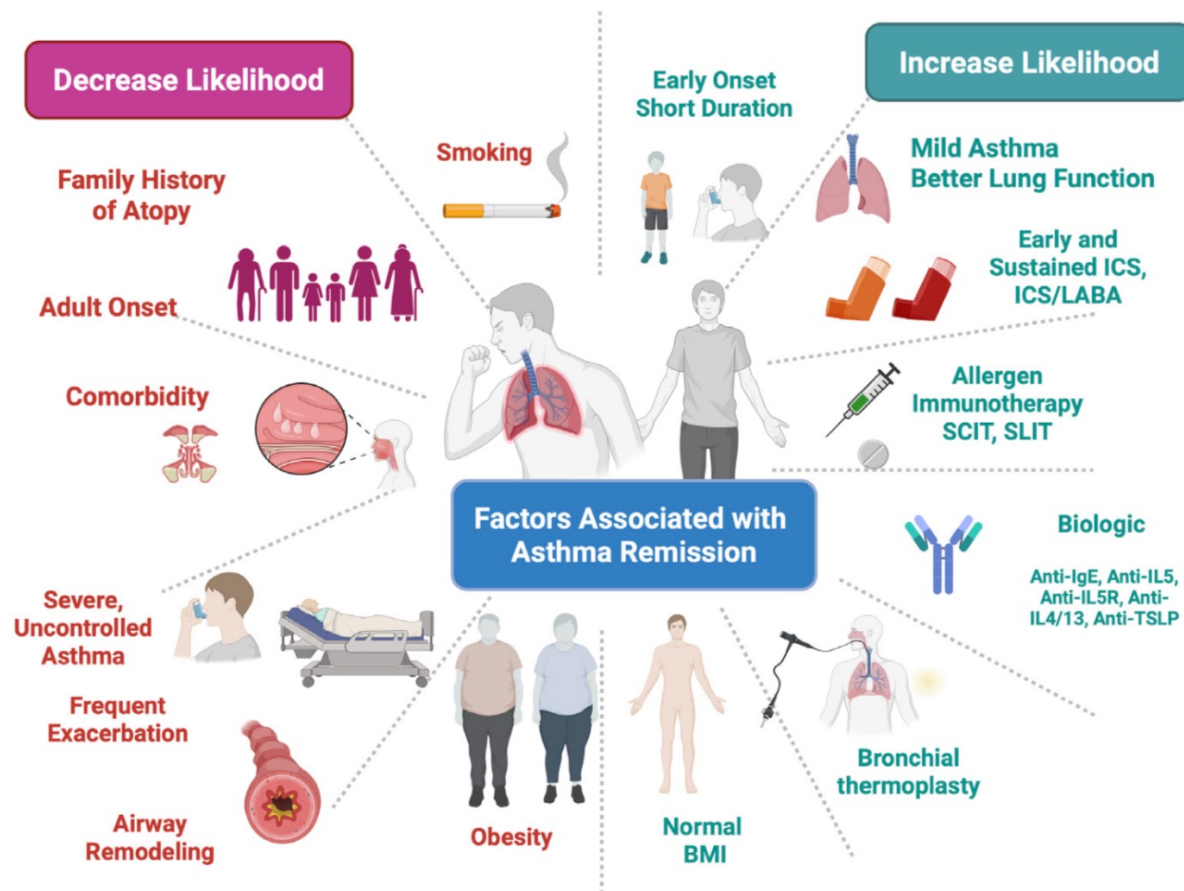
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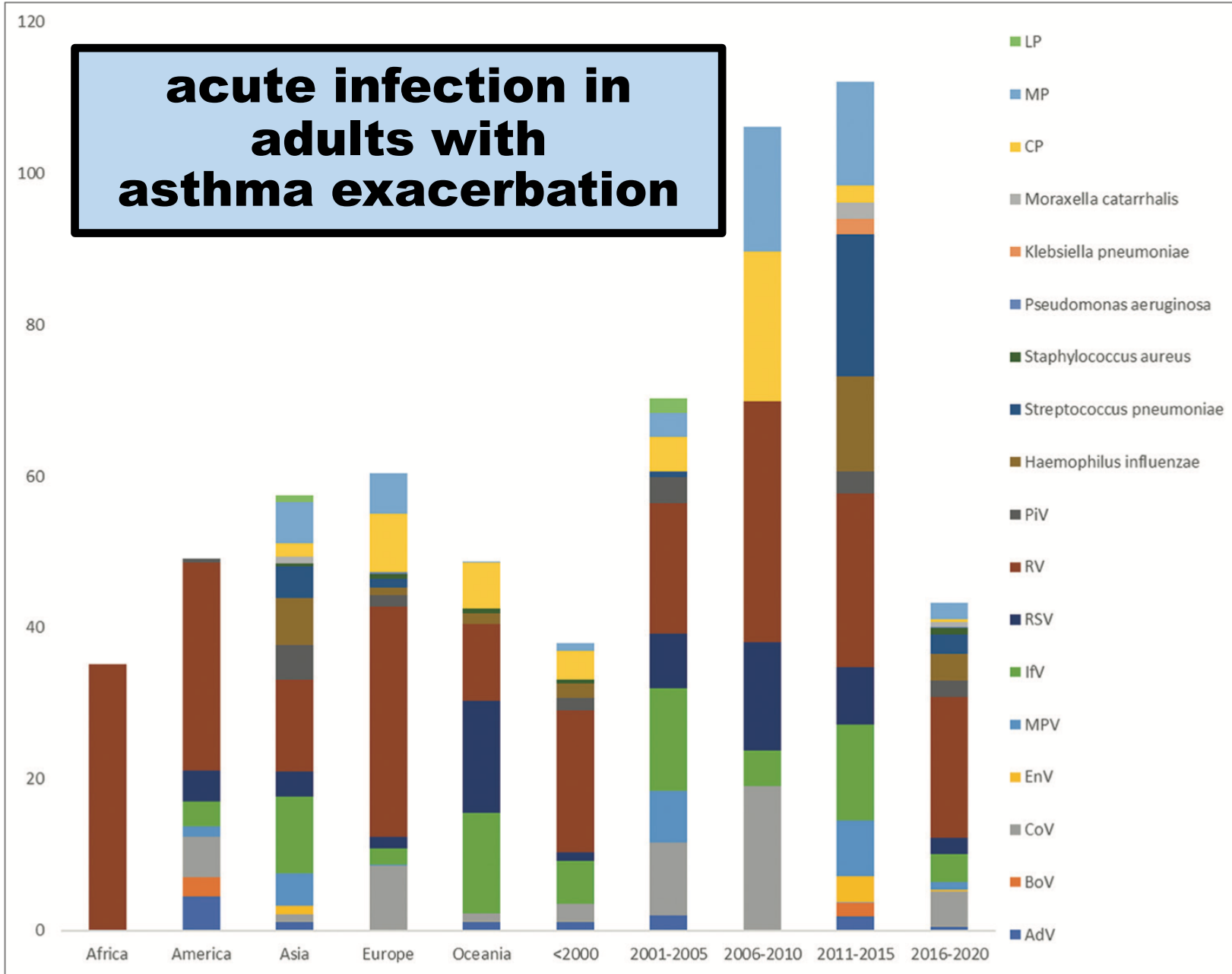
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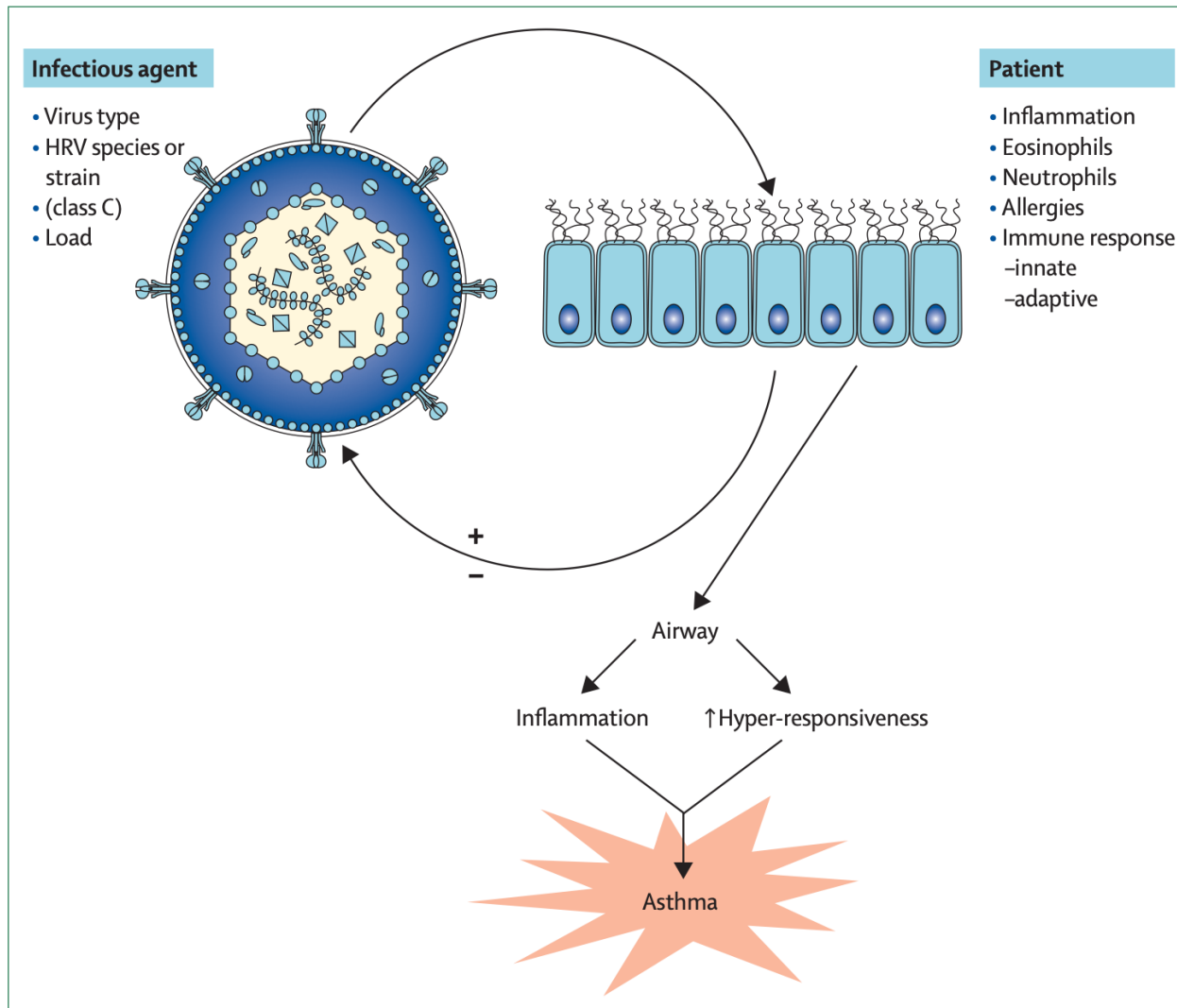
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Vaccination in Airway diseases



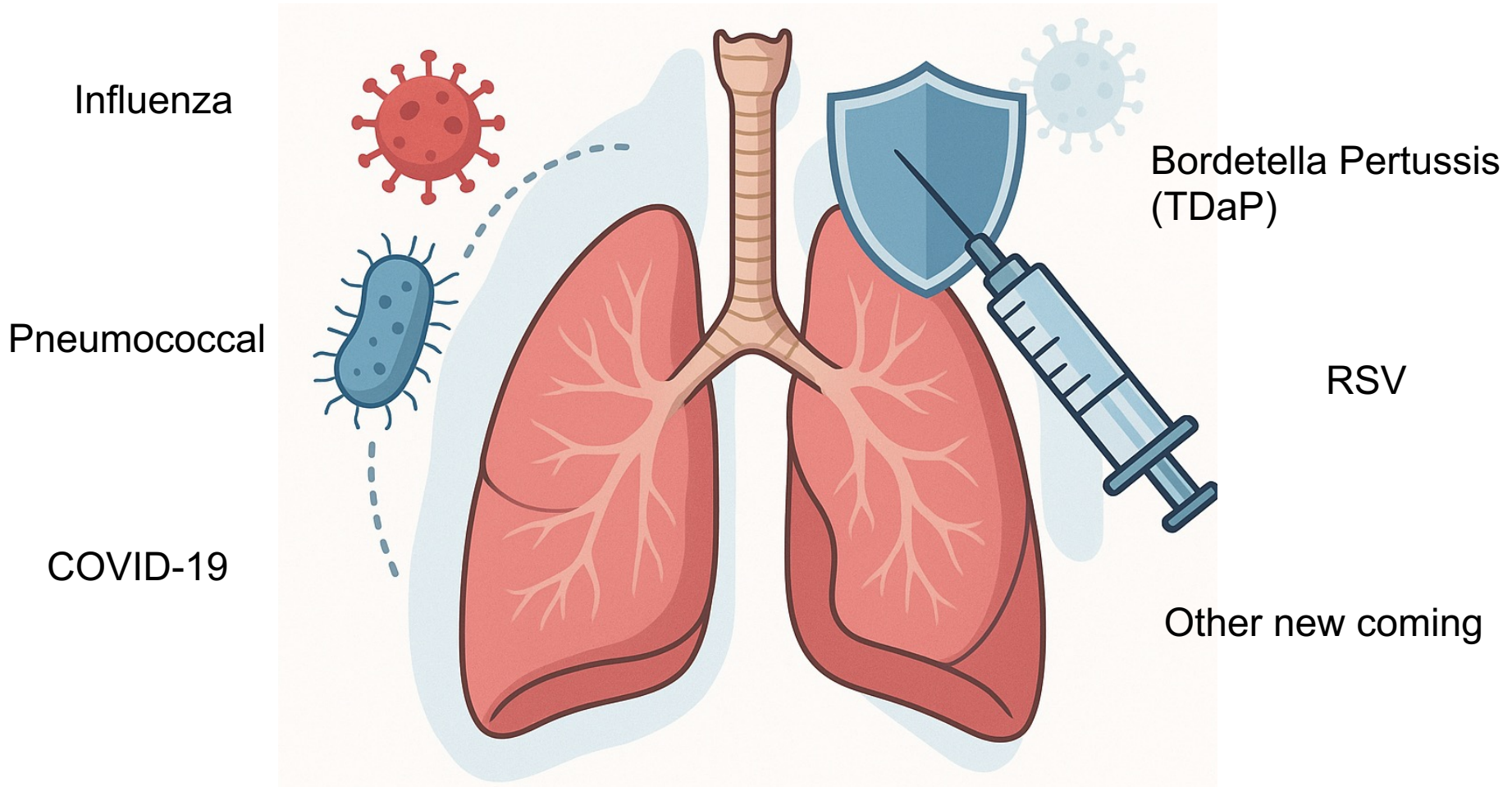


Factors determine whether a respiratory infection provoke asthma

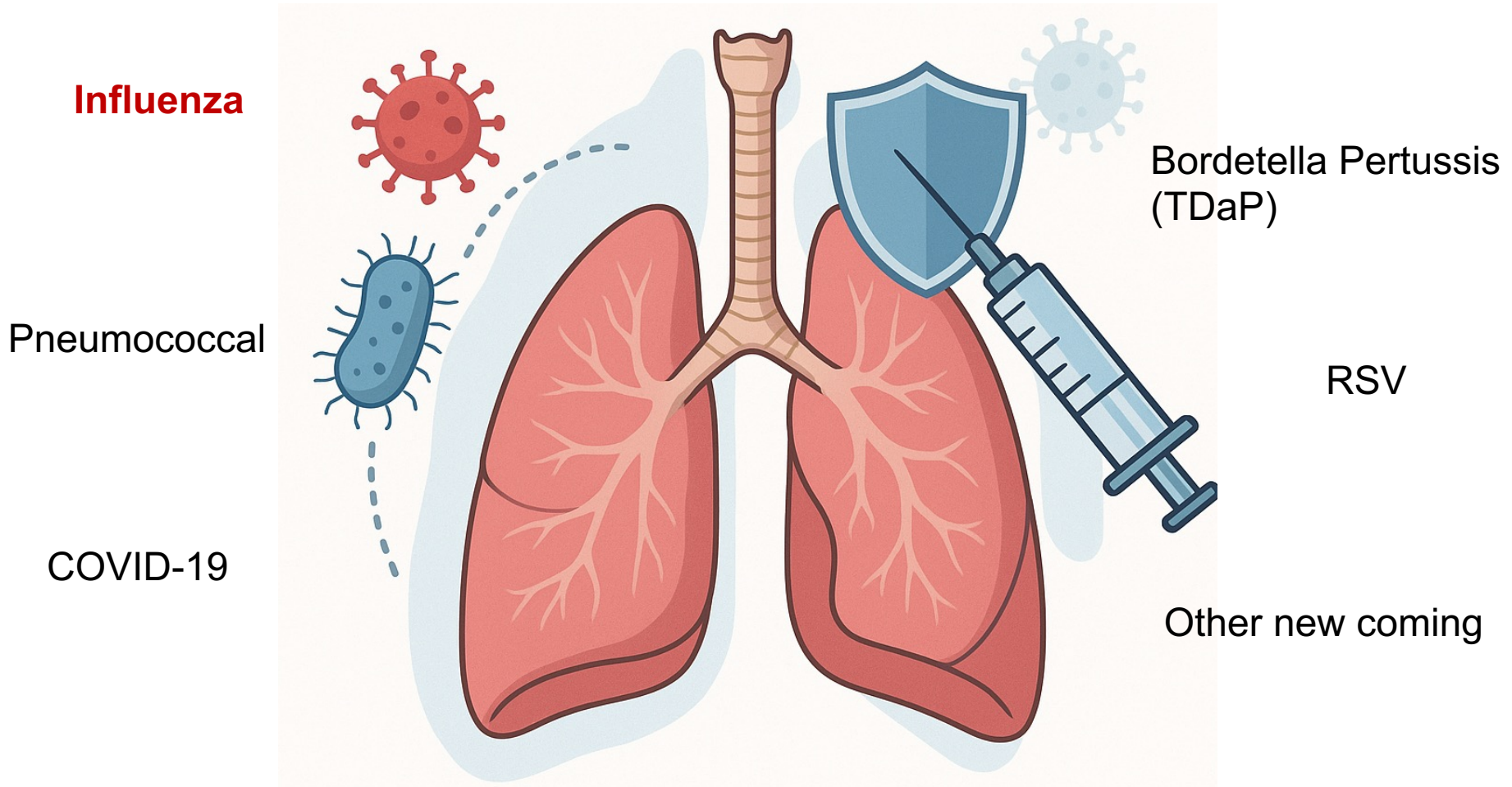


Busse WW, Lemanske RF Jr, Gern JE. Role of viral respiratory infections in asthma and asthma exacerbations. *Lancet*. 2010;376(9743):826-834.

Vaccination in Airway diseases



Vaccination in Airway diseases



Influenza vaccine

- Influenza vaccine
 - Inactivated Influenza vaccine
 - Standard dose
 - High dose
 - Live attenuated Influenza vaccine

Influenza vaccine

- Influenza vaccine
 - Inactivated Influenza vaccine
 - Standard dose
 - High dose
 - Live attenuated Influenza vaccine

the live attenuated influenza vaccine (LAIV) is not recommended in individuals with asthma or a history of wheezing, especially in children under 5 years of age, due to an increased risk of wheezing and asthma exacerbations following vaccination

Influenza vaccine

- The inactivated influenza vaccine (IIV) is recommended annually for all individuals aged 6 months and older, particularly for patients with airway disease
- Influenza infection is associated with increased risk of asthma exacerbations and respiratory complications

High-dose influenza vaccine

- The **high-dose influenza vaccine (HD-IIV)** contains a 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.

High-dose influenza vaccine

- **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.

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.

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.

High-dose influenza vaccine effectiveness

- Reduce influenza-related hospitalizations
- Reduced all-cause respiratory complications
- more 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.

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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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.

High-dose influenza vaccine safety

- Well tolerated in patients with asthma, although 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.

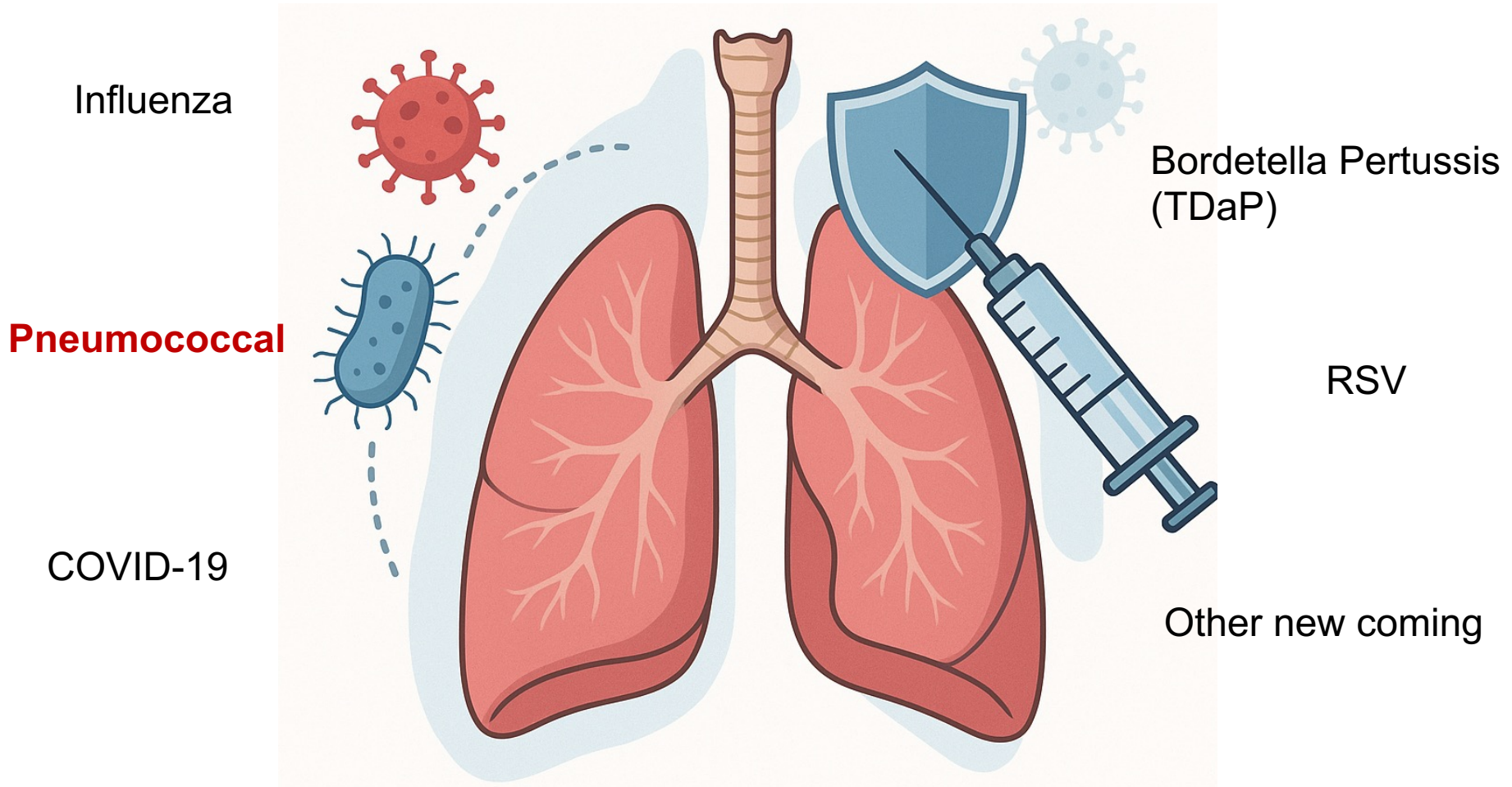
Izurieta HS, et al. *Relative effectiveness of influenza vaccines among the United States elderly, 2012–2013*. J Infect Dis. 2015;212(8):1210–1218.

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.

High-dose influenza vaccine

- **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, as there is insufficient evidence to support routine use of HD-IIV in this group

Vaccination in Airway diseases



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 vaccine

- **Pneumococcal Conjugated Vaccine (PCVs)** : These 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)
- 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.

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

Pneumococcal vaccine

- Pneumococcal Conjugated Vaccine (PCVs)
- **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>

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.

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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 vaccine in Airway disease

- Patients with **moderate to severe asthma**, 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.

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

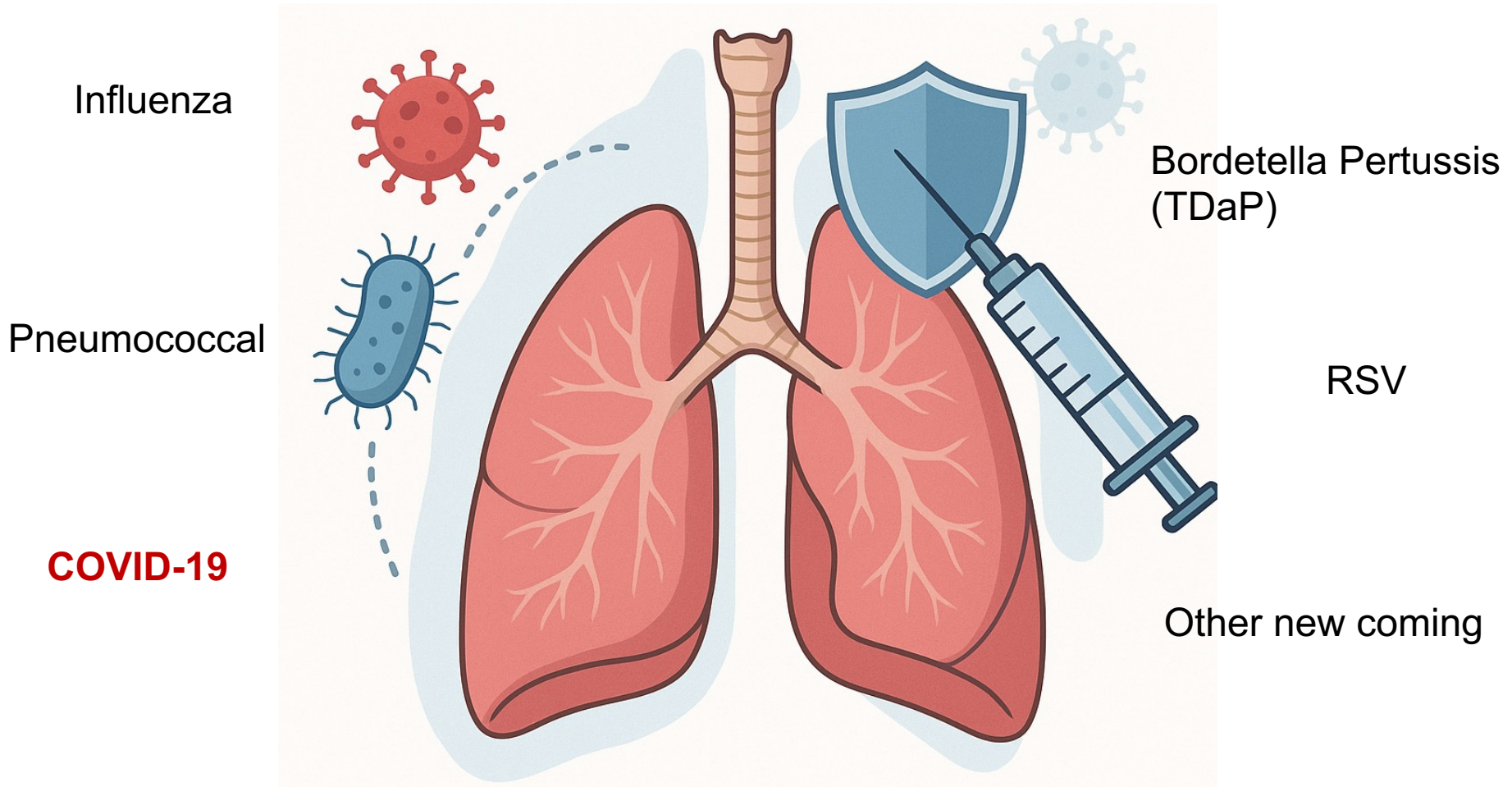
no further PPSV23 dose is needed, as PCV20 provides broad serotype coverage.

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>

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

ACIP Recommendations for Pneumococcal Vaccines in Adults. Advisory Committee on Immunization Practices (ACIP), CDC, 2022.

Vaccination in Airway diseases



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

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

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

2024–25 Moderna COVID-19 Vaccine

Vaccine type: mRNA | Do NOT use any previously available Moderna COVID-19 vaccine products.

If current age is:	And the COVID-19 vaccination history is:	Then:	Administer:
6 months through 4 years[†]	Unvaccinated (0 doses)	Give a 2-dose initial series. • Dose 1 now. • Dose 2 at least 4–8 weeks after Dose 1.[‡]	0.25 mL/25 µg in a manufacturer-filled syringe (MFS) Intramuscular (IM) injection
	1 previous dose of any Moderna COVID-19 Vaccine (Dose 1)	Complete the series. • Dose 2 at least 4–8 weeks after Dose 1.[‡]	
	2 or more previous doses of any Moderna COVID-19 Vaccine, NOT including 1 dose of 2024–25 Moderna COVID-19 vaccine [§]	Give 1 dose at least 8 weeks after the last dose.	
	2 or more previous doses of any Moderna COVID-19 Vaccine, INCLUDING at least 1 dose of 2024–25 Moderna COVID-19 vaccine [§]	No further doses are indicated.	
5 through 11 years[¶]	Unvaccinated (0 doses)	Give 1 dose now.	0.25 mL/25 µg in an MFS Intramuscular (IM) injection
	Any number of previous doses of any mRNA COVID-19 vaccine, NOT including 1 dose of 2024–25 mRNA COVID-19 vaccine	Give 1 dose at least 8 weeks after the last dose.	
	Any number of previous doses of any mRNA COVID-19 vaccine, INCLUDING 1 dose of 2024–25 mRNA COVID-19 vaccine	No further doses are indicated.	

COVID-19 vaccination

2024–25 Moderna COVID-19 Vaccine

Vaccine type: mRNA | Do NOT use any previously available Moderna COVID-19 vaccine products.

If current age is:	And the COVID-19 vaccination history is:	Then:	Administer:
12 through 64 years	Unvaccinated (0 doses)	Give 1 dose now.	0.5 mL/50 µg in an MFS
	Any number of previous doses of any COVID-19 vaccine, NOT including 1 dose of any 2024–25 COVID-19 vaccine	Give 1 dose at least 8 weeks after the last dose.	Intramuscular (IM) injection
	Any number of previous doses of COVID-19 vaccine, INCLUDING at least 1 dose of 2024–25 vaccine [†]	No further doses are indicated.	

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 vaccination

65 years of age and older	Unvaccinated (0 doses)	Give 1 dose now, followed by 1 dose 6 months later. [‡]	0.5 mL/50 µg in an MFS Intramuscular (IM) injection
	Any number of previous doses of any COVID-19 vaccine, NOT including 1 dose of any 2024–25 COVID-19 vaccine	Give 1 dose at least 8 weeks after the last dose, followed by 1 dose 6 months later. [‡]	
	Any number of previous doses of any COVID-19 vaccine, INCLUDING 1 dose of any 2024–25 COVID-19 vaccine [†]	Give 1 dose 6 months after the last dose of the 2024–25 COVID-19 vaccine. [‡]	
	Any number of previous doses of any COVID-19 vaccine, INCLUDING 2 doses of any 2024–25 COVID-19 vaccine [†]	No further doses are indicated.	

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.

2024–25 Pfizer-BioNTech COVID-19 Vaccine

Vaccine type: mRNA | Do NOT use any previously available Pfizer-BioNTech COVID-19 vaccine products.

If current age is:	And the COVID-19 vaccination history is:	Then:	Administer:
6 months through 4 years [†]	Unvaccinated (0 doses)	Give a 3-dose initial series. • Dose 1 now. • Dose 2 at least 3–8 weeks after Dose 1.[‡] • Dose 3 at least 8 weeks after Dose 2.	0.3 mL/3 µg from a yellow-capped multidose vial Intramuscular (IM) injection
	1 previous dose of any Pfizer-BioNTech COVID-19 Vaccine (Dose 1)	Complete the series. • Dose 2 at least 3–8 weeks after Dose 1.[‡] • Dose 3 at least 8 weeks after Dose 2.	
	2 previous doses of any Pfizer-BioNTech COVID-19 Vaccine (Doses 1 and 2)	Complete the series. • Dose 3 at least 8 weeks after Dose 2.	
	3 or more previous doses of any Pfizer-BioNTech COVID-19 vaccine, NOT including at least 1 dose of 2024–25 Pfizer-BioNTech COVID-19 Vaccine [§]	Give 1 dose at least 8 weeks after the last dose.	
	3 or more previous doses of any Pfizer-BioNTech COVID-19 vaccine, INCLUDING at least 1 dose of 2024–25 Pfizer-BioNTech COVID-19 Vaccine [§]	No further doses are indicated.	
5 through 11 years [¶]	Unvaccinated (0 doses)	Give 1 dose now.	0.3 mL/10 µg from a blue-capped single-dose vial Intramuscular (IM) injection
	Any number of any previous doses of any mRNA COVID-19 vaccine, NOT including 1 dose of 2024–25 mRNA COVID-19 vaccine	Give 1 dose at least 8 weeks after the last dose.	
	Any number of any previous doses of any mRNA COVID-19 vaccine, INCLUDING 1 dose of 2024–25 mRNA COVID-19 vaccine	No further doses are indicated.	

COVID-19 vaccination

Table 1b. For people who are **NOT** moderately or severely immunocompromised* *Continued*

2024–25 Pfizer-BioNTech COVID-19 Vaccine			
Vaccine type: mRNA Do NOT use any previously available Pfizer-BioNTech COVID-19 vaccine products.			
If current age is:	And the COVID-19 vaccination history is:	Then:	Administer:
12 through 64 years of age	Unvaccinated (0 doses)	Give 1 dose now.	0.3 mL/30 μg in a manufacturer-filled syringe (MFS) Intramuscular (IM) injection
	Any number of previous doses of any COVID-19 vaccine, NOT including 1 dose of any 2024–25 COVID-19 vaccine	Give 1 dose at least 8 weeks after the last dose.	
	Any number of previous doses of COVID-19 vaccine, INCLUDING at least 1 dose of 2024–25 COVID-19 vaccine [†]	No further doses are indicated.	

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 vaccination

65 years of age and older	Unvaccinated (0 doses)	Give 1 dose now, followed by 1 dose 6 months later. [‡]	0.3 mL/30 µg in an MFS Intramuscular (IM) injection
	Any number of previous doses of any COVID-19 vaccine, NOT including 1 dose of any 2024–25 COVID-19 vaccine	Give 1 dose at least 8 weeks after the last dose, followed by 1 dose 6 months later. [‡]	
	Any number of previous doses of any COVID-19 vaccine, INCLUDING ONLY 1 dose of any 2024–25 COVID-19 vaccine [†]	Give 1 dose 6 months after the last dose of the 2024–25 COVID-19 vaccine. [‡]	
	Any number of previous doses of any COVID-19 vaccine, INCLUDING 2 doses of any 2024–25 COVID-19 vaccine [†]	No further doses are indicated.	

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>

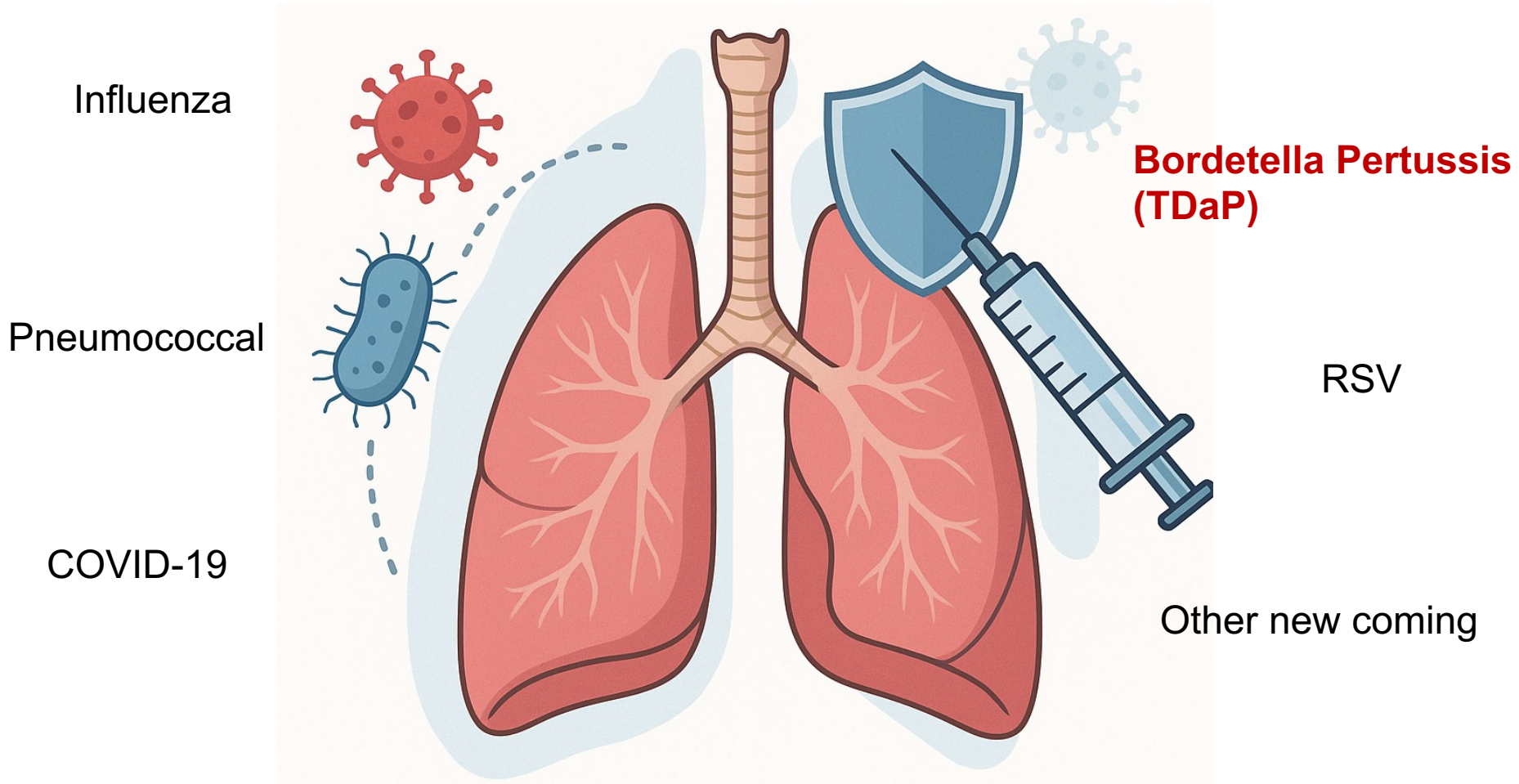
Jackson DJ, et al. COVID-19 risk and outcomes in patients with asthma: A systematic review and meta-analysis. J Allergy Clin Immunol. 2021;147(6):2021–2030.

British Thoracic Society. Advice for people with respiratory disease on COVID-19 vaccination. 2023.

COVID-19 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.**

Vaccination in Airway diseases



Bordetella Pertussis (TDaP) vaccine

- Respiratory infections, particularly *Bordetella pertussis* (the causative agent of pertussis or whooping cough), are important triggers for asthma exacerbations
- Pertussis infection can lead to prolonged, severe coughing episodes that significantly impair quality of life and may result in increased use of asthma controller medications.
- **Tdap vaccination** plays a key role in preventing such infections and reducing associated complications in asthma patients.

Bordetella Pertussis (TDaP) vaccine

- **Tdap vaccine** is a combination injectable vaccine that protects against three diseases
 - **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.

Bordetella Pertussis (TDaP) vaccine

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

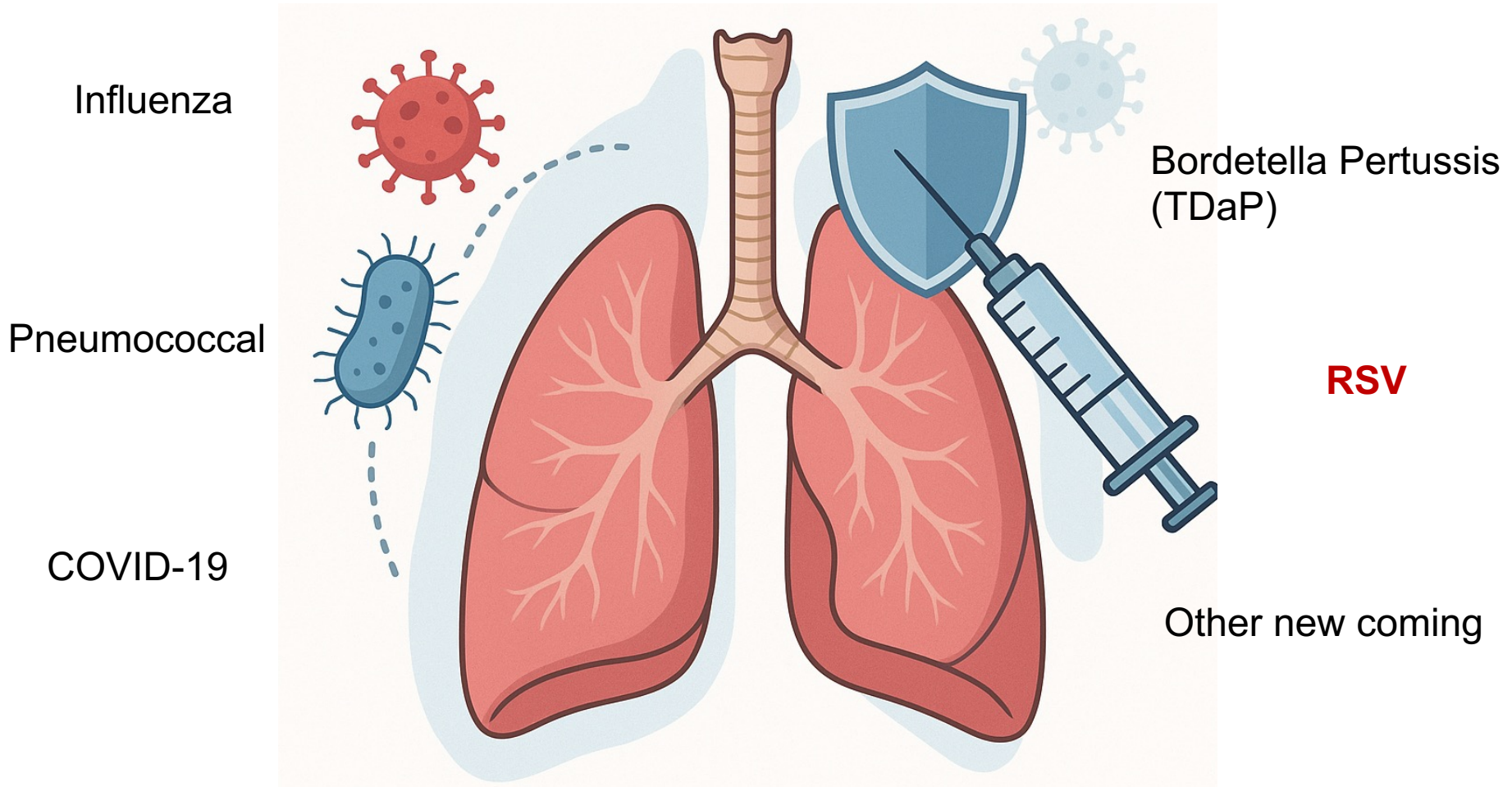
Bordetella Pertussis (TDaP) vaccine

- **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**
- It helps protect **vulnerable household contacts**, such as **infants and the elderly**, by reducing asymptomatic transmission from vaccinated adults

Bordetella Pertussis (TDaP) vaccine

- Tdap is **highly safe in asthma patients**, with 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
- Proper vaccination not only prevents pertussis infection but also contributes to **better asthma control** and reduces healthcare burden overall.

Vaccination in Airway diseases



RSV vaccine

- **Respiratory Syncytial Virus (RSV)** is a well-established cause of 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**. In patients with **poorly controlled asthma**, 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.

GSK. *Efficacy and safety of the RSVPreF3 vaccine in older adults*. N Engl J Med. 2023;388:1465–1477.

Pfizer. *Bivalent RSV prefusion F vaccine in older adults*. N Engl J Med. 2023;388:1451–1464.

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
 - **Arexvy**
 - **Abrysvo vaccine**

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.

GSK. *Efficacy and safety of the RSVPreF3 vaccine in older adults*. N Engl J Med. 2023;388:1465–1477.

Pfizer. *Bivalent RSV prefusion F vaccine in older adults*. N Engl J Med. 2023;388:1451–1464.

CDC. *RSV Vaccination for Adults 60 Years and Older*. Updated 2023.

ACIP. *RSV vaccine recommendations*. Advisory Committee on Immunization Practices (2023).

RSV vaccine

- In **2023**, new **RSV vaccines** were approved for **adults aged ≥ 60 years**, with the aim of reducing the severity of illness and hospitalization rates. This includes high-risk populations with underlying respiratory diseases such as asthma, COPD.

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.

GSK. *Efficacy and safety of the RSVPreF3 vaccine in older adults*. N Engl J Med. 2023;388:1465–1477.

Pfizer. *Bivalent RSV prefusion F vaccine in older adults*. N Engl J Med. 2023;388:1451–1464.

CDC. *RSV Vaccination for Adults 60 Years and Older*. Updated 2023.

ACIP. *RSV vaccine recommendations*. Advisory Committee on Immunization Practices (2023).

RSV vaccine

- Two RSV vaccines approved by the **U.S. FDA** include:
 - **Arexvy** (GSK): A **recombinant protein subunit vaccine (RSVPreF3)** approved for individuals aged **≥60 years**.
 - **Abrysvo** (Pfizer): 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.

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.

GSK. *Efficacy and safety of the RSVPreF3 vaccine in older adults*. N Engl J Med. 2023;388:1465–1477.

Pfizer. *Bivalent RSV prefusion F vaccine in older adults*. N Engl J Med. 2023;388:1451–1464.

CDC. *RSV Vaccination for Adults 60 Years and Older*. Updated 2023.

ACIP. *RSV vaccine recommendations*. Advisory Committee on Immunization Practices (2023).

RSV vaccine

- Public health agencies such as the **ACIP (Advisory Committee on Immunization Practices)** and the **CDC** recommend **considering RSV vaccination in adults aged ≥ 60 years**, particularly those with **chronic lung diseases**, including asthma and COPD (Vaccination should be guided by **shared clinical decision-making** between patients and healthcare providers)
- 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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Pfizer. *Bivalent RSV prefusion F vaccine in older adults*. N Engl J Med. 2023;388:1451–1464.

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 ≥ 60 years, may **benefit from vaccination**. Both 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).

Vaccine		Age	Frequency	Comments
Influenza (IIV – Inactivated influenza vaccine)		≥6 months	Annually	Avoid LAIV (Live Attenuated) in asthma or wheezing patient
Pneumococcal vaccine	Option 1: PCV20	≥19 years	Single injection	Preferred: 1 dose PCV20 (covers 20 serotypes)
	Option 2: PCV13 or PCV15 → PPSV23	≥2 years / adults	PCV13/15 followed by PPSV23 after ≥8 weeks (≥1 year in adults)	Use if PCV20 is unavailable
COVID-19 vaccine		≥6 months	Primary + booster	Strongly recommended for all asthma patients
Tdap vaccine		Adolescents, Adults	Once, then Td/Tdap every 10 years	Prevents pertussis-related coughing that can worsen asthma
RSV vaccine		≥60 years	Once (if indicated)	New in 2023; consider in older adults with severe or uncontrolled asthma

More ???

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.

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

- 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.

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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Pfizer. *Bivalent RSV prefusion F vaccine in older adults*. N Engl J Med. 2023;388:1451–1464.

CDC. *RSV Vaccination for Adults 60 Years and Older*. Updated 2023.

ACIP. *RSV vaccine recommendations*. Advisory Committee on Immunization Practices (2023).

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.

GSK. *Efficacy and safety of the RSVPreF3 vaccine in older adults*. N Engl J Med. 2023;388:1465–1477.

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ACIP. *RSV vaccine recommendations*. Advisory Committee on Immunization Practices (2023).

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.

GSK. Efficacy and safety of the RSVPreF3 vaccine in older adults. N Engl J Med. 2023;388:1465–1477.

Pfizer. Bivalent RSV prefusion F vaccine in older adults. N Engl J Med. 2023;388:1451–1464.

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

แนะนำให้ฉีดวัคซีนป้องกันโรคไข้หวัดใหญ่ปีละ 1 ครั้ง



วัคซีนป้องกัน
โรคไข้หวัดใหญ่

วัคซีน RSV



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

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



วัคซีนนิวโม
ค็อกคัส

วัคซีนโคโรนาไวรัส
สายพันธุ์ใหม่



แนะนำให้ฉีดวัคซีนโคโรนาไวรัสสายพันธุ์ใหม่ เพิ่ม 1 โดส ในผู้ป่วยที่อายุมากกว่า 65 ปี โดยสามารถให้พร้อมกับวัคซีนป้องกันโรคไข้หวัดใหญ่

การฉีดวัคซีนสามารถลดอาการที่รุนแรงของโรคหอบหืดได้
แนะนำให้ฉีดวัคซีน Tdap 1 โดส ทุกๆ 10 ปี



วัคซีนไอกรน

วัคซีนป้องกันงูสวัด
(อายุ 50 ปีขึ้นไป)



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

Take Home message





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

Vaccination in Airway disease
17 July 2025

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