Pfizer Symposium at ประชุมวิชาการ
ประจำปี 2569 มูลนิธิส่งเสริมการศึกษาไข้หวัดใหญ่ :
Influenza Foundation (Thailand)
เรื่อง **"Update Influenza and Other Respiratory Infection of the Year 2026"**

ADVANCING ADULT IMMUNIZATION: UPDATES ON PNEUMOCOCCAL And RSV PREVENTION STRATEGIES

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ธีระพงษ์ ตัณฑวิเชียร

อาจารย์หน่วยโรคติดเชื้อ คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ผู้อำนวยการศูนย์วิจัยโรคเอดส์และโรคติดเชื้อ (AIDSID) สภากาชาดไทย
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10/3/69 วันอังคาร : 14.00-14.30

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Update on Pneumococcal and RSV Prevention

Overview:

Pneumococcal Vaccines:

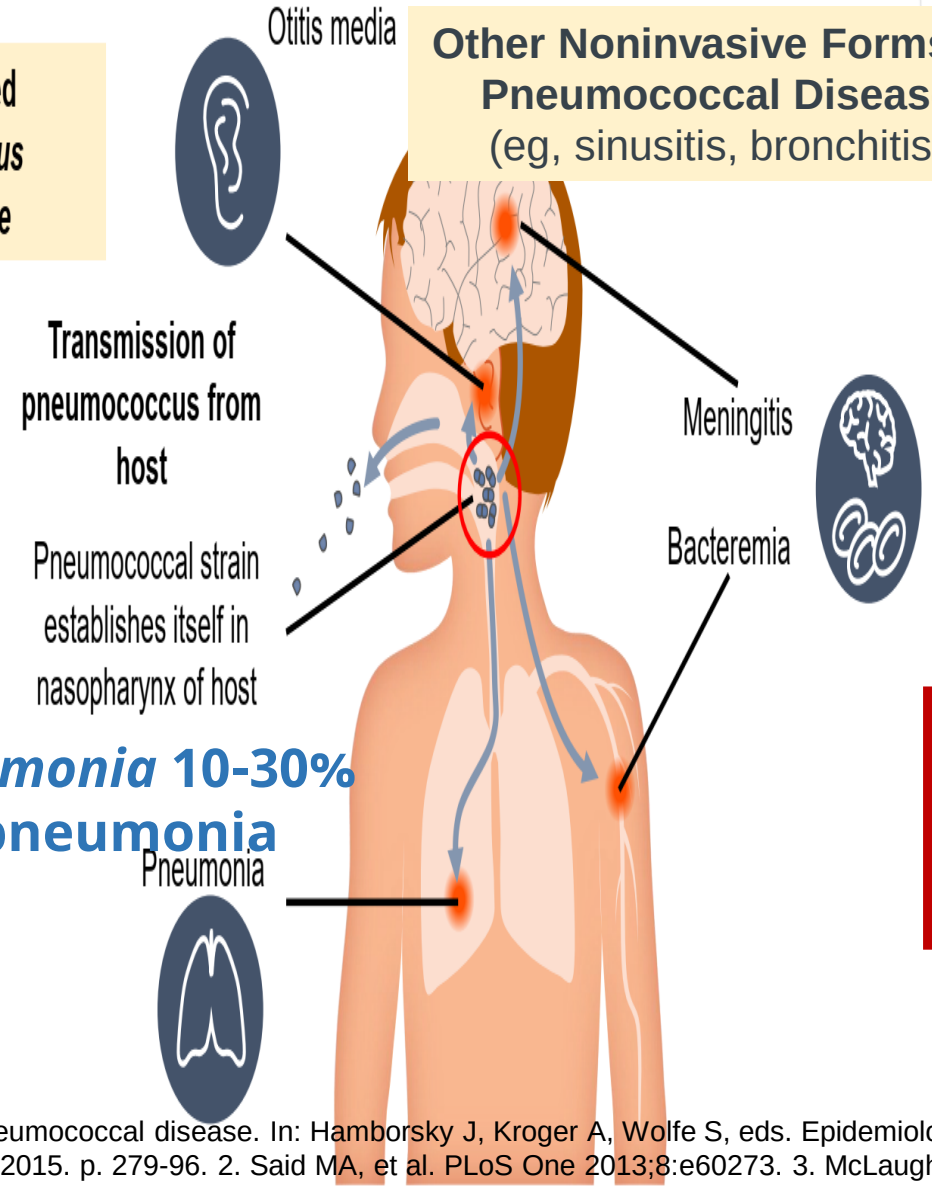
- Burden of Pneumococcal Diseases in Adult and Elderly
- Pneumococcal Conjugated Vaccines:
  Recommendation and Real-World Effectiveness

RSV Vaccines:

- Burden of RSV Infections in Adult and Elderly
- Bivalent-PreF RSV vaccine:
  Recommendation and Real-World Effectiveness

Nature of Pneumococcal Infection

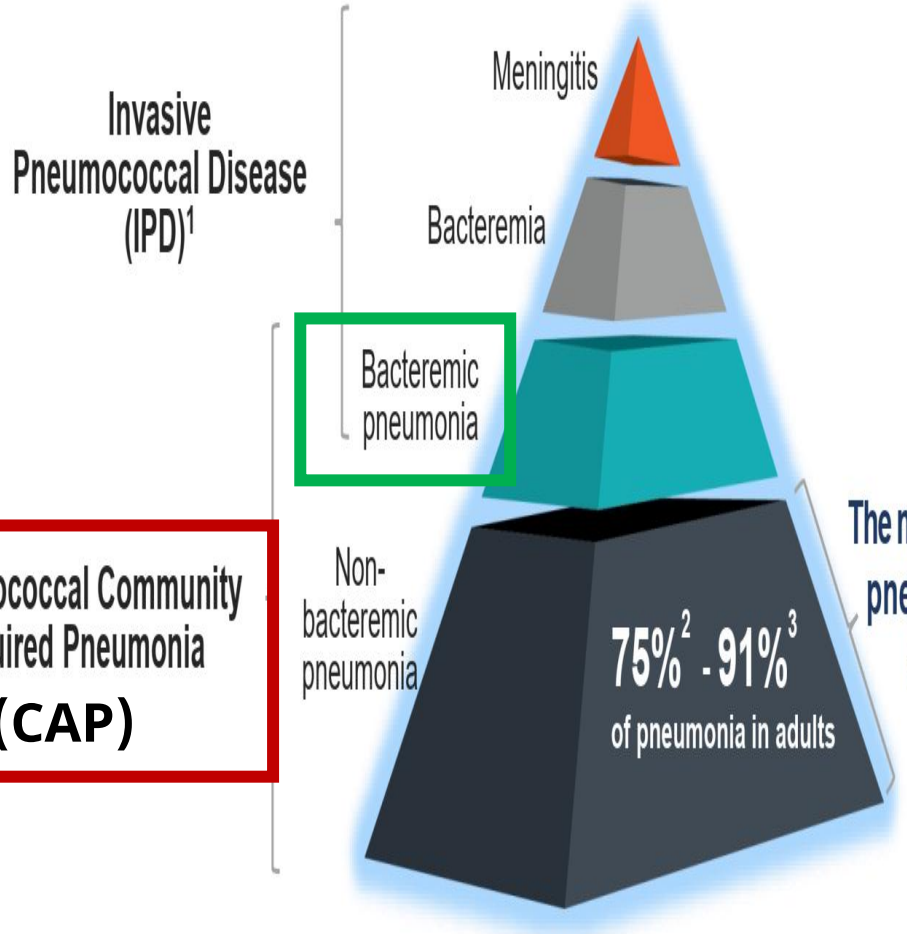
100 identified *Streptococcus pneumoniae* serotypes



Other Noninvasive Forms of Pneumococcal Disease
(eg, sinusitis, bronchitis)

***S. Pneumonia* 10-30% of all pneumonia**

Non-bacteremic Pneumonia Is The Most Common Manifestation of Pneumococcal Disease

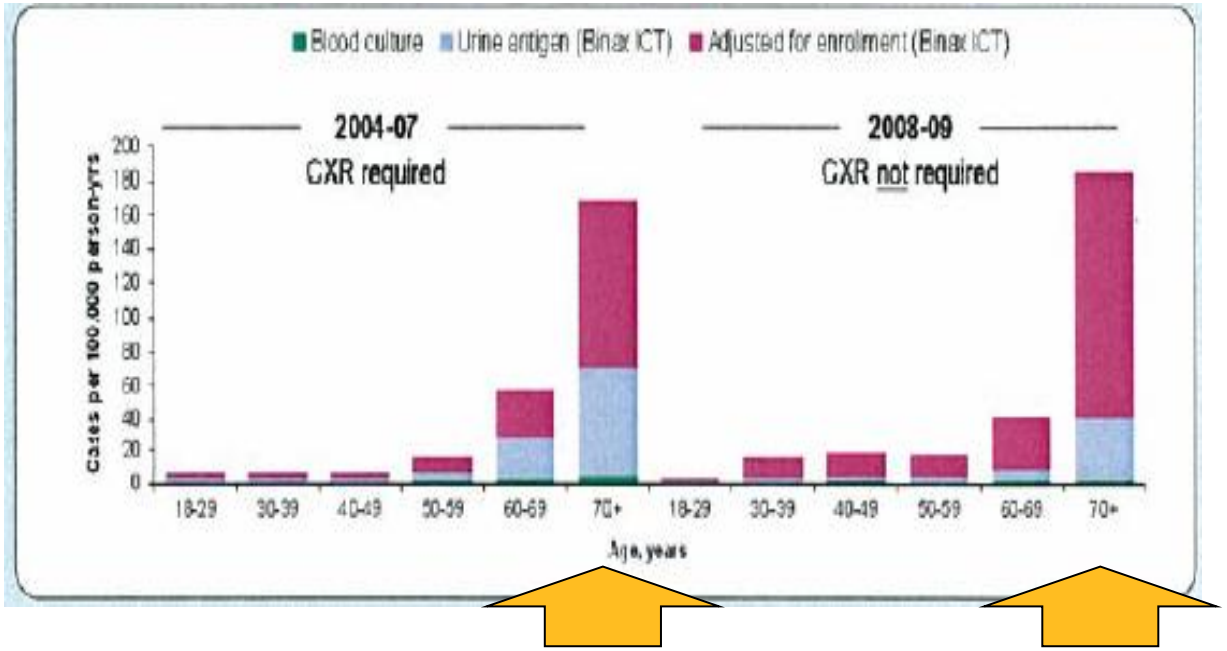


Pneumococcal Community Acquired Pneumonia **(CAP)**

1. CDC. Pneumococcal disease. In: Hamborsky J, Kroger A, Wolfe S, eds. Epidemiology and Prevention of Vaccine-Preventable Diseases. 13th ed. Washington, DC: Public Health Foundation 2015. p. 279-96. 2. Said MA, et al. PLoS One 2013;8:e60273. 3. McLaughlin JM, et al. Clin Infect Dis 2018;67:1498-506.

Highest incidence of Pneumococcal Pneumonia in age ≥70 years

Age-specific incidence rates of hospitalized pneumococcal pneumonia during 2 study periods: 2004-07 (CXR required) and 2008-09 (CXR not required)

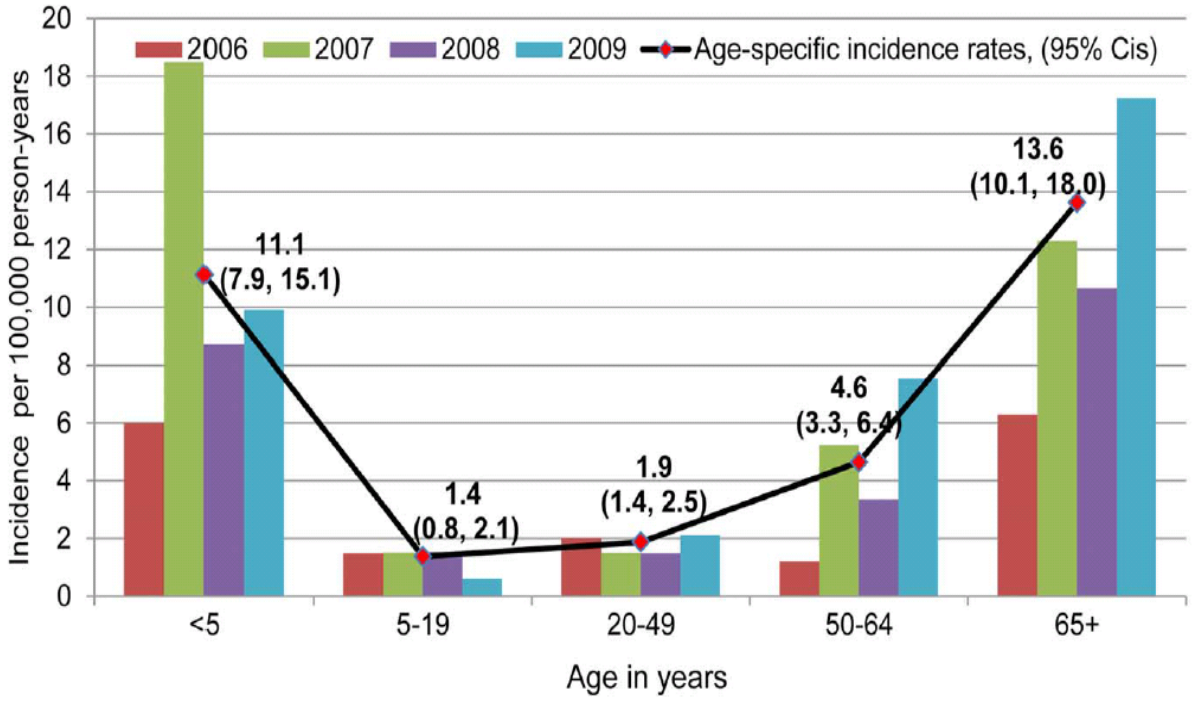


Rates increased with age and were highest for age ≥ 70 years (174 cases per 100,000)

Hospitalized Pneumococcal Bacteremia Incidence in Rural Thailand, 2005–2010

- Annual incidence 3.6 per 100,000 person-years
- Higher among infants and elderly (>65years)
- Might be underestimated as captured only hospitalized patients and did not include other forms of IPD[3]

Age >50 yrs: Bacteremic Pneumonia = 62/86 (72%)



Baggett HC et al. ISPPD Poster: Incidence of Pneumococcal Pneumonia among Adults in Thailand: Value of Non-culture Assays to Enhance Case Detection

IPD, invasive pneumococcal disease.

1. Pneumonia จากรายงานการเฝ้าระวังโรค 506. Bureau of Epidemiology, Department of Disease Control, MoPH, Thailand.
2. Reechaipichitkul W, *J Med Assoc Thai* 2014;97:283-92.**3.** Rhodes J, et al. PLoS One 2013;8(6):e66038.

Population at Risk of Pneumococcal Disease and Factors that Contribute to Risk

- The risk of IPD and pneumococcal pneumonia is influenced by host and environmental factors[1–6]
- The **risk of IPD in adults increases with age[7]**

	Host Factors[2–5]			
Age[1]	**At risk**	**High risk**	**Environmental factors[3,6]**	**Behavioral factors[2,3]**
<1 years to All ages **(>65 yrs)**	• Chronic heart disease • Chronic lung disease* • Diabetes • Functional/ anatomic asplenia • Chronic liver disease • CSF leaks	• **HIV infection** • Chronic renal failure, nephrotic syndrome • Cancer (solid, hematologic) • Solid organ transplantation • Autoimmune diseases • Immunosuppressive therapy, corticosteroids • Primary immunodeficiencies	• *Preceding viral respiratory infection (eg, influenza)* • *Residence in an institution (eg, nursing home)*	• **Smoking** • **Alcohol abuse**

HIV, human immunodeficiency virus; IPD, invasive pneumococcal disease.

1. Centers for Disease Control and Prevention. Active Bacterial Core surveillance (ABCs) report. Emerging Infections Program Network: *Streptococcus pneumoniae*, 2012. Accessed on November 4, 2022, from http://www.cdc.gov/abcs/reports-findings/survreports/spneu12.pdf. **2.** Centers for Disease Control and Prevention (CDC), Advisory Committee on Immunization Practices. Updated recommendations for prevention of invasive pneumococcal disease among adults using the 23-valent pneumococcal polysaccharide vaccine (PPSV23). *MMWR Morb Mortal Wkly Rep*. 2010;59(34):1102-1106. **3.** Musher DM. *occus pneumoniae*. In: Mandell GL, et al, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 7th ed. Philadelphia, PA; 2010:2623-2642. Accessed on November 4, viruses' from*Streptoc* https://www.doody.com/rev400images/pdf/2010/9780443068393.pdf. **4.** van Hoek AJ, Andrews N, Waight PA, et al. The effect of underlying clinical conditions on the risk of developing invasive pneumococcal disease in England. *J Infect*. 2012;65(1):17-24. **5.** Klemets P,Lyytikäinen O, Ruutu P, Ollgren J, Nuorti JP. Invasive pneumococcal infections among persons with and without underlying medical conditions: implications for prevention strategies. *BMC Infect Dis*. 2008;8:96. **6.** Centers for Disease Control and Prevention. Prevention of pneumococcal infections secondary to seasonal and 2009 H1N1 influenzae viruses infection. Accessed on November 4, 2022 from http://www.cdc.gov/h1n1flu/vaccination/provider/provider_pneumococcal.htm. 7. Baxter R, Yee A, Aukes L, et al. Risk of underlying chronic medical conditions for invasive pneumococcal disease in adults. Vaccine. 2016;34(36):4293-4297. **8.** Morton JB, et al. Vaccine 2017;35:1692-1697.

In Addition to Age, Certain **Underlying Medical Conditions** Can Increase the Risk of Pneumococcal Pneumonia in Adults

Older adults have a 2X–8X higher risk of pneumococcal disease compared with adults aged 18–49 years

Adults with UMCs are 3X–8X more likely to experience an episode* of pneumococcal pneumonia compared with healthy adults of the same age

Adults aged 50–64 years have a

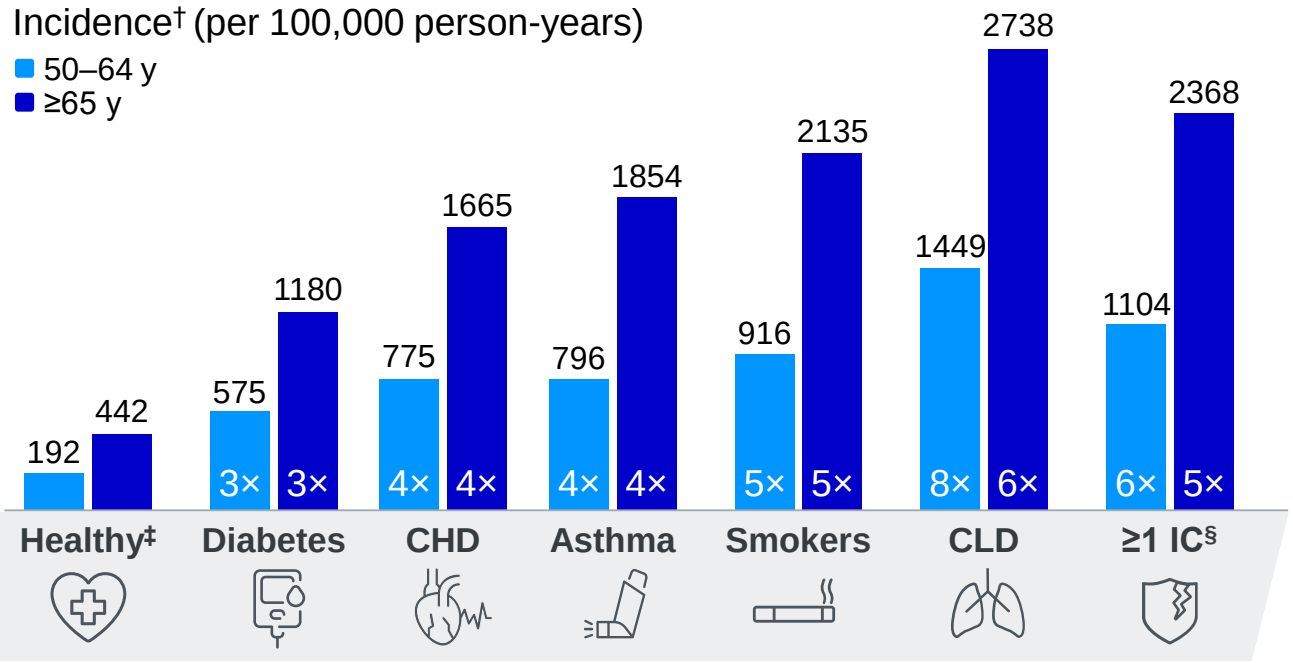
3X higher risk of IPD

2X higher risk of Pneumococcal Pneumonia

Adults aged ≥65 years have a

8X higher risk of IPD

4X higher risk of Pneumococcal Pneumonia



*Disease episodes from inpatient hospital admissions, emergency department visits (but not admitted), outpatients, etc, were included in the analysis. †The incidence rate varied greatly for each manifestation of pneumococcal disease. ‡Excludes immunocompromising, chronic, and other medical conditions. §Immunocompromising conditions included cochlear implants, congenital or acquired asplenia, sickle cell disease/other hemoglobinopathies, HIV infection, leukemia, lymphoma, iatrogenic immunosuppression, nephrotic syndrome, Hodgkin disease, multiple myeloma, chronic renal failure, cerebrospinal fluid leak, generalized malignancy, solid organ transplant, congenital or acquired immunodeficiencies, lymphatic and hematopoietic tissue malignancy.
CHD=chronic heart disease; CLD=chronic lung disease; IC=immunocompromising condition; UMC=underlying medical condition.
Grant LR, et al. *Open Forum Infect Dis*. 2023;10(5):ofad192.

Older adults and individuals with medical conditions are at higher risk of respiratory infections.

Old Age

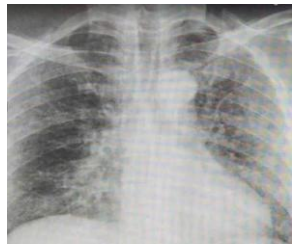
	Invasive pneumococcal disease	Seasonal Influenza	COVID-19	RSV
Overall CFR[1]	10-30%[8]	<0.1%[1]	2-3%[4]	26.7% [9]
Risk for mortality OR (95% CI)				
Elderly (>65)	2.83 (2.52-3.18) [8]	3.95 (1.26-12.37) [2]	1.01 (3.95-9.11) [5]	1.88 (1.32–2.67) [10]
CVD	2.27 (1.84-2.80) [8]	1.43 (1.01-2.02) [2]	5.19 (3.25-8.29) [5]	2.53 (1.84-3.48) [11]
Diabetes	1.20 (1.01-1.31) [8]	2.93 (1.01-8.53) [2]	3.68 (2.68-5.03) [5]	N/A
Pulmonary disease	1.12 (0.97-1.48)*[8]	1.45 (0.80-2.13)*[2]	5.15 (2.51-10.57) [5]	1.85 (1.27–2.68) [12]
Cirrhosis	2.25 (1.92-2.13) [8]	2.40 (1.41–4.08) [2]	2.41 (1.34–4.32) [6]	N/A
Renal conditions	1.99 (1.57-2.50) [8]	1.74 (1.45–2.09) [3]	2.88 (1.52–5.44) [7]	11.6 (1.36–99.74)[13]
Cancer	2.13 (1.30-3.49) [8]	1.81 (1.35–2.23) [3]	1.10 (0.81-3.18)*[5]	N/A

CFR = Case Fatality Rate, *Not significant

1. Center of Disease Control and Prevention. About Estimated Flu Burden. https://www.cdc.gov/flu-burden/php/about/index.html?CDC_AAref_Val=https://www.cdc.gov/flu/about/burden/index.html%25202 2. Martínez A,; Surveillance of Hospitalized Cases of Severe Influenza in Catalonia Working Group. Risk factors associated with severe outcomes in adult hospitalized patients according to influenza type and subtype. PLoS One. 2019 Jan 11;14(1):e0210353. doi: 10.1371/journal.pone.0210353. 3.Coleman BL. Risk factors for serious outcomes associated with influenza illness in high- versus low- and middle-income countries: Systematic literature review and meta-analysis. Influenza Other Respir Viruses. 2018;12(1):22-29. doi:10.1111/irv.12504 4.Cao Y, COVID-19 case-fatality rate and demographic and socioeconomic influencers: worldwide spatial regression analysis based on country-level dataBMJ Open 2020;10:e043510. doi: 10.1131/bmjopen-2020-043510 5. Zheng Z. Risk factors of critical & mortal COVID-19 cases: A systematic literature review and meta-analysis. J Infect. 2020 Aug;81(2):e11-e25. doi: 10.1011/j.jinf.2020.04.021. 6. Kim D. Predictors of Outcomes of COVID-19 in Patients with Chronic Liver Disease: US Multi-center Study. Clin Gastroenterol Hepatol. 2020 Sep 17:S1542-3515(20)31288-X. doi: 10.1011/j.cgh.2020.09.027. 7. Savas Ozturk, Mortality analysis of COVID-19 infection in chronic kidney disease, haemodialysis and renal transplant patients compared with patients without kidney disease: a nationwide analysis from Turkey, Nephrology Dialysis Transplantation, Volume 35, Issue 7, December 2020, Pages 2083–2095, https://doi.org/10.1093/ndt/gfaa271 8.Demirdal T, Sen P, Emir B. Predictors of mortality in invasive pneumococcal disease: a meta-analysis. Expert Rev Anti Infect Ther. 2020 Dec 31:1-18. doi: 10.1080/14787210.2021.1858799. . 9. Khaing, et al. *Influenza and other respiratory viruses,* 18(11), e70039. https://doi.org/10.1111/irv.70039 10. Surie, et al. *MMWR. Morbidity and mortality weekly report,* 72(40), 1083–1088. https://doi.org/10.15585/mmwr.mm7240a2; 11 Wee, et al. *JAMA network open,* 8(5), e2511764. https://doi.org/10.1001/jamanetworkopen.2025.11764 12. Branche, et al. *Open Forum Infectious Diseases,* Volume 12, Issue 7, July 2025, ofaf394, https://doi.org/10.1093/ofid/ofaf394 13. Joseph, et al. Viruses 2025, 17(8), 1030; https://doi.org/10.3390/v17081030

Adult vaccinations against respiratory infections

Antoni Torres; EXPERT REVIEW OF ANTI-INFECTIVE THERAPY 2025, VOL. 23, NOS. 2–4, 135–147



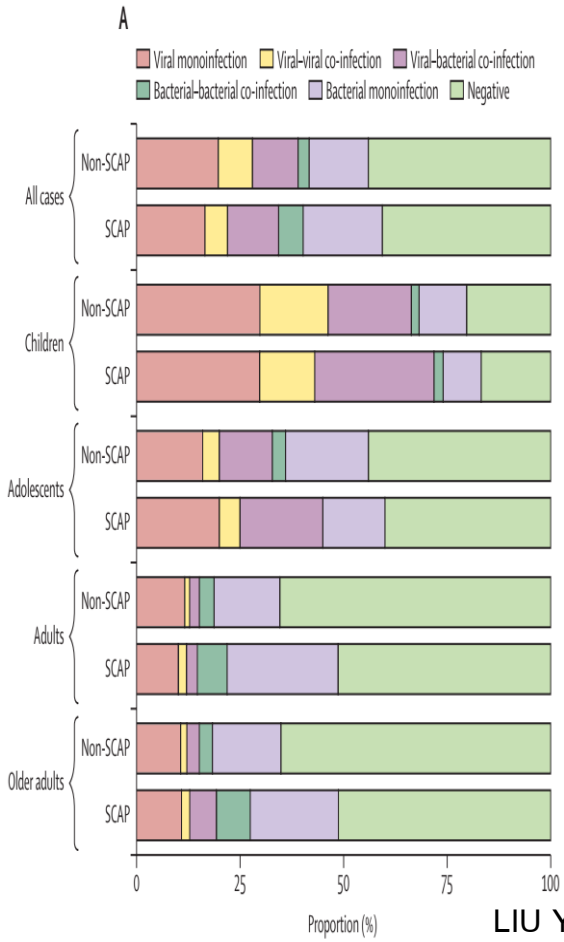


Table 2. Pneumococcal and viral vaccine indications (ACIP & WHO).

Indications	Pneumococcal	Flu	COVID-19	RSV
- Age (years)	>60	>60	>60	>75
- Comorbidities	Yes	Yes	Yes	Yes
- Immunosuppression	Yes	Yes	Yes	Yes
- Pregnant women		Yes	Yes	–
- People living in nursing homes	Yes	Yes	Yes	Yes
- Health care workers	–	Yes	Yes	-
- Essential workers	–	Yes	Yes	–
- Household members and caregivers of people at risk	–	–	Yes	–
Frequency	–	Seasonal	Annual or twice a year	Unknown (every 3 years?)

Table 1. Chronic comorbidities and conditions that increase the risk of severe respiratory disease.

Factors	Pneumococcal disease	Influenza infection	COVID-19	RSV infection
Comodbidities	X	X	X	X
Cardiopulmonary disease	X	X	X	X
Kidney disorders	X	X	X	X
Liver disorders	X	X	X	X
Neurological or neuromuscular conditions	X	X	X	X
Haematological disorders	X	X	X	X
Diabetes mellitus	X	X	X	X
Moderately or severely immunocompromised	X	X	X	X
Other factors			X	X
Frailty	X	X	X	X
Nursing home residence	X	X	X	X
Advanced age	X	X	X	X
Pregnancy	X	X	X	X

LIU YN;Lancet Microbe 2023; 4: e330–39

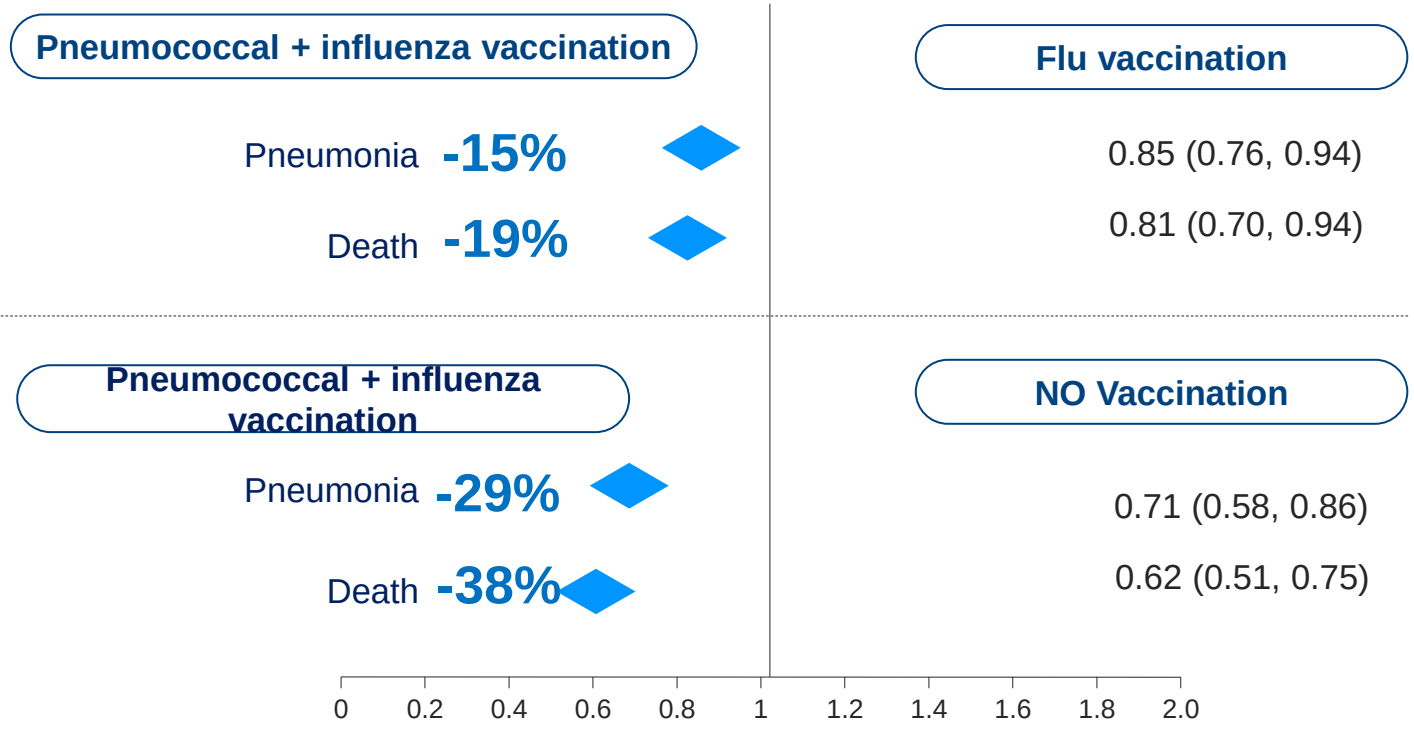
Simultaneous influenza and pneumococcal vaccination has additive preventive effects[1]

- Method: Meta-analysis of 17 selected studies using a multi-step approach by two separate authors.
- Database: PubMed, Cochrane Library, and Embase databases Year: 2018

วัคซีนป้องกันปอดบวมหรือปอดอักเสบ
Vaccination for prevention of pneumonia :

- วัคซีนป้องกันไข้หวัดใหญ่
- วัคซีนป้องกันโควิด **19**
- วัคซีนป้องกันการติดเชื้ออาร์เอสวี
- วัคซีนป้องกันนิวโมคอคคัส

Emerging influenza vaccine
(H5N1, H7N9)
Coronavirus vaccine (Pancorona)



Concomitant influenza and pneumococcal Vaccination is superior to separate vaccine administration or to no vaccination among older adults

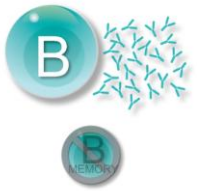
Both vaccines showed acceptable safety profiles and AEs were mild or moderate

1. Yin M, Huang L, Zhang Y, et al. Effectiveness and safety of dual influenza and pneumococcal vaccination versus separate administration or no vaccination in older adults: a meta-analysis. Expert Rev Vaccines. 2018;17(7):653-663.

History of usage of licenced pneumococcal vaccines

polysaccharide vaccines[1,2]

polysaccharide antigens



- **B cell activation** and antibody production
- **T-cell–independent** immune response that cannot be boosted
- **May deplete memory B cells**[4]
- **No mucosal response**[5]

1881 — Discovery of *S. pneumoniae* (Sternberg, Pasteur)

1911 — First whole cell vaccine

1928 — Penicillin discovered (A. Fleming)

1945 / 1946 — Penicillin in clinical practice

1960 — Epidemiology, mortality unchanged

PPSV Adult and Elderly

1977 — License PPV14

1983 — License PPV23

Epidemiology, mortality unchanged

2000 — License PCV7

Dramatic impact of PCVs on the epidemiology of pneumococcal diseases in all age groups if used in pediatric National immunization program (NIP)

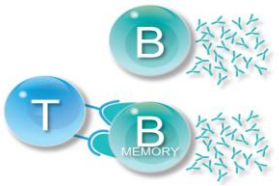
2009 — License PCV13 infant

2012 — License PCV13 adult

PCV Adult and Elderly

conjugate vaccines[1-3]

polysaccharide antigens covalently linked to carrier protein



- **B cell activation** and antibody production
- **T-cell–dependent** immune response with booster response to revaccination
- **Memory B cell activation**[4]
- **Mucosal response**[5]

2020 — License PCV10 (India)

2021 — Licence PCV15 adult

2022 — Licence PCV15 infant

License PCV20 adult

License PCV14 (India)

2024 — Licence PCV20 children (3+1)

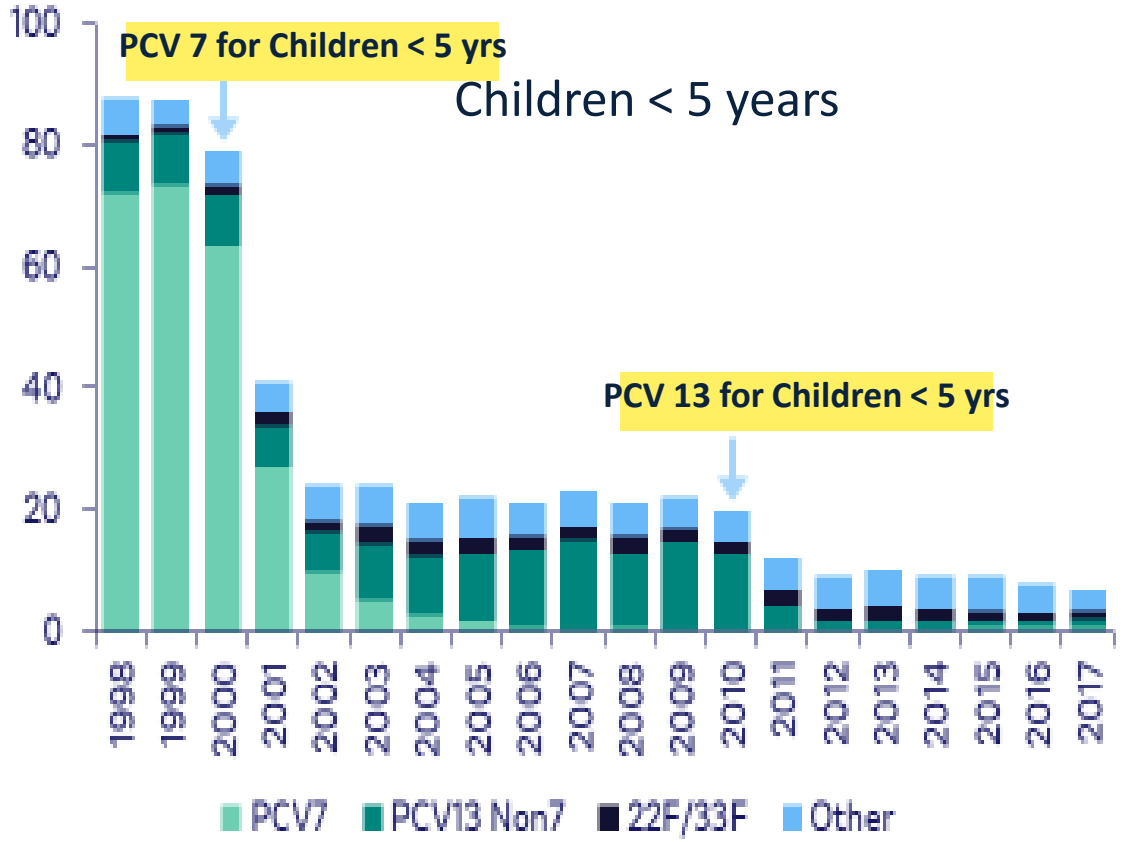
Licence PCV21 adult

1. de Roux A, et al. Clin Infect Dis. 2008;46(7):1015-1023. 2 Clutterbuck EA, et al. Immunology. 2006;119(3):328-337. PCV21 is not yet approved and available in Thailand

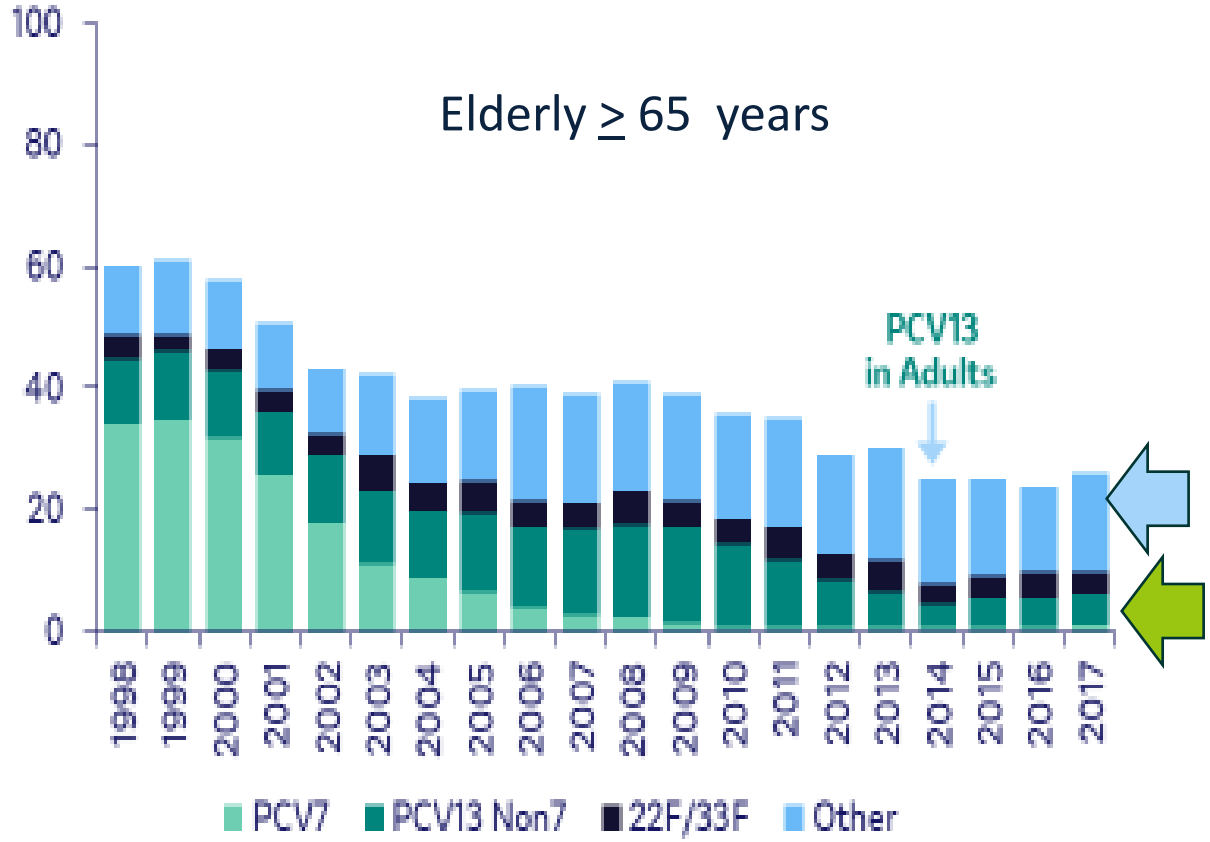
PCVs significantly reduced pneumococcal disease in children and adults

Residual disease mainly caused by non-vaccine types and is more important in adults than children

IPD Incidence by Serotypes, Children <5 Years



IPD Incidence by Serotypes, Adults ≥65 Years



US CDC ABC Surveillance Network, 1998-2017

Pneumococcal Serotypes

Vaccine	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	22F	33F	8	10A	11A	12F	15B	2	9N	17F	20	15A	15C	16F	23A	23B	24F	31	35B
Pneumococcal conjugate vaccines[1-3,5]																																
PCV13 [CRM_{197}]	●	●	●	●	●	●	●	●	●	●	●	●	●																			
PCV15 [CRM_{197}]	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																	
PCV20 [CRM_{197}]	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●												
PCV21 [CRM_{197}]		●			●		●				●			●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●
Pneumococcal polysaccharide vaccine[4]																																
PPV23	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●								

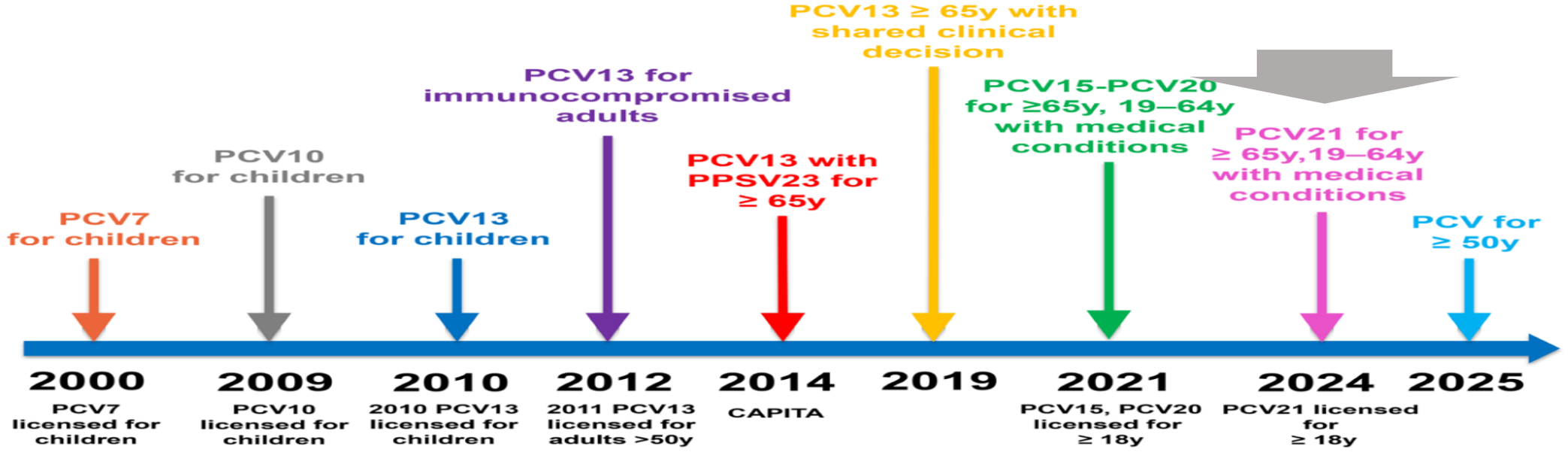
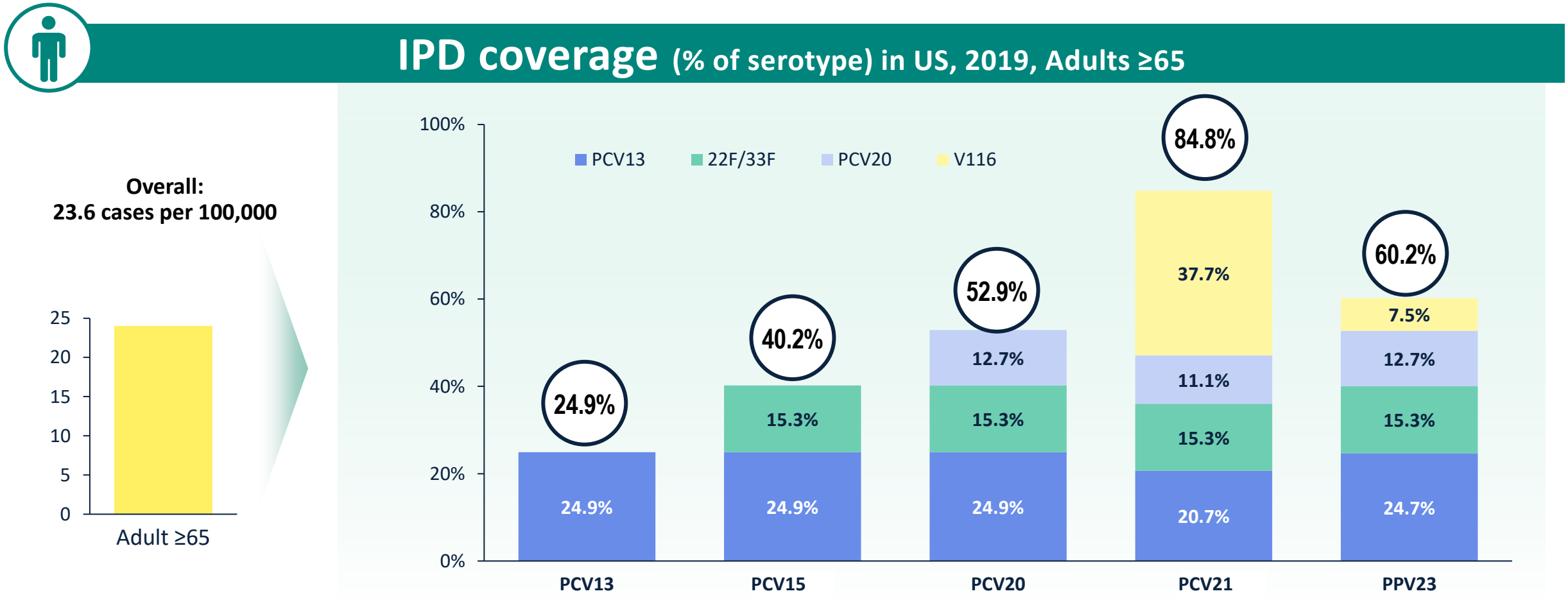


Figure 1. Evolution of Conjugated Pneumococcal Vaccines.

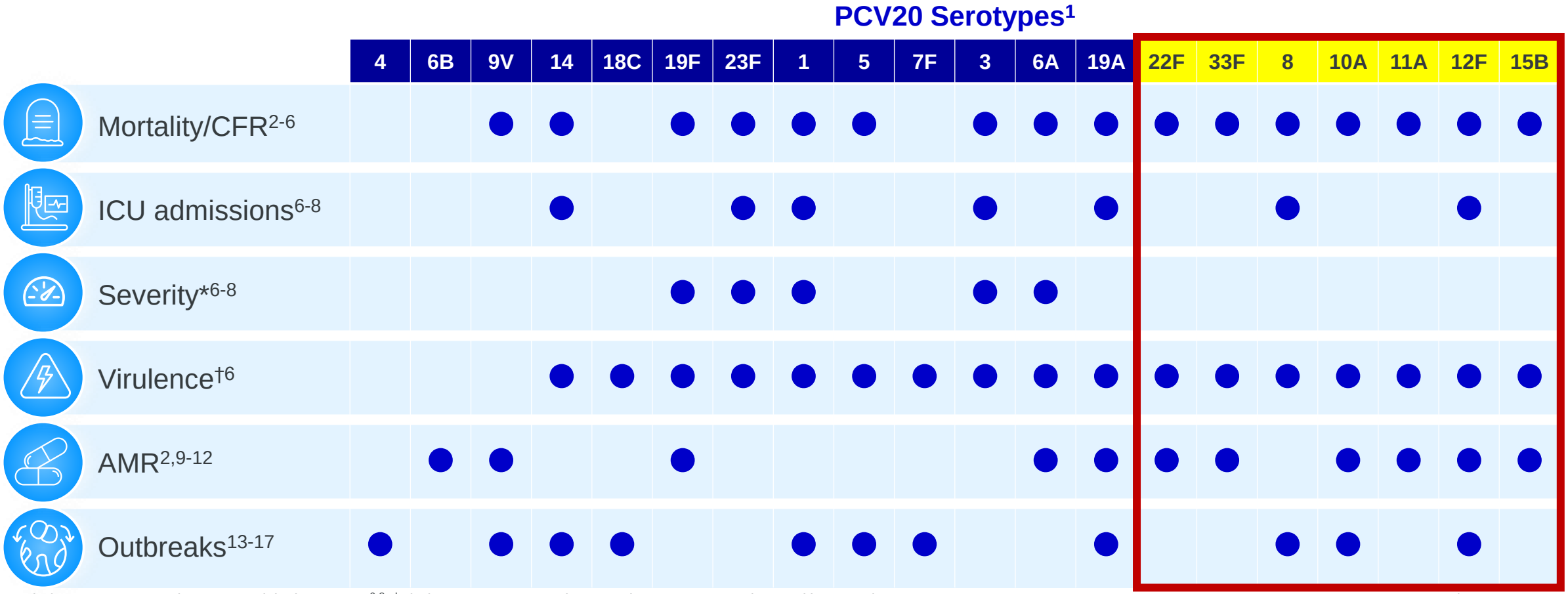
Lale Ozisik ;*Vaccines* **2025**, *13*, 498

US surveillance data indicates that serotypes in PCV are responsible for the majority of residual IPD in adults

In the US for adults ≥65 years, the serotypes in V116 were responsible for 85% of IPD in 2019, underscoring the role not just for expanded valency, but for selection of serotypes based on epidemiologic data.



Serotypes Included in PCV20 Are Medically Significant and Associated With Serious Outcomes



*Includes PSI scores and CURB-65 risk classes 3–5[6-8]. †Virulence was assessed among the 24 serotypes detected by UAD (1, 3, 4, 5, 6A, 7F, 6B, 9V, 14, 18C, 19A, 19F, 23F, 22F, 33F, 8, 10A, 11A, 12F, 15B/C, 2, 9N, 17F, and 20)[6,7].

AMR=antimicrobial resistance; CFR=case fatality rate; CURB-65=Score for Pneumonia Severity: Confusion, BUN >19 mg/dL (>7 mmol/L), Respiratory Rate ≥30, Systolic BP <90 mm Hg or Diastolic BP ≤60 mm Hg, Age ≥65; ICU=intensive care unit; PSI=Pneumonia Severity Index; UAD=urinary antigen detection.

1. PVC20 (Pneumococcal polysaccharide conjugated vaccine, 20-valent,adsorbed) LPD Rev. no: 3.0, Jul 2025. **2.** Méroc E, et al. *Microorganisms*. 2023;11(7):1816. **3.** Amin-Chowdhury Z, et al. *Clin Infect Dis.* 2020;71(8):e235-243. **4.** Müller A, et al. *Emerg Infect Dis*. 2022;28(1):166-179. **5.** De Miguel S, et al. *Microorganisms*. 2021;9(11):2286. **6.** Ramirez J, et al. *Microorganisms*. 2023;11(11):2813. **7.** Menéndez R, et al. *Microorganisms*. 2023;11(11):2781. **8.** Torres A, et al. *Clin Infect Dis.* 2021;73(6):1075-1085. **9.** Park DC, et al. *Ann Lab Med*. 2019;39(6):537-544. **10.** Yun KW, et al. *Vaccine*. 2021;39(40):5787-5793. **11.** Griffith A et al. *Can Commun Dis Rep.* 2024;50(5):121-134. **12.** Cohen R, et al. *Infect Dis Now*. 2024;54(5):104937. **13.** Ikuse T, et al. *Epidemiol Infect.* 2018;146(14):1793-1796. **14.** Sleeman KL, et al. *J Infect Dis*. 2006;194(5):682-688. **15.** Zulz T, et al. *J Clin Microbiol*. 2013;51(5):1402-1407. **16.** Zivich PN, et al. *Pneumonia (Nathan).* 2018;10:11. **17.** Pitts SI, et al. *Public Health Rep.* 2015;130(1):54-59.

Use of PCV15 and PCV20 Among US Adults: Updated Recommendations of the Advisory Committee on Immunization Practices – United States, 2022

TABLE 1. Recommendations for use of 15-valent pneumococcal conjugate vaccine in series with 23-valent pneumococcal polysaccharide vaccine or 20-valent pneumococcal conjugate vaccine in pneumococcal conjugate vaccine-naïve adults aged ≥19 years — United States, 2022

Medical indication group	Specific underlying medical condition	Age group, yrs (19-490 years)	Age group, yrs (≥ 50 years)
None	None	None	1 dose of PCV20 or 1 dose of PCV15 followed by a dose of PPSV23 ≥1 years later*
Underlying medical conditions or other risk factors	Alcoholism Chronic heart disease† Chronic liver disease Chronic lung disease¶ Cigarette smoking Diabetes mellitus Cochlear implant CSF leak Congenital or acquired asplenia Sickle cell disease or other hemoglobinopathies Chronic renal failure** Congenital or acquired immunodeficiencies**,†† Generalized malignancy** HIV infection** Hodgkin disease** Iatrogenic immunosuppression**,§§ Leukemia** Lymphoma** Multiple myeloma** Nephrotic syndrome** Solid organ transplant**	1 dose of PCV20 or 1 dose of PCV15 followed by a dose of PPSV23 ≥1 years later§	1 dose of PCV20 or 1 dose of PCV15 followed by a dose of PPSV23 ≥1 years later*

Current and Proposed Options for a Risk-Based Recommendation

	Current policy	Proposed Policy Option
None of the conditions listed below	No recommendation	No recommendation
Chronic medical conditions† (CMC)	**PPSV23**	PCV20 **OR** PCV15 and PPSV23 **Or 1 dose PCV21**
Cochlear implant, CSF leak	**Both PCV13* and PPSV23**	
Immunocompromising conditions	**Both PCV13* and PPSV23, repeat PPSV23 after 5 years**	

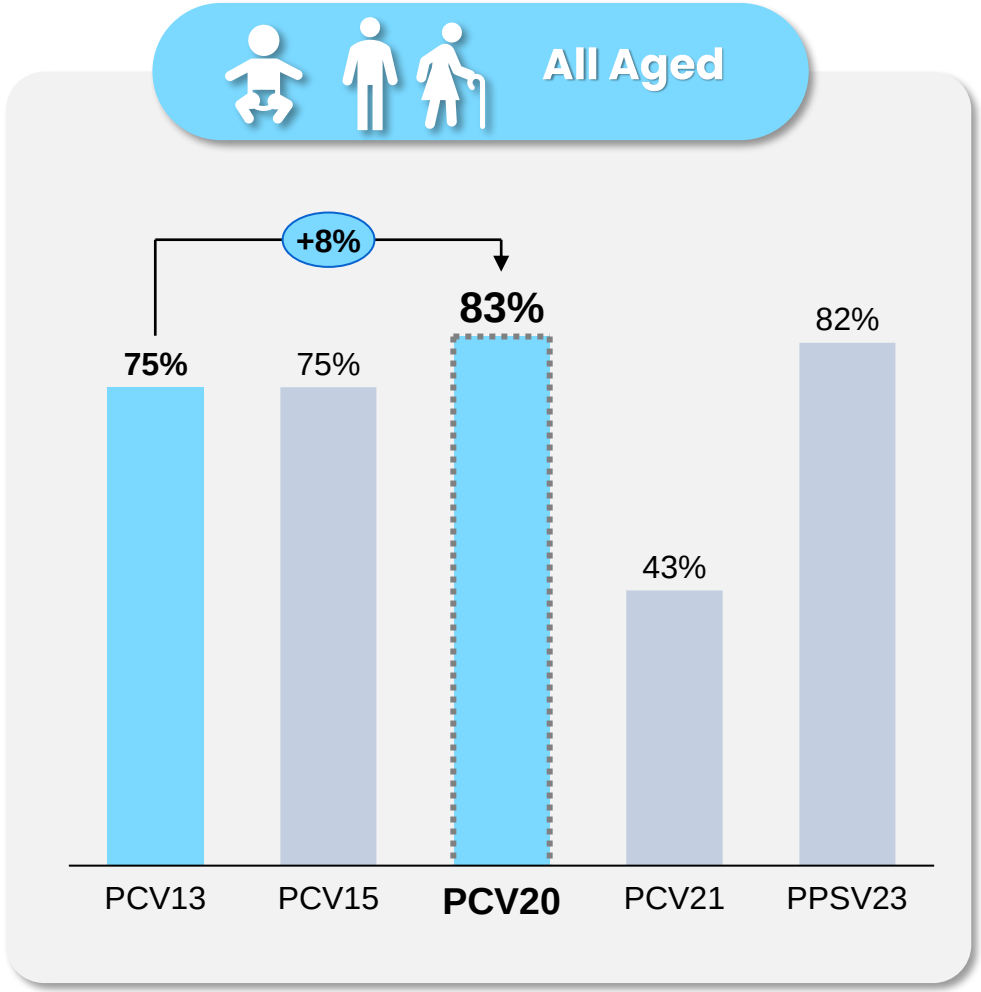
In 2021, PCV20 and PCV15 were licensed by the US-FDA for adults aged ≥18 years, based on studies that compared antibody responses to either PCV20 or PCV15 with those to PCV13

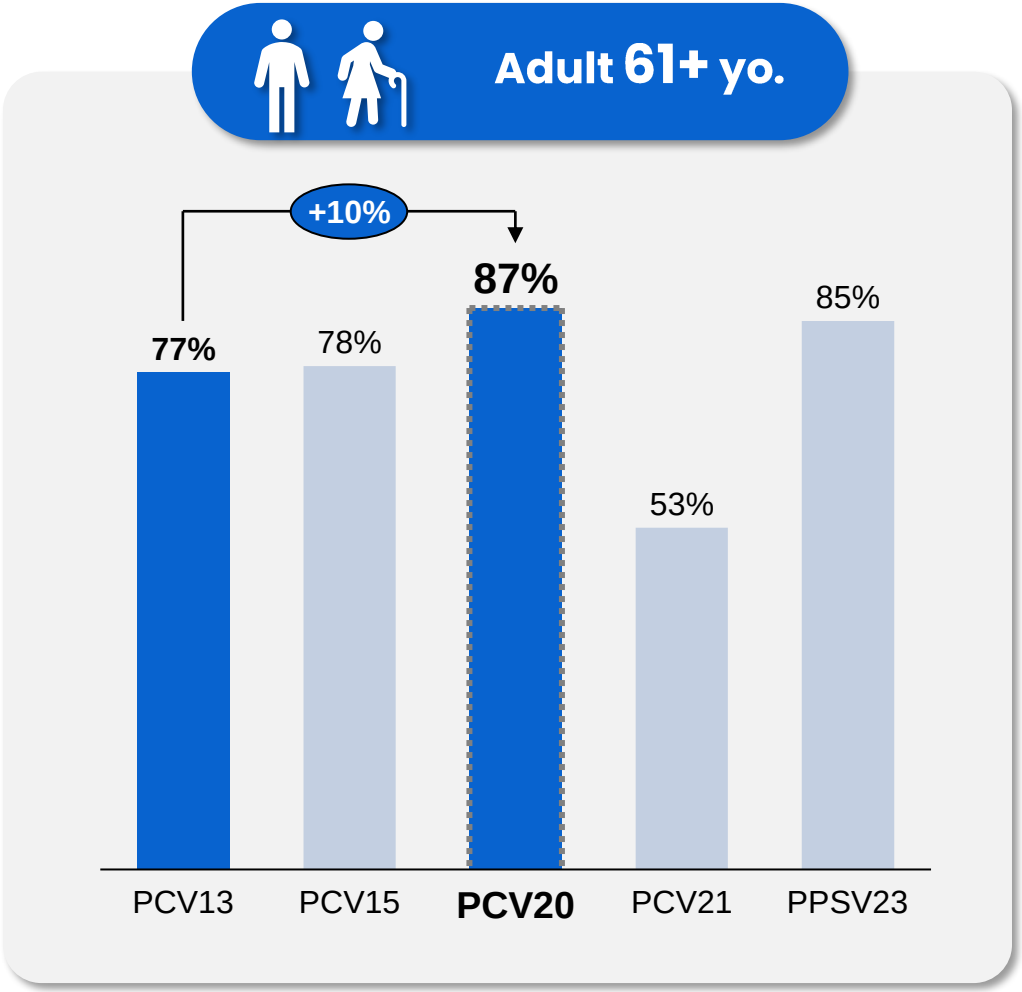
CSF, cerebrospinal fluid; PCV13, 13-valent pneumococcal conjugate vaccine; PCV15, 15-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine; US-FDA, United States Food and Drug Administration.

Kobayashi M, et al. *MMWR* 2022;71 no. 4.

Pneumococcal Vaccines Coverage In Thailand By Age-group[1]

Serotype distribution of *S. pneumoniae* isolates from sterile site in IPD in Thailand by age-group from 2013 – 2016 (n=512), All ages





** PCV21 has not been approved in Thailand*

1. Report of Vaccine Preventable Infections Surveillance, September 1, 2013 – August 31, 2016. Department of Medical Science, Ministry of Public Health.
2. Ozisik L. The New Era of Pneumococcal Vaccination in Adults: What Is Next? Vaccines (Basel). 2025 May 7;13(5):498. doi: 10.3390/vaccines13050498

Use of PCV15 and PCV20 Among US Adults: Updated Recommendations of the Advisory Committee on Immunization Practices – United States, 2022[1]

Current and Proposed Options for a Risk-Based Recommendation

	Current policy	Proposed Policy Option
None of the conditions listed below	No recommendation	No recommendation
Chronic medical conditions† (CMC)	PPSV23	PCV20 OR PCV15 and PPSV23 Or 1 dose PCV21
Cochlear implant, CSF leak	Both PCV13* and PPSV23	
Immunocompromising conditions	Both PCV13* and PPSV23, repeat PPSV23 after 5 years	

Pneumococcal Vaccine Recommendation for Elderly and Adult with Medical Conditions in Thailand[2]

Adult aged ≥65 years

Adult aged 18–64 years
With certain risk factors or underlying medical conditions*

PCV13 or PCV15

OR

PCV20

≥1 year[#] → **PPSV 23****

Consider[#]

*CHF, COPD, cirrhosis or chronic liver diseases, diabetes mellitus, alcoholism, asthma, cigarette smoking,cochlear implants and cerebrospinal fluid leaks
** USA- Optional PCV 20

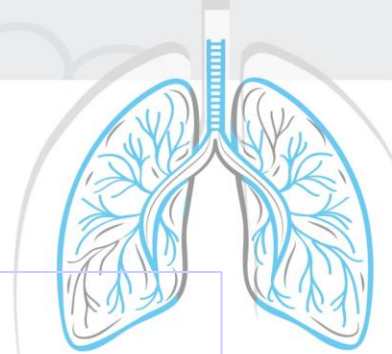
[#]**For immunocompromised aged ≥65 years, cochlear implant, and cerebrospinal fluid leak, PPSV23 is recommended and the recommended interval between PCV13 and PPSV23 is at least 8 weeks**

In 2021, PCV20 and PCV15 were licensed by the US-FDA for adults aged ≥18 years, based on studies that compared antibody responses to either PCV20 or PCV15 with those to PCV13

CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; PCV13, 13-valent pneumococcal conjugate vaccine; PCV15, 15-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine.

1. Kobayashi, Miwako et al. (2022). Use of 15-Valent Pneumococcal Conjugate Vaccine and 20-Valent Pneumococcal Conjugate Vaccine Among U.S. Adults: Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. 71(4). 2. Infectious Disease Association of Thailand. Recommended Adult and Elderly Immunization Schedule 2023. Available at: https://www.pidst.or.th/A1333.html Accessed 22 Feb 2024..

ACIP Recommendations for Adult pneumococcal vaccination with PCV20



According to the CDC's ACIP adult pneumococcal vaccination recommendations, one dose of PCV20 may help protect eligible adult patients who

✓ **Adults 50 years old and above**

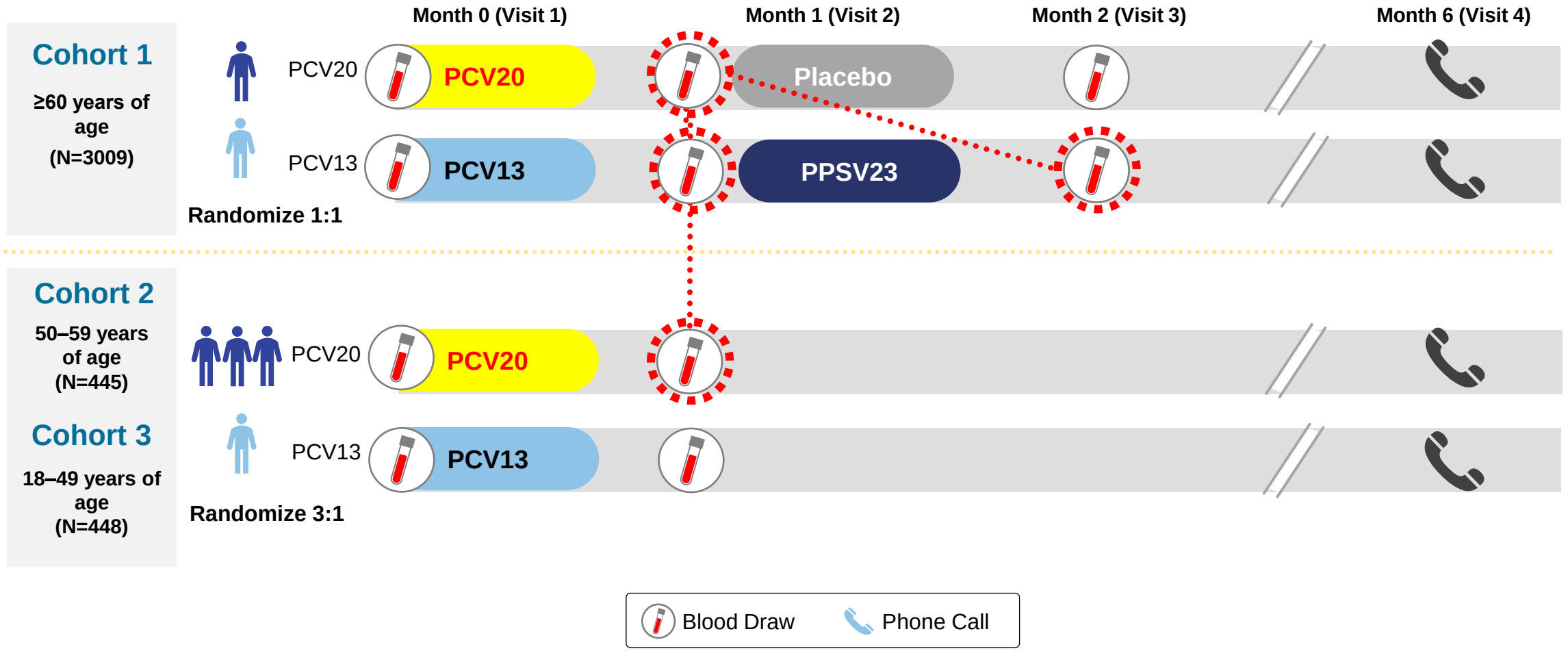
Prior Vaccine/s	PCV20 single dose
None	PCV20
PPSV23 only at any age	≥1 year → PCV20
PCV13 only at any age	≥1 year → PCV20
PCV13 at any age & **PPSV23** at <65 years	≥5 years → PCV20
Shared clinical decision-making	
Complete series: PCV13 at any age & **PPSV23** at ≥65 years	≥5 years → PCV20

✓ **Adults 19 through 49 years old with a risk condition**

Patients			Prior Vaccine/s	PCV20 single dose
With specified Immunocompromising conditions	With cochlear implant or CSF leak	with chronic health conditions		
✓	✓	✓	**None**	PCV20
✓	✓	✓	**PPSV23 only**	≥1 year → PCV20
✓	✓	✓	**PCV13 only**	≥1 year → PCV20
✓	✓		**PCV13** and **PPSV23 1 dose**	≥5 years → PCV20
✓			**PCV13** and **PPSV23 2 doses**	≥5 years → PCV20

1. Kobayashi M, Leidner AJ, Gierke R, et al. Expanded Recommendations for Use of Pneumococcal Conjugate Vaccines Among Adults Aged ≥50 Years: Recommendations of the Advisory Committee on Immunization Practices — United States, 2024. MMWR Morb Mortal Wkly Rep 2025;74:1–8. DOI: http://dx.doi.org/10.15585/mmwr.mm7401a.

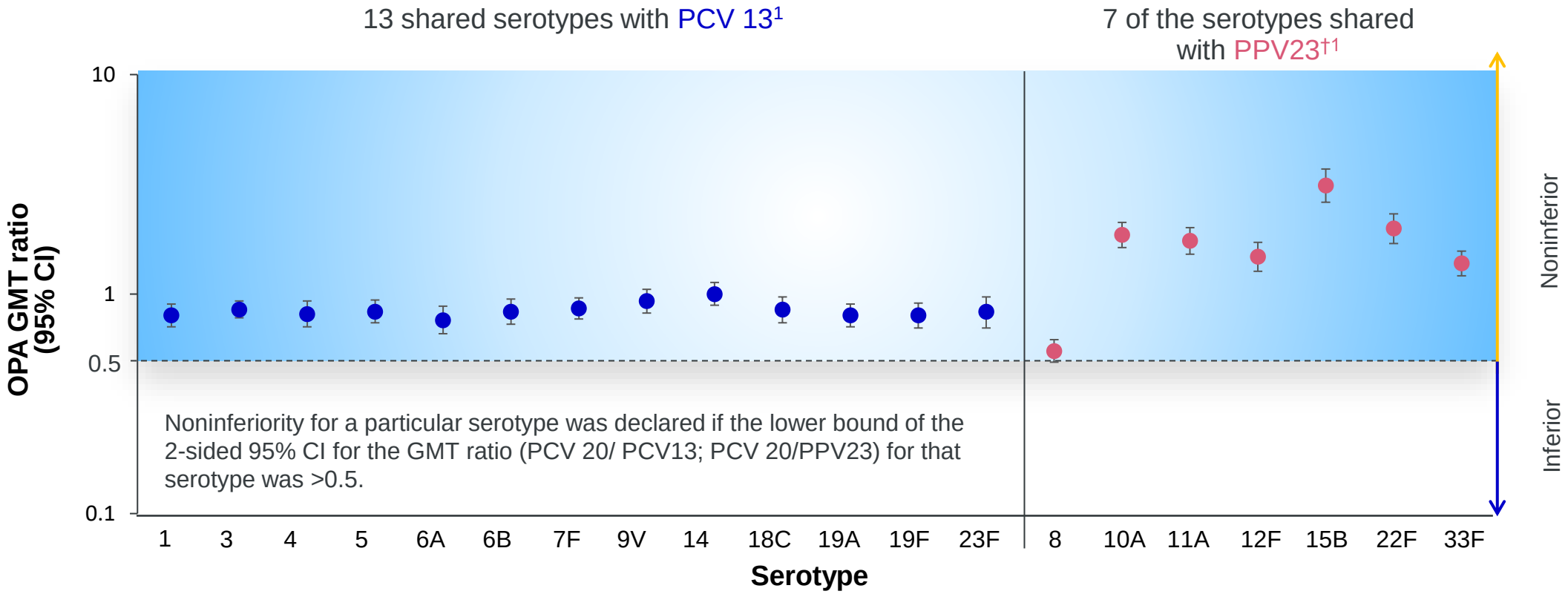
PCV20 Clinical Study Design in Pneumococcal Vaccine–Naive Adults[1]



GMT=geometric mean titers; OPA=opsonophagocytic activity.

1. Essink B, et al. Clin Infect Dis. 2022;75(3):390-398

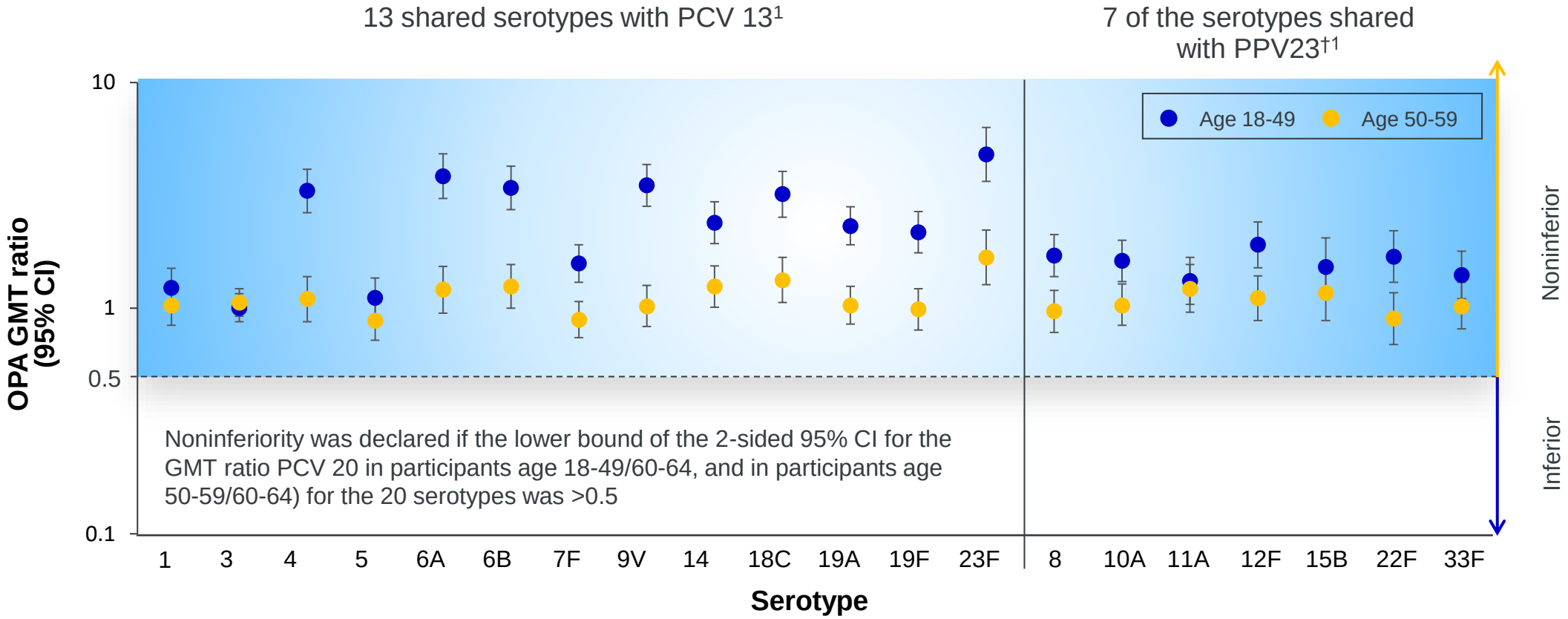
PCV 20 Noninferior Immunogenicity in Pneumococcal Vaccine–Naïve Adults ≥60 Years of Age



Immune responses elicited by PCV 20 (Pneumococcal polysaccharide conjugate vaccine [20-valent, adsorbed]) (n=1157-1430) met noninferiority criteria for all shared serotypes with PCV 13 (n=1390-1419) and 6 of 7 shared serotypes with PPV23 (n=1201-1319). The response to serotype 8 missed the prespecified statistical noninferiority criterion by a small margin (the lower bound of the 2-sided 95% CI for the GMT ratio being 0.49 versus >0.50). As agreed upon with regulators at the study design stage, in supportive analyses, 77.8% of participants in the PCV 20 group achieved a ≥4-fold rise in serotype 8 OPA titres from before vaccination to 1-month post-vaccination[1]

*OPA GMTs 1 month after vaccination with PCV 20 vs control vaccine.[1]
†PPV23 and PCV 20 have 19 shared serotypes. The 7 shared serotypes evaluated are unique to PPV23 and PCV 20, and are not contained in PCV 13.[1,2]
CI=confidence interval; GMR=geometric mean ratio; OPA=opsonophagocytic activity.
1. PVC20 (Pneumococcal polysaccharide conjugated vaccine, 20-valent,adsorbed) LPD Rev. no: 3.0, Jul 2025.; 3. Kobayashi M, Leidner AJ, Gierke R, et al. Expanded Recommendations for Use of Pneumococcal Conjugate Vaccines Among Adults Aged ≥50 Years: Recommendations of the Advisory Committee on Immunization Practices — United States, 2024. MMWR Morb Mortal Wkly Rep 2025;74:1–8. DOI: http://dx.doi.org/10.15585/mmwr.mm7401a.

In Pneumococcal Vaccine–Naïve Adults 18–59 Years of Age PCV20 Demonstrated Noninferior Immunogenicity* Compared to Responses in Adults 60–64 Years of Age



The immune responses in adults aged 18-49 and in adults aged 50-59 were compared to the immune response to the corresponding serotype-specific immune responses in adults aged 60-64 following [PCV 20] (Pneumococcal polysaccharide conjugate vaccine [20-valent, adsorbed])[1]

*OPA GMTs 1 month after vaccination with PCV 20.[1]
†PPV23 and PCV 20 have 19 shared serotypes. The 7 shared serotypes evaluated are unique to PPV23 and PCV 20, and are not contained in PCV 13.[1,2]
CI=confidence interval; GMR=geometric mean ratio; OPA=opsonophagocytic activity.

1. PVC20 (Pneumococcal polysaccharide conjugated vaccine, 20-valent,adsorbed) LPD Rev. no: 3.0, Jul 2025.; 3. Kobayashi M, Leidner AJ, Gierke R, et al. Expanded Recommendations for Use of Pneumococcal Conjugate Vaccines Among Adults Aged ≥50 Years: Recommendations of the Advisory Committee on Immunization Practices — United States, 2024. MMWR Morb Mortal Wkly Rep 2025;74:1–8. DOI: http://dx.doi.org/10.15585/mmwr.mm7401a.

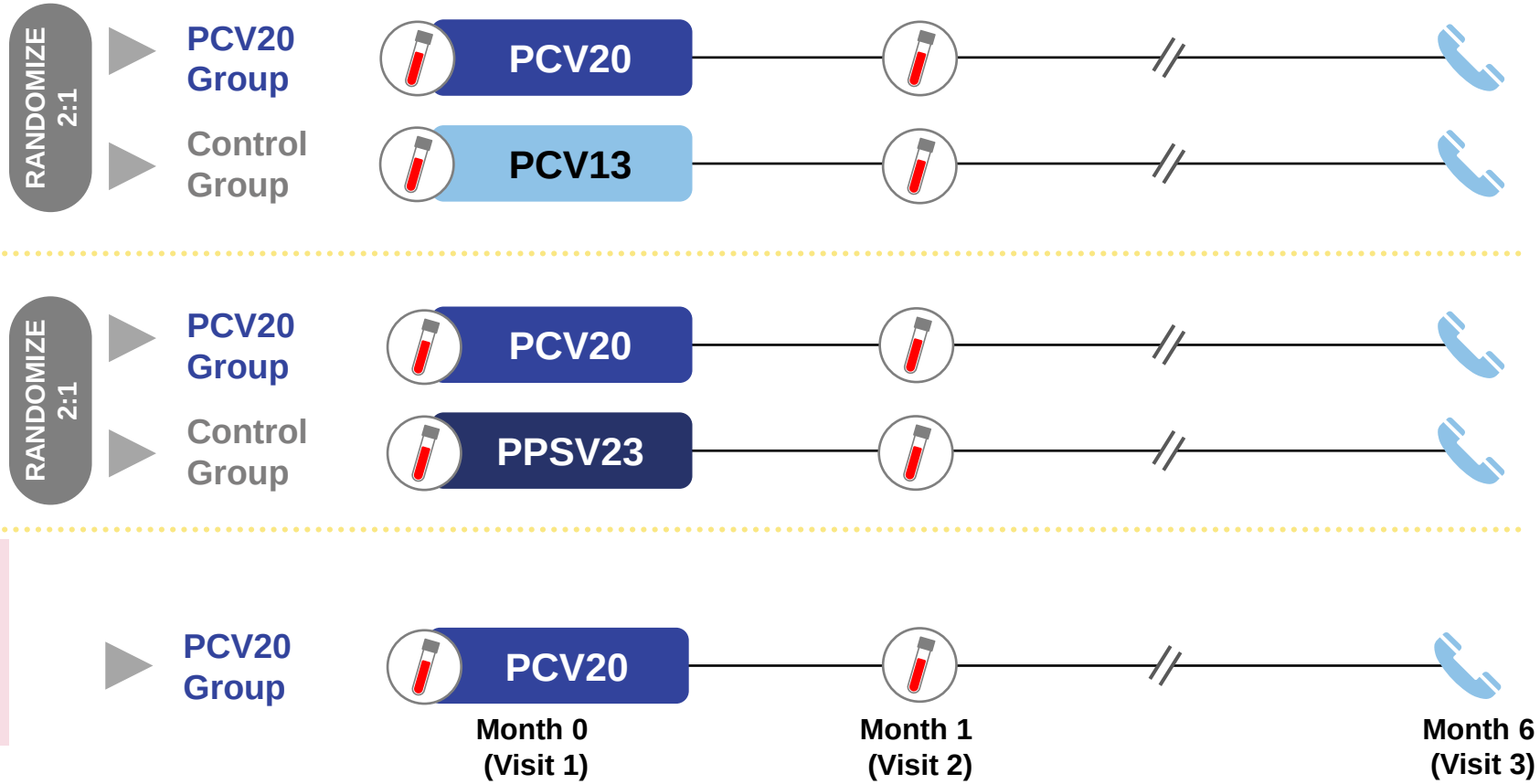
PCV20 Open-Label Clinical Study Design in Adults with Previous Pneumococcal Vaccination[1]

Safety and immunogenicity of PCV20 was evaluated in a randomized, open-label clinical study in adults ≥65 years of age with prior pneumococcal vaccination history

Cohort A
PPSV23 (n=253)
Previously vaccinated ≥1 to ≤5 years before enrollment

Cohort B
PCV13 (n=246)
Previously vaccinated ≥6 months before enrollment

Cohort C
PCV13 + PPSV23 (n=125)
Previously vaccinated with PCV13 followed by PPSV23 ≥1 year before enrollment

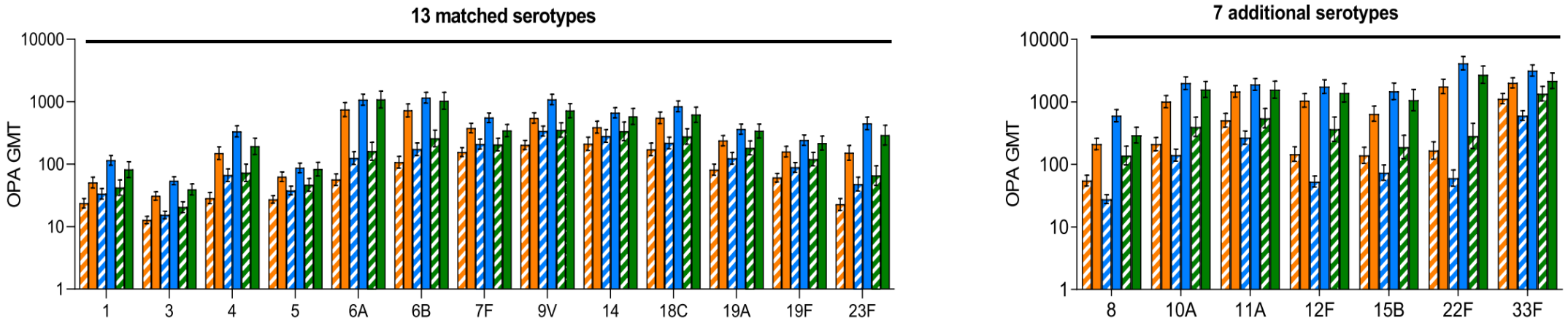


PPSV23=23-valent polysaccharide vaccine. PCV13= Pneumococcal 13-valent Conjugate Vaccine [Diphtheria CRM197 Protein]; PCV20= 20-valent pneumococcal conjugate vaccine

1. Cannon K, et al. *Vaccine*. 2021;39(51):7494-7502.

PCV20 is Immunogenic Regardless of Pneumococcal Vaccination History in Adults 65 Years and Older[1]

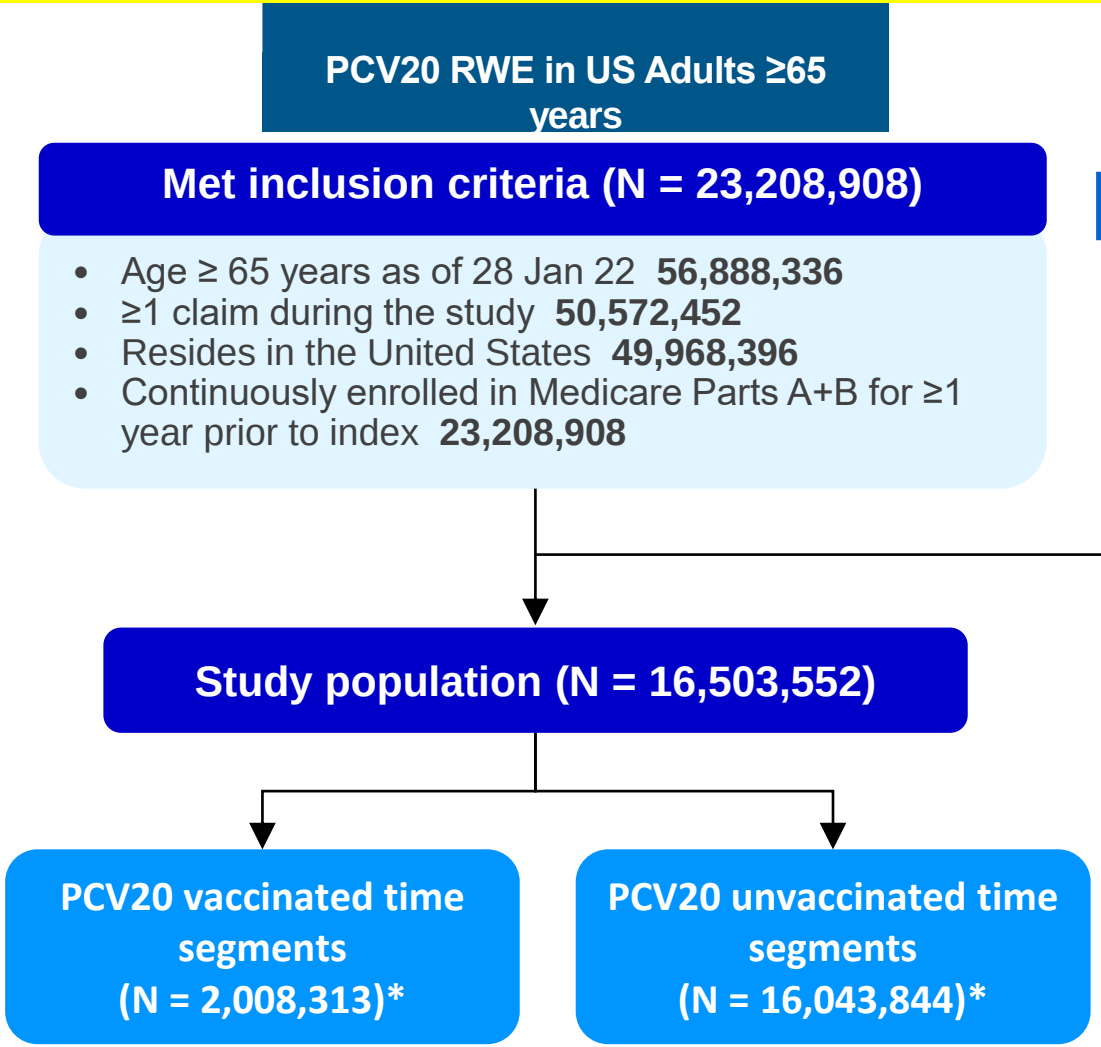
Pneumococcal OPA GMTs were evaluated before and 1-month after administration of PCV20 in adults 65 years of age and older with prior pneumococcal vaccination



PPSV23=23-valent polysaccharide vaccine. PCV13= Pneumococcal 13-valent Conjugate Vaccine [Diphtheria CRM197 Protein]; PCV20= 20-valent pneumococcal conjugate vaccine

1. Cannon K, et al. *Vaccine*. 2021;39(51):7494-7502.

Real-world effectiveness of PCV20 among adults ≥65 years in the United States



Results: Attrition diagram

Individuals excluded (N = 6,705,356)

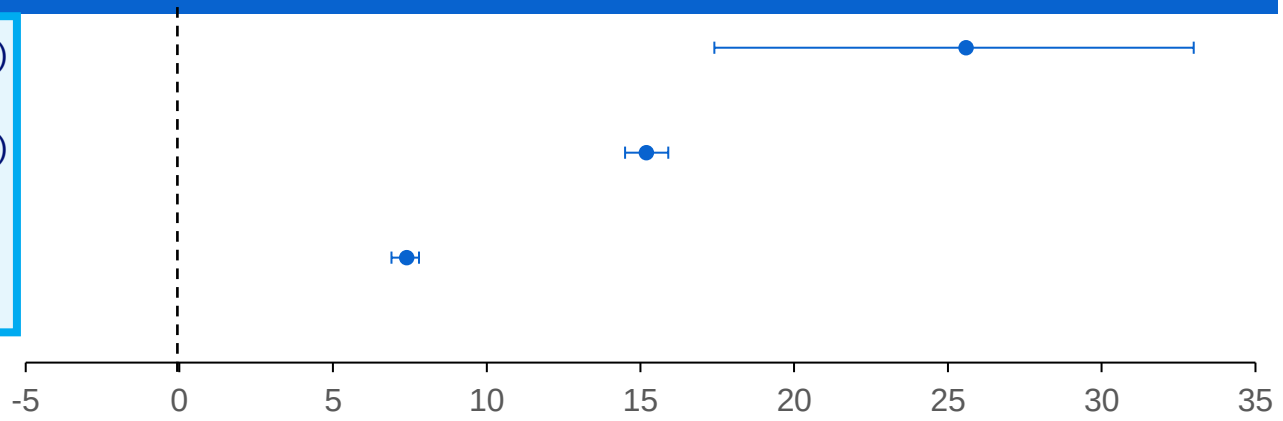
- Previous record of death or missing sex† **543**
- Medicare Part C between 28 Jan 22 and index **46,482**
- PCV20 prior to 1 Jul 22 **230,767**
- PCV15 prior to 1 Jul 22 **3,126**
- PPSV23 <2 years prior to index **2,236,862**
- PCV13 <5 years prior to index **4,156,311**
- Outcome <30 days after PCV20 vaccination **31,265**

*Represents sample size prior to IPTW weighting; †Categories were combined to mask counts <1.
PCV13, 13-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine.

1. Miles, AC. Real-world effectiveness of 20-valent pneumococcal conjugate vaccine among adults ≥65 years of age in the United States [Oral presentation]. Presented at: ESCMID Global 2025; Aprill 11, 2025; Vienna, Austria.

Results: PCV20 vaccine effectiveness in adults aged ≥65 years against all IPD, ACP, and LRTI[1–3]

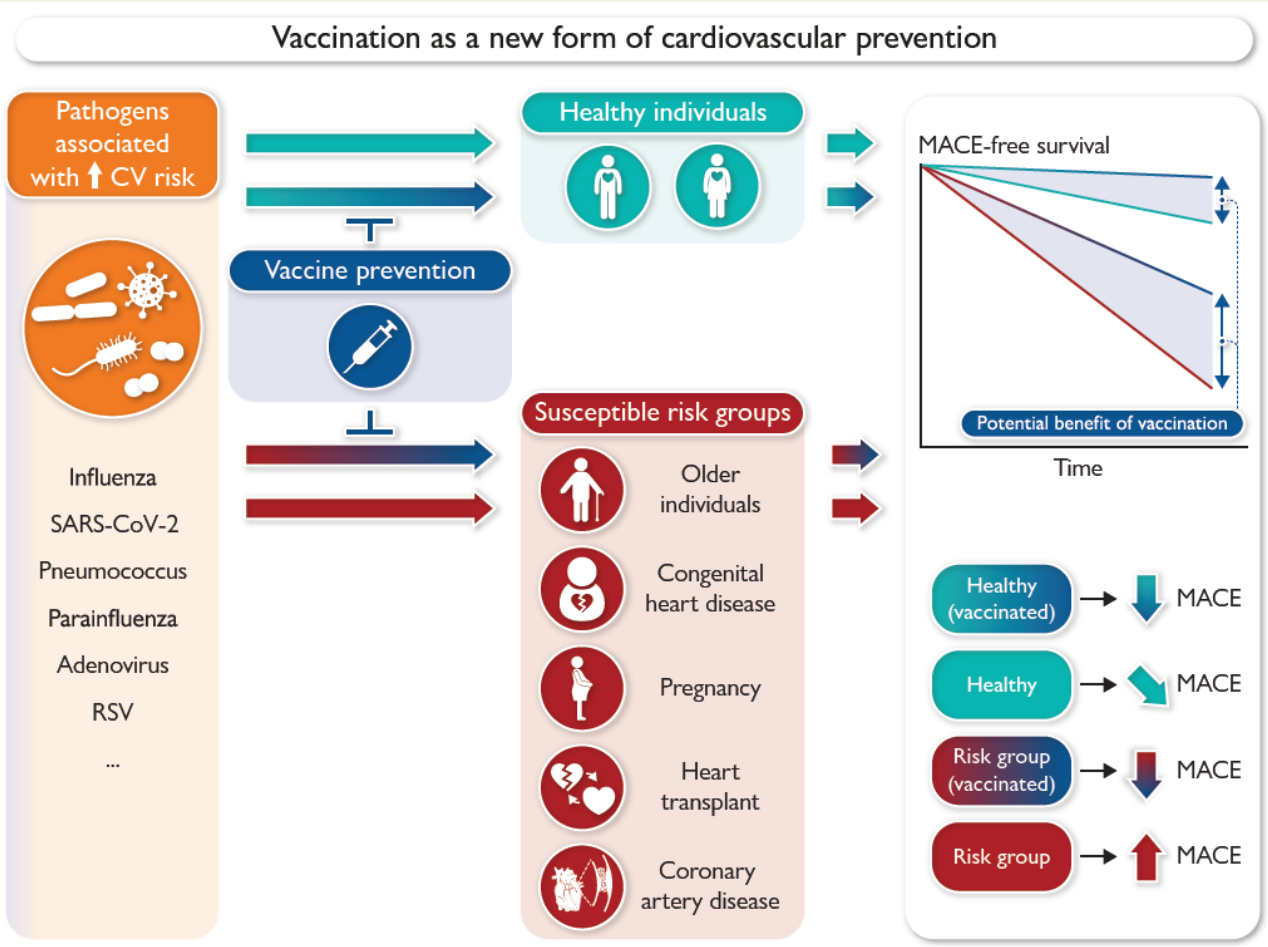
Endpoint	Adjusted VE, % (95% CI)
All IPD	**25.6** (17.4, 33.0)
ACP (all cause pneumonia)	**15.2** (14.5, 15.9)
LRTI	**7.4** (6.9, 7.8)



ACP, all-cause pneumonia; CI, confidence interval; IPD, invasive pneumococcal disease; LRTI, lower respiratory tract infection; PCV20, 20-valent pneumococcal conjugate vaccine; VE, vaccine effectiveness.

1. Miles, AC. Real-world effectiveness of 20-valent pneumococcal conjugate vaccine among adults ≥65 years of age in the United States [Oral presentation]. Presented at: ESCMID Global 2025; Aprill 11, 2025; Vienna, Austria; 2. Miles, AC. Real-world Effectiveness of 20-valent Pneumococcal Conjugate Vaccine Among Older Adults in the United States. Presented at: ERS congress 2025; September 27, 2025. Amsterdam, Netherlands.; 3. Miles, AC. Real-world effectiveness of 20-valent pneumococcal conjugate vaccine among adults 65–74, 75–84, and ≥85 years of age in the United States. Poster presented at: IDWeek 2025; October 19-22, 2025; Atlanta, United states.

Vaccination as a new form of cardiovascular prevention: a European Society of Cardiology clinical consensus statement



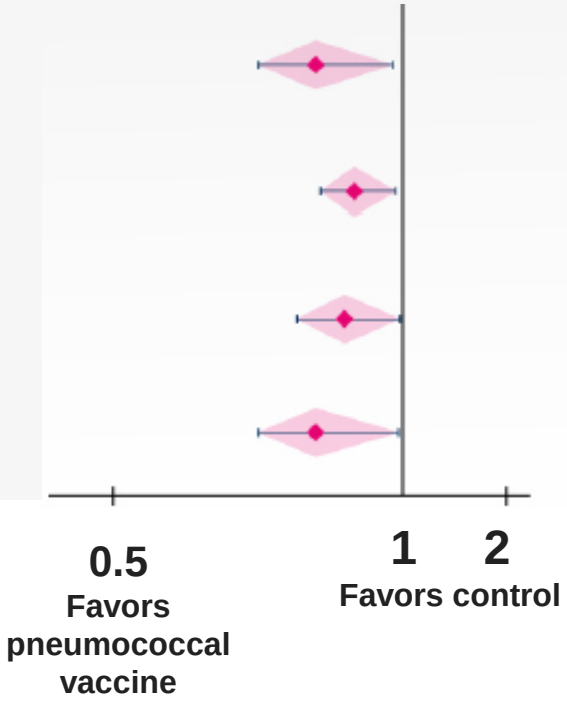
Pneumococcal Vaccination	Pneumococcal vaccines are 10–70% effective in preventing invasive disease. A meta- analysis showed a 10% reduction in CV events, including myocardial infarction, in individuals aged ≥15 years
RSV Vaccination	RSV can cause cardiac events in up to 20% of individuals with pre-existing heart conditions during acute infection. In adults over 10, the RSV vaccine is 89% effective in preventing lung infections and may reduce CV complications
COVID-19 Vaccination	Patients with cardiovascular disease (CVD) face a more severe course of COVID-19 and a ~30% higher risk of developing long COVID. Vaccination reduces the risk of long COVID by 43% and significantly lowers hospitalization and mortality

Heidecker B, Libby P, Vassiliou VS, et al. Vaccination as a new form of cardiovascular prevention: a European Society of Cardiology clinical consensus statement. Eur Heart J. Published online June 30, 2025. doi:10.1093/eurheartj/ehaf384

Pneumococcal Vaccination associated with decreased risk of CV outcomes

A systematic review and meta-analysis of cohort studies
11 studies | 332,217 participants | mean follow-up 20.1 months

	Relative Risk	95% CI
Total CV events (random effects)	**0.81**	(0.71-0.97)
CV mortality (fixed effects)	**0.92**	(0.81-0.98)
Myocardial infarction (elderly-fixed)	**0.90**	(0.82-0.999)
Cerebrovascular events (elderly-random)	**0.81**	(0.75-0.99)



RR= Relative risk ratio

Vlachopoulos CV el al. Association between pneumococcal vaccination and cardiovascular outcomes: a systematic review and meta-analysis of cohort studies. *Eur J Prev Cardiol.* 2015;22(9):1185-1199. doi:10.1177/2047487314549512 Adapted from figure 2

Cost-effectiveness of use of 20-valent pneumococcal conjugate vaccine among adults in Germany

Objective: To evaluate the economic viability and health impact of introducing the 20-valent pneumococcal conjugate vaccine (PCV20) for adults in Germany by comparing with using PCV15 followed by PPSV23

PCV20 compared to PSV15+PPSV23

Clinical outcomes

- Lower **IPD** case -928
- Lower **CAP inpatient** case -12,485
- Lower **CAP outpatient** case - 5,978
- Lower **No. of deaths** -2,776
- Increase **total LY** +20,277
- Increase **total QALY** +13,398

Economic outcomes

- Medical care cost -97.02 M€
- Vaccination cost -357.03 M€
- Total cost -454.04 M€

PCV20 demonstrates superior cost-effectiveness

compared to current vaccination strategies by reduction in pneumococcal disease incidence and improved health outcomes. Also, reduced healthcare costs and a positive cost-benefit ratio.

PD: invasive pneumococcal disease; CAP: community-acquired pneumonia; LY: life-year; QALY: quality adjusted life year

Kühne F, Achtert K, Püschner F, Urbanski-Rini D, Schiller J, Mahar E, Friedrich J, Atwood M, Sprenger R, Vietri J, von Eiff C, Theilacker C. Cost-effectiveness of use of 20-valent pneumococcal conjugate vaccine among adults in Germany. Expert Rev Vaccines. 2023 Jan-Dec;22(1):921-932.

Summary PCV20 Clinical Study Design in Pneumococcal Vaccine–Naive Adults

Immunogenicity

- **Noninferiority criteria were met for all 13 matched serotypes** between PCV13 and PCV20
- OPA GMTs for 6 of 7 additional serotypes shared with PPSV23 were higher in the PCV20 group 1-month after vaccination, with **robust increases in OPA GMTs for all 7 additional serotypes** observed from baseline to 1-month after PCV20
- **Similar percentages of participants in PCV20 and PCV13 groups had ≥4-fold rises** in OPA titers from before to 1-mo after vaccination **and OPA titers ≥LLOQ** 1-mo after vaccination

Summary PCV20 Clinical Study Design in Adults with Previous Pneumococcal Vaccination

Immunogenicity

- **PCV20 is immunogenic regardless of Pneumococcal Vaccination History** in Adults 65 Years and Older[1]

Essink B, et al. *Clin Infect Dis.* 2022;75(3):390-398.

Use of PCV15 and PCV20 Among US Adults: Updated Recommendations of the Advisory Committee on Immunization Practices – United States, 2022[1]

Current and Proposed Options for a Risk-Based Recommendation

	Current policy	Proposed Policy Option
None of the conditions listed below	No recommendation	No recommendation
Chronic medical conditions† (CMC)	PPSV23	PCV20 OR PCV15 and PPSV23 Or 1 dose PCV21
Cochlear implant, CSF leak	Both PCV13* and PPSV23	
Immunocompromising conditions	Both PCV13* and PPSV23, repeat PPSV23 after 5 years	

Pneumococcal Vaccine Recommendation for Elderly and Adult with Medical Conditions in Thailand[2]

Adult aged ≥65 years

Adult aged 18–64 years
With certain risk factors or underlying medical conditions*

PCV13 or PCV15

OR

PCV20

≥1 year[#] → **PPSV 23****

Consider[#]

*CHF, COPD, cirrhosis or chronic liver diseases, diabetes mellitus, alcoholism, asthma, cigarette smoking,cochlear implants and cerebrospinal fluid leaks
** USA- Optional PCV 20

[#]**For immunocompromised aged ≥65 years, cochlear implant, and cerebrospinal fluid leak, PPSV23 is recommended and the recommended interval between PCV13 and PPSV23 is at least 8 weeks**

CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; PCV13, 13-valent pneumococcal conjugate vaccine; PCV15, 15-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine.

1. Kobayashi, Miwako et al. (2022). Use of 15-Valent Pneumococcal Conjugate Vaccine and 20-Valent Pneumococcal Conjugate Vaccine Among U.S. Adults: Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. 71(4). 2. Infectious Disease Association of Thailand. Recommended Adult and Elderly Immunization Schedule 2023. Available at: https://www.pidst.or.th/A1333.html Accessed 22 Feb 2024..

Update on Pneumococcal and RSV Prevention

Overview:

Pneumococcal Vaccines:

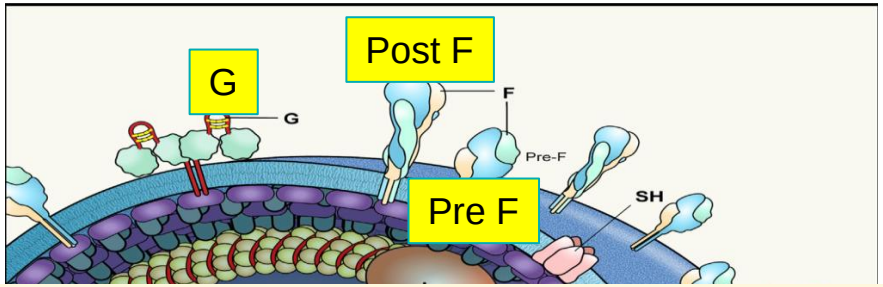
- Burden of Pneumococcal Diseases in Adult and Elderly
- Pneumococcal Conjugated Vaccines:
  Recommendation and Real-World Effectiveness

RSV Vaccines:

- Burden of RSV Infections in Adult and Elderly
- Bivalent-PreF RSV vaccine:
  Recommendation and Real-World Effectiveness

Respiratory Syncytial Virus (RSV)

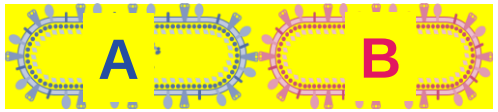
Average R_0 ~ 3[1]



F: surface fusion protein

- Essential for viral entry[2,3]
- Mediates fusion between the viral envelope and airway epithelial cells[4]
- **Highly conserved between RSV-A and RSV-B[5]**

- **RSV is categorized into two co-circulating subgroups, dictated by sequence of the G glycoprotein[2]:**
  - **RSV A**
  - **RSV B**

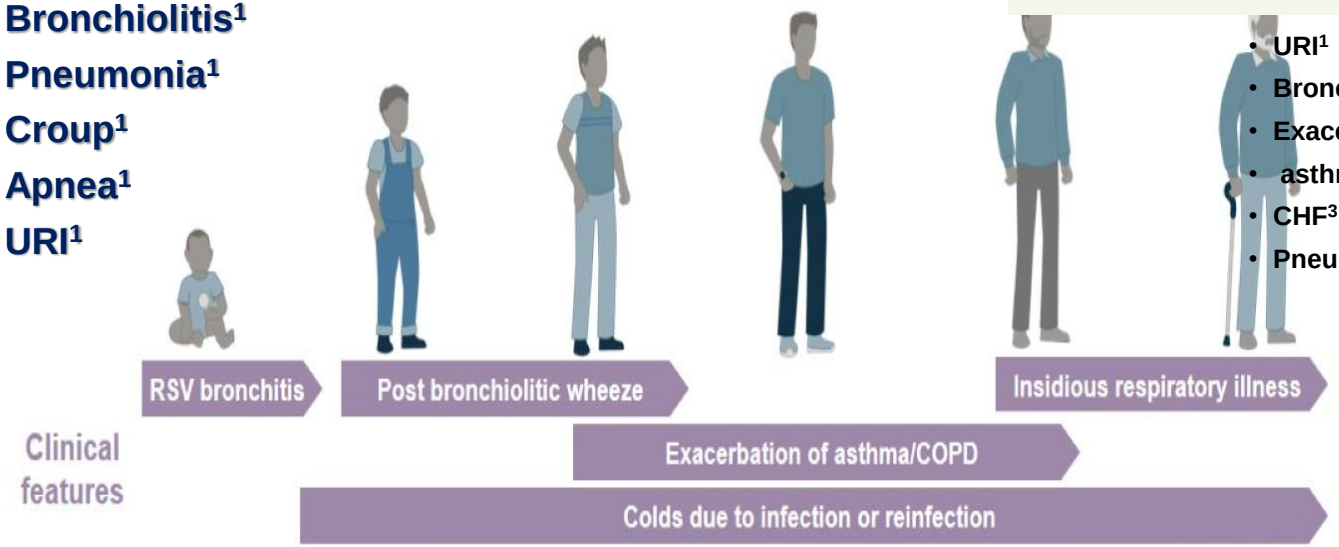


G: attachment glycoprotein

- Targets ciliated cells of the airways[2]
- Variable between RSV-A and RSV-B[5,6]

Older adults are at high risk of severe RSV infection

- **Bronchiolitis[1]**
- **Pneumonia[1]**
- **Croup[1]**
- **Apnea[1]**
- **URI[1]**



- **URI[1]**
- **Bronchitis[1]**
- **Exacerbation**
- **asthma[1], COPD[3],**
- **CHF[3]**
- **Pneumonia[1]**

Children infected by age 2 years.[1]

1. Centers for Disease Control and Prevention (CDC), 2(EXPERT REVIEW OF CLINICAL IMMUNOLOGY
https://doi.org/10.1080/1744666X.2025.2494658

- An exceptional mucosal pathogen of the respiratory epithelium
- Infects virtually all children before 3 years of age
- Infection confers partial immunity → reinfection throughout life
- **Underrecognized in older adults, particularly frail, older adults and immunocompromised persons**

COPD, chronic obstructive pulmonary disease.
Openshaw PJ, et al. Annu Rev Immunol. 2017;35:501-532.

1. Jain H et al. Respiratory syncytial virus infection. In: StatPearls. NCBI Bookshelf version. StatPearls Publishing; 2022. https://www.ncbi.nlm.nih.gov/books/NBK459215/. Accessed August 2024; **2.** Bergeron HC, Tripp RA. Viruses 2021;13:2478; **3.** Jung HE et al. Viruses 2020;12:102; **4.** Nuttens C et al. Infect Dis Ther 2024; 13:1725-1742

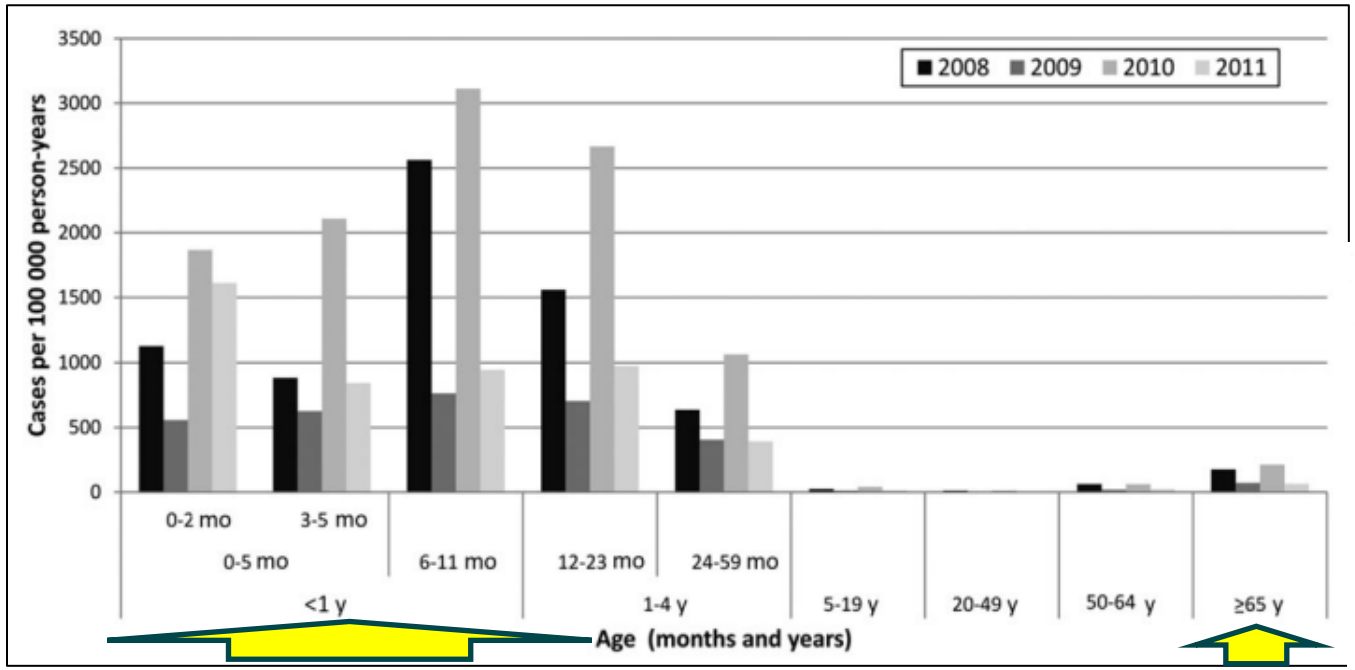
1. Centers for Disease Control and Prevention (CDC), 2023. Symptoms and Care. https://www.cdc.gov/rsv/symptoms/?CDC_AAref_Val=https://www.cdc.gov/rsv/about/symptoms.html(accessed June 2024); 2. Openshaw PJM et al. Annu Rev Immunol 2017;35:501–532; 3. Walsh E et al. Clin Chest Med 2017;38(1):29–36; 4. Branche AR et al. Clin Infect Dis 2022;74(6):1004–1011; 5. Centers for Disease Control and Prevention (CDC), 2023. RSV in Older Adults and Adults with Chronic Medical Conditions. https://www.cdc.gov/rsv/older-adults/?CDC_AAref_Val=https://www.cdc.gov/rsv/high-risk/older-adults.html(accessed June 2024)

RSV Acute Respiratory Infection Hospitalization in Thailand, 2008-2011

- Active population-based surveillance in 2 rural Thailand provinces **2008–1**
- 13,982 enrolled patients hospitalized with ALRI,

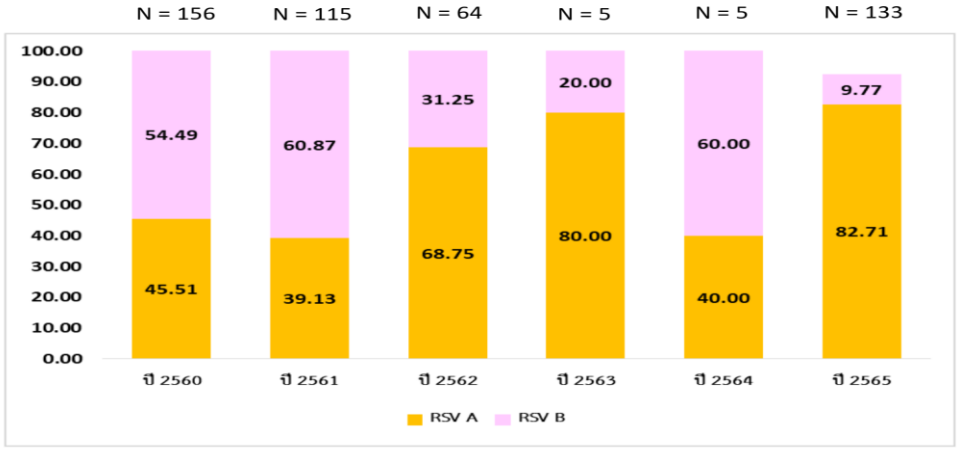
8.1% were RSV RT-PCR positive

Incidence rates of RSV–associated ALRI hospitalizations, 2008-2011

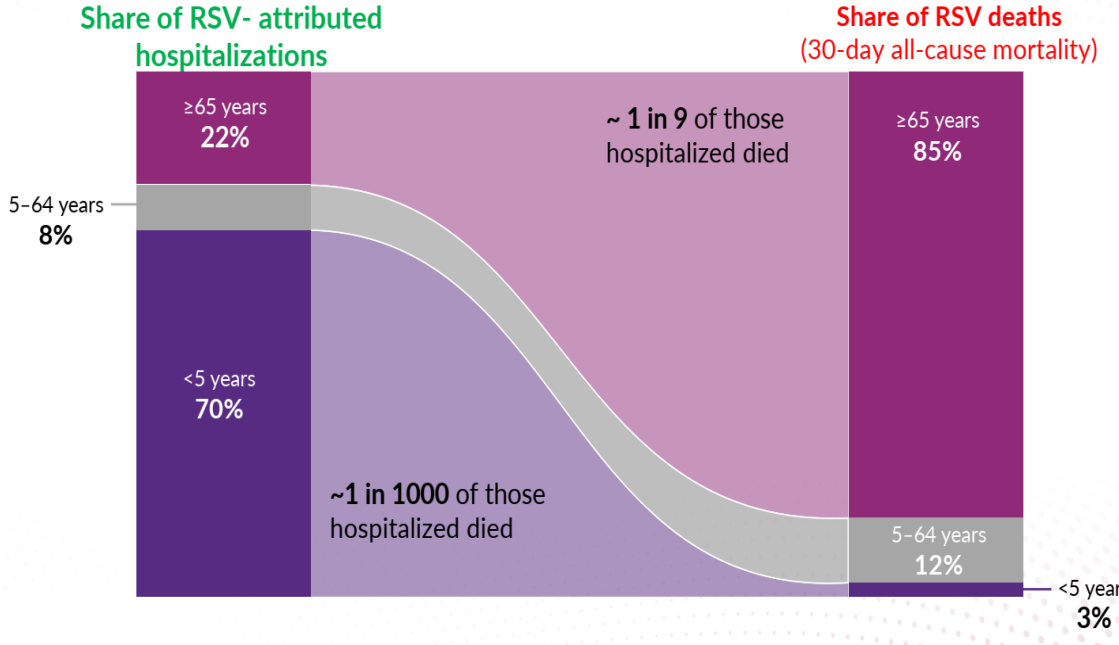


The highest rates occurred among **children aged 6–11 months**, at 1,903 cases per 100,000 persons/year
But in 2009, 2010 and 2011 the highest rate occurred among thos aged 0-5 month

รูปที่ 4 ร้อยละของผู้ติดเชื้อไวรัส RSV จำแนกตามสายพันธุ์ A และ B เปรียบเทียบ ปี 2560-2565



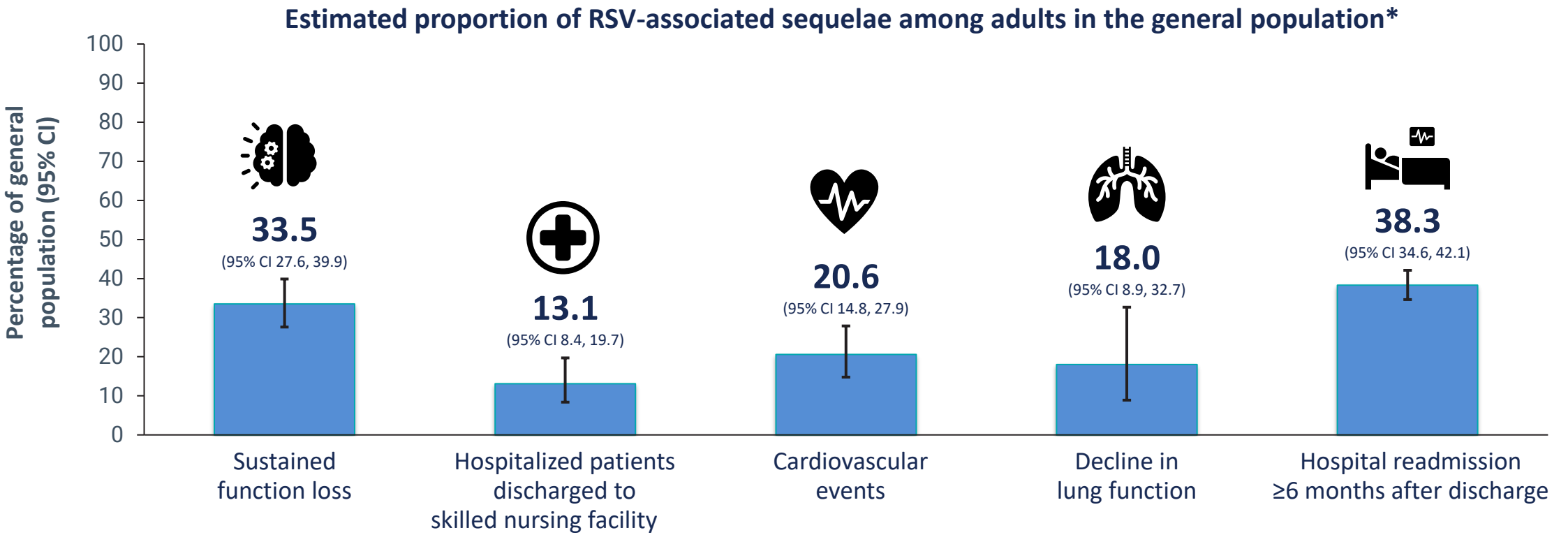
Data from Ontario show that older adults make up a disproportionate number of RSV-attributed deaths



Naorat et al, The Journal of Infectious Diseases, https://doi.org/10.1093/infdis/jit456

Ontario population-based laboratory and health administrative data, 2010/2011–2018/2019 respiratory virus seasons. From: Hamilton MA, et al. Influenza Other Respir Viruses. 2022;16(6):1072-1081.

RSV-associated sequelae occur frequently in adult patients

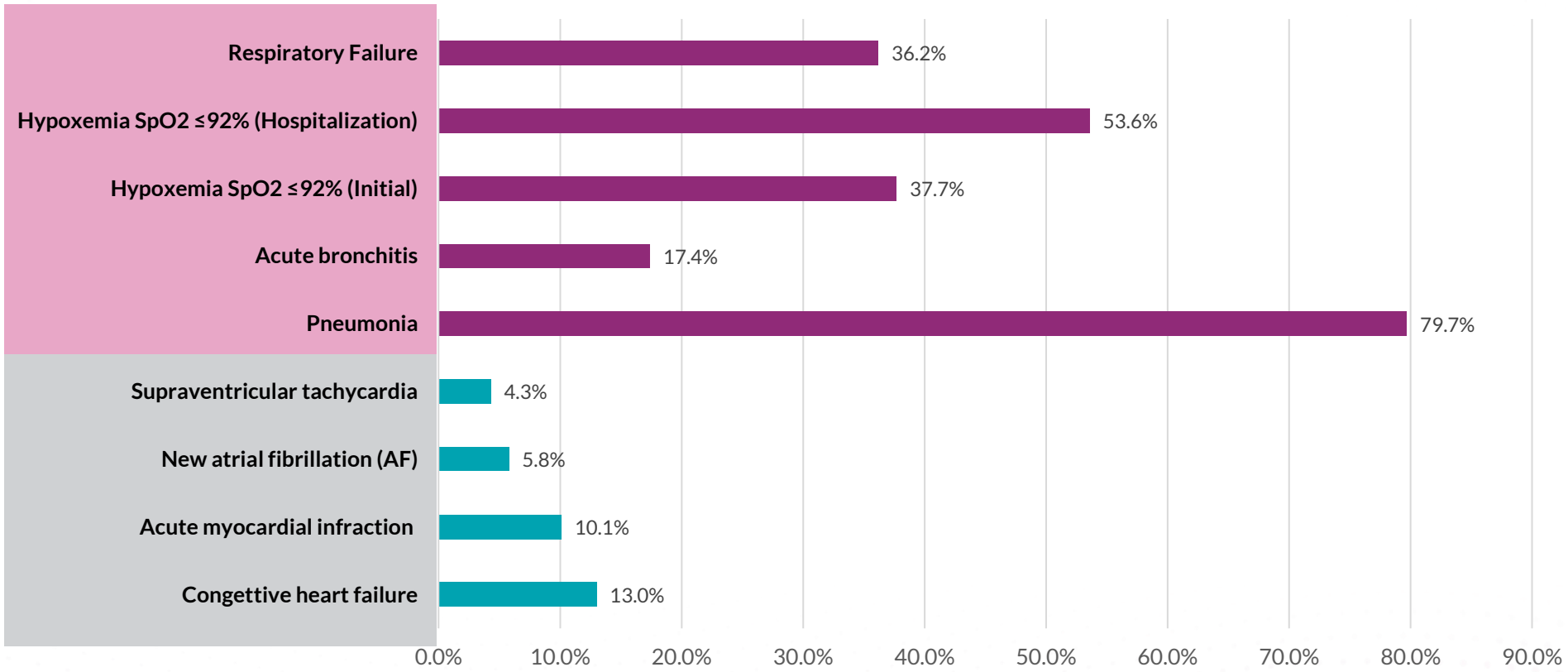


Estimated **relative risk of cardiovascular events** in **RSV vs influenza** was **1.4** (95% CI 1.0, 2.0)

*Systematic review with random-effects meta-analyses using restricted maximum likelihood to calculate proportions and relative risks of sequelae in adult patients with RSV within 1 year of hospitalization or resolution of acute infection. The review included 21 studies, of which function loss (n=1); discharged to skilled nursing facility (n=2); cardiovascular events (n=2); decline in lung function (n=1); readmission (n=5) are presented in this graph.
CI, confidence interval; RSV, respiratory syncytial virus.
Ubamadu E, et al. *Infect Dis Ther.* 2024;13:1399-1417.

Complication of RSV in adults in Thailand

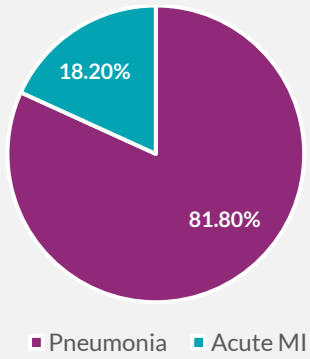
- Retrospective and prospective cohort studies were conducted at a university hospital in adult ≥15 years between May 2014 and December 2015, N = 69



15.9 %

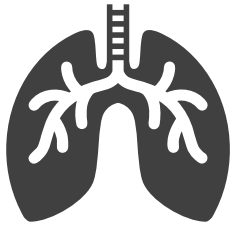
In-hospital mortality rate

Cause of Hospitalization Death



Chuaychoo B, et al. *J Clin Virol [Internet].* 2019 [cited 2023 Dec 2];117:103–8. Available from: https://pubmed.ncbi.nlm.nih.gov/31280089/

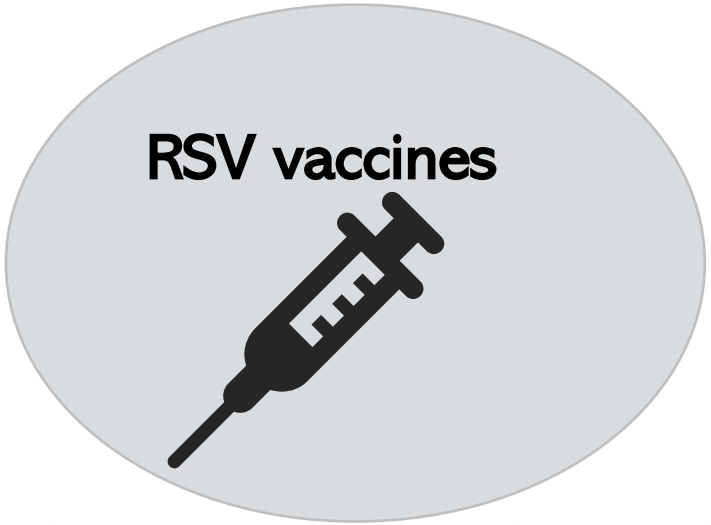
Benefits of RSV vaccines for Older Adult and High-Risk Adult

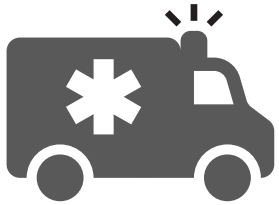


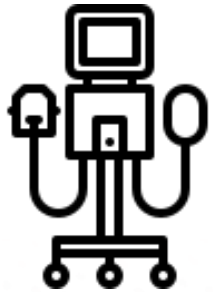
Prevent Acute RTI included Pneumonia[1]

Prevent Lower Respiratory Tract Infecton[1]

Reduce RSV hospitalization[2]







Reduce Emergency Department visit[2]

Prevent Cardiovascular Events ?

Reduce Invasive mechanical ventilation[3]

1. Papi A, Ison MG, Langley JM, *et al;* AReSVi-006 Study Group. Respiratory syncytial virus prefusion F protein vaccine in older adults. *N Engl J Med.* 2023 Feb 16;388(7):595-608, 2. CDC 2024, Effectiveness of adult respiratory syncytial virus (RSV) vaccines, 2023–2024. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2024-06-26-28/07-RSV-Adult-Surie-508.pdf (access 15 August 2024)., 3. Surie, Diya, et al. *JAMA*, 30 Aug. 2025, DOI:10.1001/jama.2025.15896.

RSV Vaccine Recommendations for Adults 50 Years of Age and Over

As of mid-April 2025, about **14.65 million RSV vaccine doses** have been administered to adults aged ≥ 60 rs

Recommendation
-Routine RSV immunisation for **all adults aged ≥ 75 years**
-RSV immunisation for adults **aged 50-74 years who are at increased risk for severe RSV disease**

คำนะนำสมาคมโรคติดเชื้อแห่งปะเทศไทย 2567

- **แนะนำให้วัคซีนชนิดใดก็ได้ในผู้ที่มีอายุตั้งแต่ 75 ปีขึ้นไป**
- **พิจารณาให้วัคซีนชนิดใดก็ได้ในผู้ที่มีอายุตั้งแต่ 60 ถึง 74 ปี ที่มีความเสี่ยงต่อการติดเชื้อ RSV ที่รุนแรง**
- **> 18 ปี ในผู้ที่มีภาวะ immunocompromised conditions**

สามารถฉีดวัคซีนได้ตลอดทั้งปี
และยังไม่มีคำแนะนำการให้วัคซีนเข็มกระตุ้น

Risk factors for severe RSV disease

Chronic Cardiovascular disease

Chronic Pulmonary disease

Chronic Kidney disorders (Stage 4,5)

Liver disorders (eg cirrhosis)

Neurologic or neuromuscular conditions

Hematologic disorders

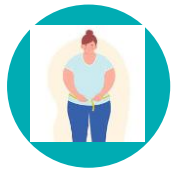
Diabetes mellitus (organ damage)

Moderate or severe immune compromise

Frail

Advanced age

Reside in nursing homes



Severe Obesity (BM I> 40)

Weekly RSV Vaccination Dashboard | RSVVaxView | CDC access on 5th September 2025

*Shared clinical decision-making (SCDM) - health care providers and their patients should have a conversation to determine if RSV vaccination will be beneficial.
Centers for Disease Control and Prevention. Healthcare Providers: RSV Vaccination for Adults 60 Years of Age and Over.
https://www.cdc.gov/vaccines/vpd/rsv/hcp/older-adults.html

Last updated
March 2025

National RSV vaccination recommendations for older adults and adults at risk for severe disease vary by type and country

Age-based recommendations

≥60 years

- Austria[1]
- Poland[2]
- Chile[3]
- Campania (Italy)[4]
- Saudi Arabia[5]

≥65 years

- Ireland[6]

≥75 years

- UK[7]
- Sweden[8]
- USA[9]
- Australia[10]
- Germany[11]
- Dubai (UAE)[12]*
- Canada[13]
- France[14]
- Greece[15]
- Switzerland[16]
- Sicily (Italy)[17]
- Cyprus[18]

Risk-based recommendations

≥18 years

- Austria[1]
- Switzerland[16]†

≥60 years (50 years)

- Sweden[8]
- Norway[19]
- USA[9]
- Germany[11]
- Greece[15]
- Belgium[20]
- Australia[10]
- Canada[13]
- Sicily (Italy)[17]
- France[14]‡
- Switzerland[16]
- Dubai (UAE)[12]*
- Cyprus[18]§

*Recommended vaccination based on reputable sources, such as the CDC. †Off-label. ‡Aged 60 years and over with chronic respiratory pathologies (particularly COPD) or cardiac pathologies (particularly heart failure). §Risk factors for developing RSV defined as individuals with chronic cardiovascular, respiratory, ESRD/dialysis dependence, liver, or neurological/neuromuscular conditions; moderate/severe immune deficiencies; chronic blood conditions; diabetes mellitus complicated by CKD; BMI ≥40 kg/m2, and those in nursing homes.

BMI=body mass index; CDC=Centers for Disease Control and Prevention; CKD=chronic kidney disease; ESRD=end-stage renal disease; NITAG=National Immunisation Technical Advisory Group; RSV=respiratory syncytial virus

1. Austria: Impfplan Österreich; 2. Poland: Vaccination schedule for the elderly - Szczepienia.Info (pzh.gov.pl); 3. Chile: Recomendación del CAVEI sobre incorporación de vacunación contra virus respiratorio sincicial en adultos mayores y embarazadas.docx (minsal.cl); 4. Italy (Campania): Italian Drug Agency Resolution; 5. Saudi Arabia: Ministry of Health | Respiratory Syncytial Virus; 6. Ireland: Recommendations for passive immunisation and vaccination against respiratory syncytial in infants, children and older adults; 7. United Kingdom: Guidance: RSV vaccination of older adults: information for healthcare practitioners; 8. Sweden: Vaccination mot RS-virus; 9. United States: CDC. CDC updates RSV vaccination recommendation for adults. June 26, 2024. https://www.cdc.gov/media/releases/2024/s-0626-vaccination-adults.html; 10. Australia: Australian Immunisation Handbook Respiratory syncytial virus (RSV) | The Australian Immunisation Handbook (health.gov.au); 11. Germany: STIKO RSV Vaccination Recommendation (https://www.rki.de/DE/Home/homepage_node.html); 12. Dubai, UAE: Immunization Guidelines; 13. Canada: Respiratory syncytial virus (RSV): Canadian Immunization Guide - Canada.ca; 14. France: Haute Autorité de Santé - Vaccine strategy for the prevention of RSV infections in adults aged 60 years and over (has-sante.fr); 15. Greece: Ministry of Health RSV; 16. Switzerland: INFOVAC Respiratory Syncytial Virus; 17. Italy (Sicily): Raccomandazioni del Board del Calendario per la Vita sulla vaccinazione contro Virus Respiratorio Sinciziale (VRS o RSV) nella popolazione anziana e negli adulti a rischio; 18. Cyprus: Εθνικό Πρόγραμμα Εμβολιασμών Ενηλίκων και Ειδικών Ομάδων - Υπουργείο Υγείας - Gov.cy. 19. Norway: RSV-vaksine - veileder for helsepersonell; 20. Belgium: Vaccination against RSV (adults). All URLs accessed February 2025. 21. Pfizer. RSVpreF vaccine Fachinformation. Accessed April 2025. https://labeling.pfizer.com/ShowLabeling.aspx?id=197656

Table 5. Dosing and Administration Parameters for RSVpreF3-ASO1E and RSVpreF.[7,8]

Vaccine	Indication
RSVpreF3-ASO1E	Prevention of LRTD caused by RSV in adults 60 years of age or older
RSVpreF	Prevention of LRTD caused by RSV in adults 60 years of age or older
	Prevention of LRTD and severe LRTD in infants from birth through 6 months of age (given during pregnancy at 32 through 36 weeks gestational age)

Effectiveness of approved respiratory syncytial virus (RSV) vaccines.

Vaccine	RSVPreF3			RSVpreF		mRNA-1345
Study	AReSVi-006			RENOIR		ConquerRSV
Population	Adults ≥60 years old			Adults ≥60 years old		Adults ≥60 years old
Study arms, N						
Vaccine group	12467	12470*	12467	17215	16164	17793
Placebo group	12499	12503	12499	17069	16059	17748
Follow-up, months, median	6.7 (1 season)	17.8 (2 season)	30.6 (3 season)	6 (1 season)	17.6 (2 season)	3.7
Vaccine Efficacy, %						
LRTI-Overall	82.6	67.2	62.9	≥2 symptoms 66.7 ≥3 symptoms 85.7	≥2 symptoms 55.7 ≥3 symptoms 77.8	≥2 symptoms 83.7 ≥3 symptoms 82.4
LRTI-Severe	94.1	78.8	67.4	-**	-	-
ARI	71.7	62.7	51.1	62.1	36.9	68.4

Wroblewski et al; Annals of Pharmacotherapy 2024:1–11

Bivalent RSVPreF Vaccine

Bivalent RSV Vaccine stabilized preF[1]

Vaccinate eligible adults[1]

Generates diverse antibody repertoire against RSV preF[2]

Produces RSV neutralizing activity[2]

Helps prevent RSV lower respiratory tract disease[1]

- Pfizer's Bivalent RSVpreF vaccinecan induce neutralizing activity to block fusion of viral and host cellular membranes and help prevent lower respiratory tract disease[1,3]

  Contains equal proportions of **RSV preF A(60ug) and RSV preF B 60 ug) and no adjuvant**

DESCRIPTION

- **Bivalent RSVPreF Vaccine** is a sterile solution for intramuscular injection **A single dose** after reconstitution is approximately 0.5 mL.

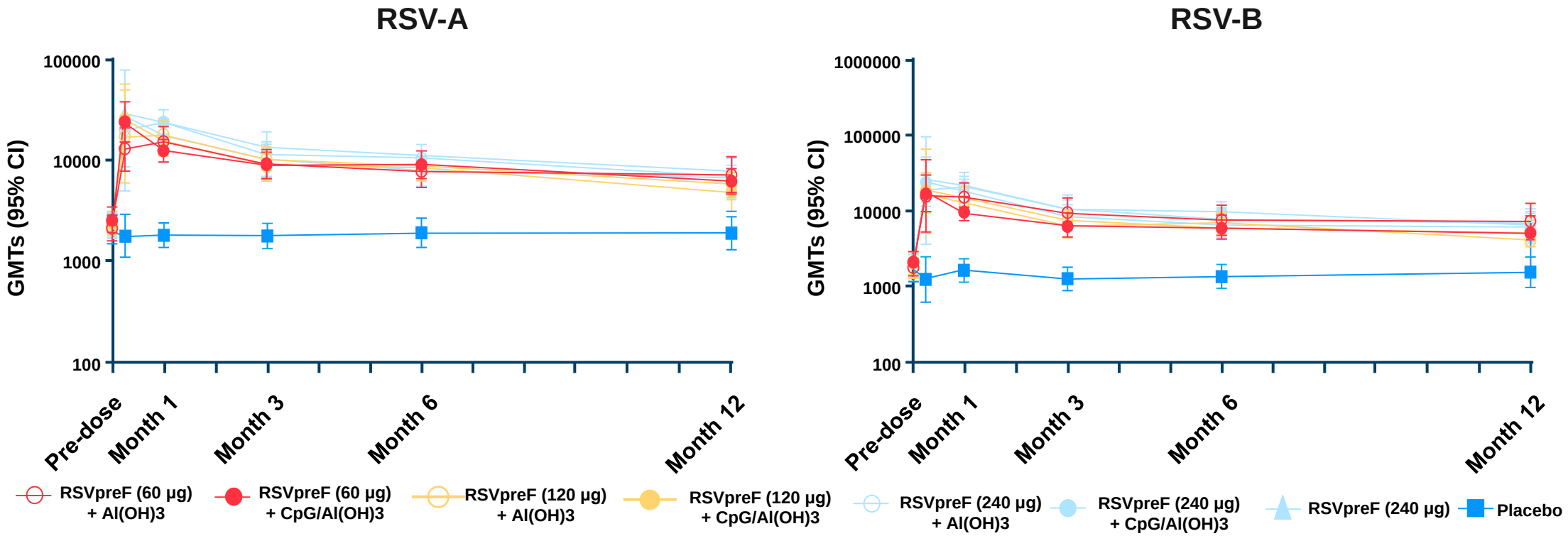
INDICATION

- **Bivalent RSVPreF Vaccine is indicated for active immunization**
  - for the prevention of lower respiratory tract disease (LRTD) caused by **RSV in individuals 18 years of age and older**
  - of **pregnant individuals at 32 through 36 weeks gestational age** for the prevention of LRTD and severe LRTD caused by RSV in infants from birth through 6 months of age.

preF, prefusion F; RSV, respiratory syncytial virus

1. Bivalent RSVpreF Thailand LPD Version Rev 4.0. March 2025; **2.** Mukhamedova M. Immunity 2021;54:769-780.e6; **3.** McLellan JS. Curr Opin Virol 2015;11:70-75

RSV-A/B neutralizing GMTs remained elevated 12 months after vaccination with RSVpreF* in the primary cohort regardless of inclusion of adjuvant (Al or Al+CPG)



No difference in immunogenicity between formulations with and without adjuvants

*Stabilized RSVpreF (dose level 120 µg).
Adjuvant 1, aluminum hydroxide; Adjuvant 2, CpG oligodeoxynucleotides and aluminum hydroxide; CI, confidence interval; GMT, geometric mean titer; RSV, respiratory syncytial virus; RSVpreF, respiratory syncytial virus prefusion F.
Baber J, et al. *J Infect Dis*. 2022;226:2054-2063.

Safety and Immunogenicity of RSVpreF ± Adjuvant (± SIIV) in Older Adults (NCT03572062)

RENOIR study: RSVpreF established efficacy

240 study sites in 7 countries

- Argentina
- Canada
- Finland
- Japan
- Netherlands
- South Africa
- USA

Enrollment

38,863 participants
Adults **≥60 years**

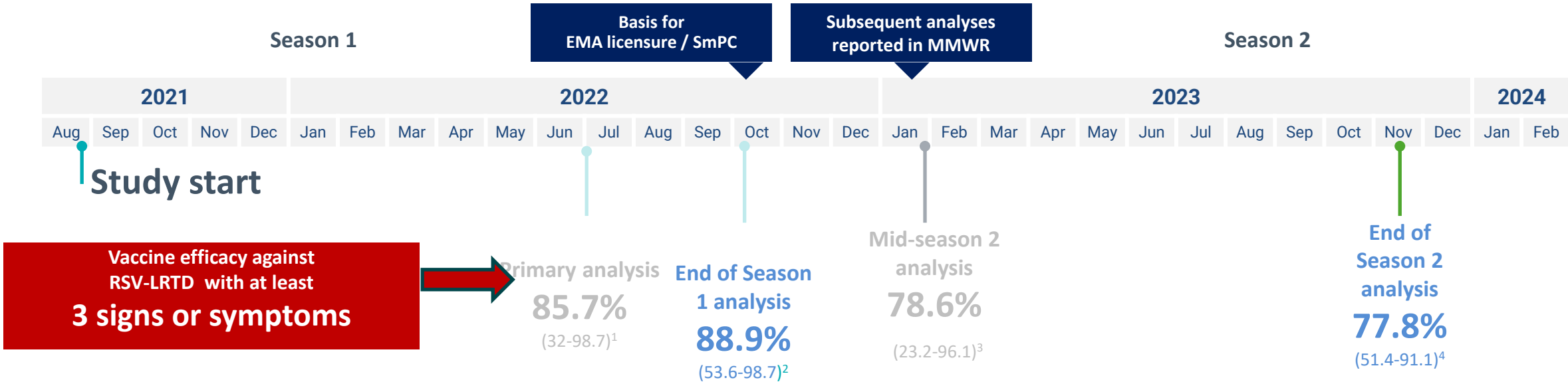
Randomized 1:1 to receive RSVpreF 120 µg or placebo

Stratified by age group
- 60–69, 70–79, and ≥80 years

Key inclusion / exclusion criteria

Healthy or with stable chronic conditions

Immunocompromised persons with serious chronic disorders (e.g., end-stage renal disease, metastatic cancer)



LRTD, lower respiratory tract disease; MMWR, Morbidity and Mortality Weekly Report; RSV, respiratory syncytial virus; RSVpreF, respiratory syncytial virus prefusion F; SmPC, Summary of Product Characteristics.

1. Walsh EE et al. *N Engl J Med* 2023;388:1465-1477; 2. RSV vaccine, LPD rev no.: 4.0, LPD Date: March 10 , 2025. 3. Melgar M et al. *Morb Mortal Wkly Rep* 2023;72;793-801; 4. Pfizer Inc. Pfizer Announces Positive Top-Line Data for Full Season Two Efficacy of Bivalent RSV PreF vaccine® for RSV in Older Adults. Press release. February 29, 2024. https://www.pfizer.com/news/press-release/press-release-detail/pfizer-announces-positive-top-line-data-full-season-two [All accessed August 13, 2024]

Bivalent RSVpreF Vaccine: Immunogenicity and Safety Data From the Phase 3 MONeT Trial (MONeT Substudy A&B)

Feature	MONeT A[1]	MONeT B[2]
Study Population	**Adults aged 18–59 with chronic medical conditions** 681 participants	**Immunocompromised adults aged ≥18 years** 203 participants (~50% aged ≥60)
Study Design	Phase 3, multicenter, randomized, double-blind, placebo-controlled	Phase 3, single-arm, open-label, multicenter, descriptive
Vaccination Schedule	**Single dose of RSVpreF**	**Two doses of RSVpreF, 1 month apart**
Primary Safety Outcomes	•Local reactions and systemic events within 7 days after each vaccination •AEs through 1 month and SAEs through 6 months •Newly diagnosed chronic medical conditions through 6 months	•Local reactions and systemic events within 7 days after each vaccination •AEs through 1 month and SAEs through 7 months •Newly diagnosed chronic medical conditions
Immunogenicity Outcomes	Primary – Neutralizing titers (NTs) measured as: •Geometric mean titer ratio - Estimated by the ratio of the GMT for RSV A and RSV B serum NTs in MONeT to that in RENOIR •Difference in seroresponse (≥4-fold rise from baseline*) rate - Measured by difference in rate of RSV A and RSV B serum NTs at 1 month after vaccination between MONeT and RENOIR	Primary – Neutralizing titers (NTs) measured as: •GMT for RSV A and RSV B in study population as measured at baseline, 1 month after vaccination dose 1; 1 month after vaccination dose 2 •GMFR of NTs for RSV A and RSV B at baseline, and 1 month after vaccination dose 1; 1 month after vaccination dose 2
Study Period	Completed by March 2024	May 2023 – March 2024

1. Munjal I. Bivalent RSVpreF (Pfizer) safety and immunogenicity in non-pregnant adults aged 18-59 years. RSVpreF Adult Clinical Development Update. ACIP Meeting June 26 2024. 2. Munjal I, et al. RSVpreF adult. Presentation at Advisory Committee of Immunization Practices. October 24, 2024

Efficacy

- RSVpreF remained efficacious in preventing RSV-LRTI through 2 RSV seasons overall and by age and underlying comorbidities
  - Efficacy similar for **both RSV subgroups A and B** and against subgroups A and B
  - Average of 16.4 months of follow-up since vaccination (2 seasons)
  - Average of 17.6 months of follow-up since vaccination among participants who contributed to the season 2 analysis

MONeT (Study C3671023) evaluated the safety, tolerability, and immunogenicity of RSVpreF in adults at high risk of severe RSV disease

- **Substudy A:** Adults aged 18–59 years with chronic comorbid conditions
- **Substudy B:** Immunocompromised individuals aged ≥18 years

MONeT substudy A achieved its co-primary immunogenicity endpoints and primary safety endpoint; substudy B showed positive topline safety and immunogenicity results

Safety

- Overall safety profile of RSVpreF remained consistent through end of season 2

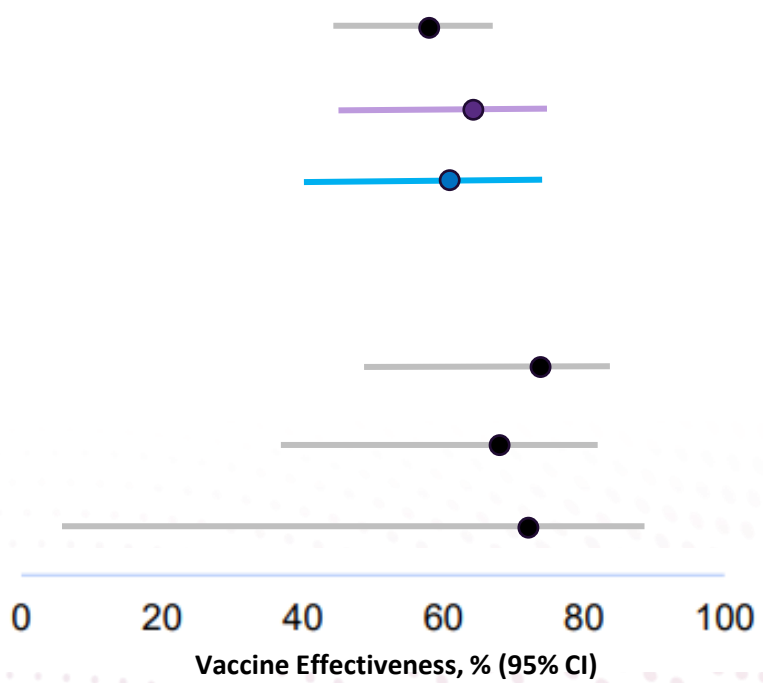
LRTI, lower respiratory tract infection; preF, prefusion F; RSV, respiratory syncytial virus

RSV Vaccine Effectiveness Against Hospitalization or In-Hospital Outcomes Among US Adults Aged 60 Years or Older During 2 Seasons

Test-negative, case-control study in adults with RSV at 26 hospitals in 20 US states.
During October 1, 2023, to March 31, 2024, or October 1, 2024, to April 30, 2025.

2 SEASONS

	RSV-positive cases, vaccinated/ total (%)	RSV-negative controls, vaccinated/ Group total (%)	Days since RSV vaccination among cases and controls, median (IQR)	Vaccine effectiveness*, % (95% CI)
RSV-Associated Hospitalization or In-Hospital Outcomes, ≥60 years				
≥60 (All adults)	821 (7.7)	966/6137 (15.7)	223 (95 to 421)	**58** (45 to 68)
GSK RSV Vaccine	27/785 (3.4)	502/5673 (8.8)	275 (97 to 426)	**64** (47 to 76)
Pfizer RSV Vaccine	25/783 (3.2)	396/5567 (7.1)	208 (97 to 420)	**61** (41 to 74)
28-d in-hospital outcomes, ≥60 years				
Acute respiratory failuree	11/227 (4.8)	966/6137 (15.7)	208 (95 to 421)	**73** (50 to 86)
Intensive care unit admission	10/162 (6.2)	966/6137 (15.7)	208 (95 to 421)	**67** (37 to 83)
Invasive mechanical ventilation or death	3/58 (5.2)	966/6137 (15.7)	204 (94 to 421)	**72** (7 to 91)



*Respiratory syncytial virus vaccine effectiveness (VE) was estimated by comparing the odds of RSV vaccination between RSV-positive case patients and RSV-negative control patients, using multivariable logistic regression. The odds ratios were adjusted for a base set of a priori variables, including age, sex, race and ethnicity, US Department of Health and Human Services region, and calendar month and year of admission. The adjusted odds ratio of RSV vaccination was used to estimate RSV VE as (1 – adjusted odds ratio) × 100%.

Surie, Diya, et al. *JAMA*, 30 Aug. 2025, DOI:10.1001/jama.2025.15896. *JAMA*.

Kaiser Permanente Southern California (KPSC)[2,3]

A **real-world study** using a **large integrated healthcare database** of 4.9 million members within 16 hospitals and 197 medical centers to evaluate the **effectiveness** of the **RSVpreF vaccine** in **adults aged ≥60 years**

Study objectives and methods[1-3]

Objective: To estimate bivalent RSVpreF vaccine effectiveness in adults aged ≥60 years[1-3]

Study design[1, 2]

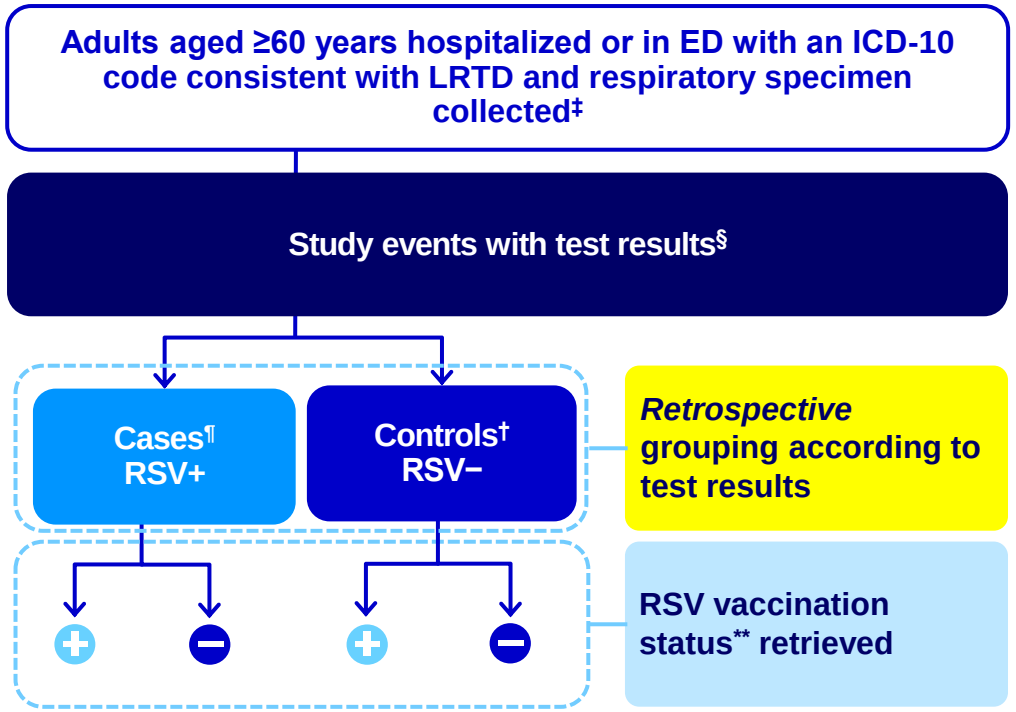
- **Retrospective case-control study** with **test-negative design** during **first and second RSV season after vaccination**
- 24 November 2023 -- 9 April 2024 season
- 5 November 2024 -- 21 April 2025 season

Outcomes[2]

- **Primary: VE against first RSV-related LRTD hospitalization/ED visit**
- Additional: VE against severe LRTD hospitalizations/ED visits; subgroup analyses by age, RSV serotype, high-risk chronic medical conditions, and frailty

Analyses[2]

- VE calculated as (1 − odds ratio) × 100%, with 95% CIs using multivariable logistic regression including prespecified and model-specified covariates*
- Sensitivity analyses with prespecified strict and broad control definitions†

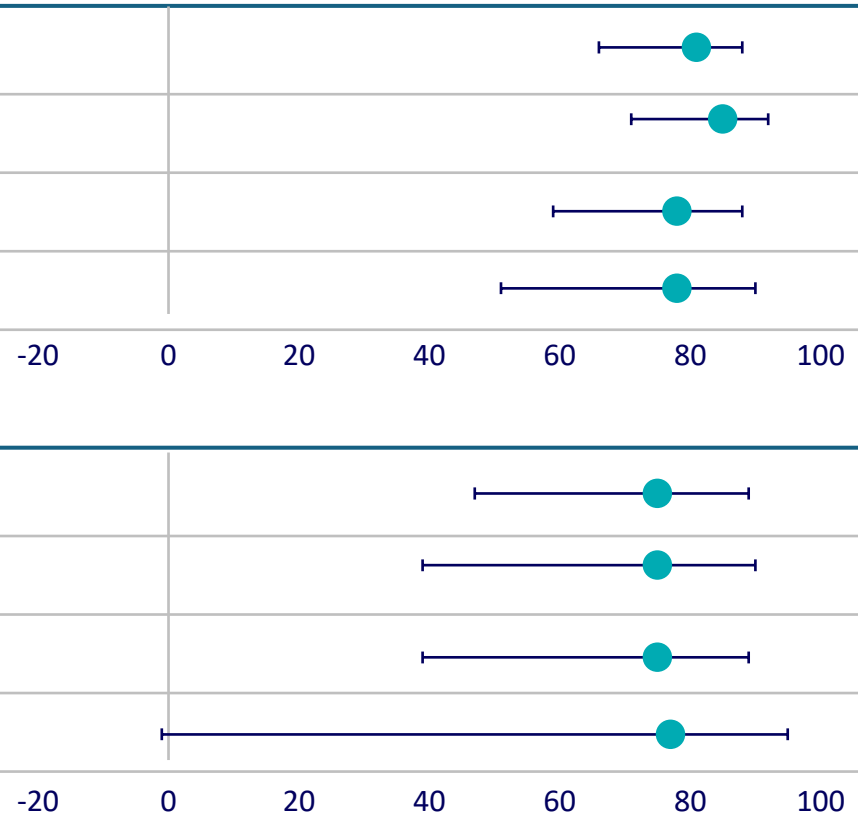


CI, confidence interval; ED, emergency department; hMPV, human metapneumovirus; ICD-10, International Classification of Diseases 10th Revision; KPSC, Kaiser Permanente Southern California; LRTD, lower respiratory tract disease; PCR, polymerase chain reaction; RSV, respiratory syncytial virus; RSVpreF, respiratory syncytial virus prefusion F; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; SOC, standard of care; VE, vaccine effectiveness; VPD, vaccine-preventable disease.*Including month of encounter, age, sex, self-reported race and ethnicity, modified Charlson score, and healthcare utilization in the year before encounter; †Strict controls (primary analysis): LRTD events that were negative for RSV, hMPV, influenza, and SARS-CoV-2, and were positive for a non-VPD; adenovirus, coronavirus (229E, HKU1, NL63, or OC43), human rhinovirus/enterovirus, parainfluenza 1-4, *Chlamydia pneumoniae*, *Mycoplasma pneumoniae* and broad controls (sensitivity analysis): RSV-negative LRTD events, regardless of other identified causes (and including those who tested negative for all pathogens). ‡Respiratory specimens tested with multiplex PCR assay for RSV (either SOC testing or enhanced specimen collection of salvaged swabs that were not positive for SARS-CoV-2 or influenza and not already tested for RSV); §Retrospective database study using existing healthcare data; no patients were actively enrolled; ¶Cases were RSV-positive LRTD events. **Vaccinated defined as receipt of RSVpreF ≥21 days before LRTD encounter.

1. ClinicalTrials.gov. NCT06077968. https://clinicaltrials.gov/study/NCT06077968. Accessed 14 October 2025; 2. Tartof SY, et al. *JAMA Netw Open* 2024;7(12):e2450832; 3. Tartof SY. Vaccine Effectiveness of Abrysvo against Respiratory Syncytial Virus-related Lower Respiratory Tract Disease Hospitalizations and Emergency Department Admissions over Two RSV Seasons—Kaiser Permanente Southern California, October 2023–April 2025. Oral Presentation at IDWeek Atlanta GA, October 20, 2025.

RSV vaccine effectiveness in the first and second season after vaccination - *Severe LRTD* and RSV Subtypes*

First season after vaccination† (84 days since vaccination, median)	Population size	Vaccine Effectiveness RSV-Associated Hospitalization/ED (95% CI)
RSV-related LRTD hospitalization or ED visits	2235	**81%** (66, 88)
Severe LRTD	1538	**85%** (71, 92)
RSV A	1788	**78%** (59, 88)
RSV B	1916	**78%** (51, 90)
Second season after vaccination‡ (372 days since vaccination, median)		
RSV-related LRTD hospitalization or ED visits	1089	**75%** (47, 89)
Severe LRTD	732	**75%** (39, 90)
RSV A	998	**75%** (39, 89)
RSV B	857	**77%** (-1, 95)

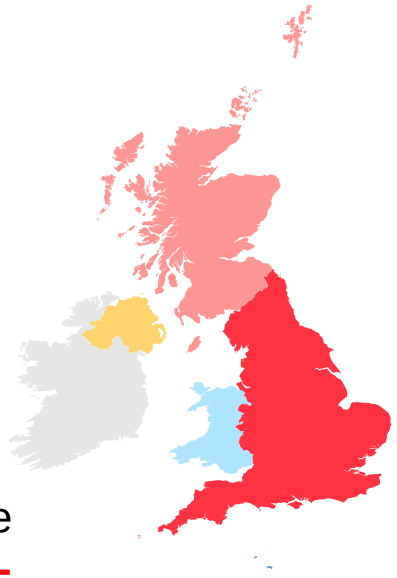


Vaccine effectiveness for severe LRTD decreased in the second season after vaccination and VE against RSV A and B showed no difference in the first and second season after vaccination

CI, confidence interval; ED, emergency department; LRTD, lower respiratory tract disease; RSV, respiratory syncytial virus.
*Supplemental use of oxygen; †First season after vaccination; 2023-2024 season includes those vaccinated October, 2023 to March, 2024 and all unvaccinated with LRTD events in the 2023-2024 season; 2024-2025 season includes those vaccinated April 2024 to March 2025 and all unvaccinated with LRTD events in the 2024-2025 season in the strict analysis population; ‡Includes those vaccinated from October, 2023 to March, 2024 and all unvaccinated with LRTD events occurring during the 2024-2025 RSV season in the strict analysis population.
Tartof SY. Vaccine Effectiveness of Abrysvo against Respiratory Syncytial Virus-related Lower Respiratory Tract Disease Hospitalizations and Emergency Department Admissions over Two RSV Seasons—Kaiser Permanente Southern California, October 2023–April 2025. Oral Presentation at IDWeek Atlanta GA, October 20, 2025.

RSV vaccination in the United Kingdom
achieved high coverage and impact in the program's first season

- **UK National Recommendations for RSV vaccine use in adults in 2024-2025 season:**
  - **Adults turning 75 years old** on, or after, September 1, 2024, are eligible for the routine program[1]
  - One-off catch-up campaign for adults already aged 75-79 years old on September 1, 2024 was also conducted
- **RSVpreF launched in August 2024** in Scotland and September 2024 in England
  - At 68.6%[2] and 41.8% vaccine coverage respectively, Scotland and England observed a country-wide **reduction in RSV-related hospitalization incidence** in the target population of **62.1% (95% CI, 35-79.8)** and **30% (95% CI, 18-40)**, respectively[2,3]
  - Vaccine coverage has subsequently increased in Scotland to 70.6% (May 2025) and 58.9% in England (May 2025)[4]



United Kingdom

A multicenter, test-negative, case-control study was also conducted to estimate the individual-level effectiveness of RSV vaccine in England[5]

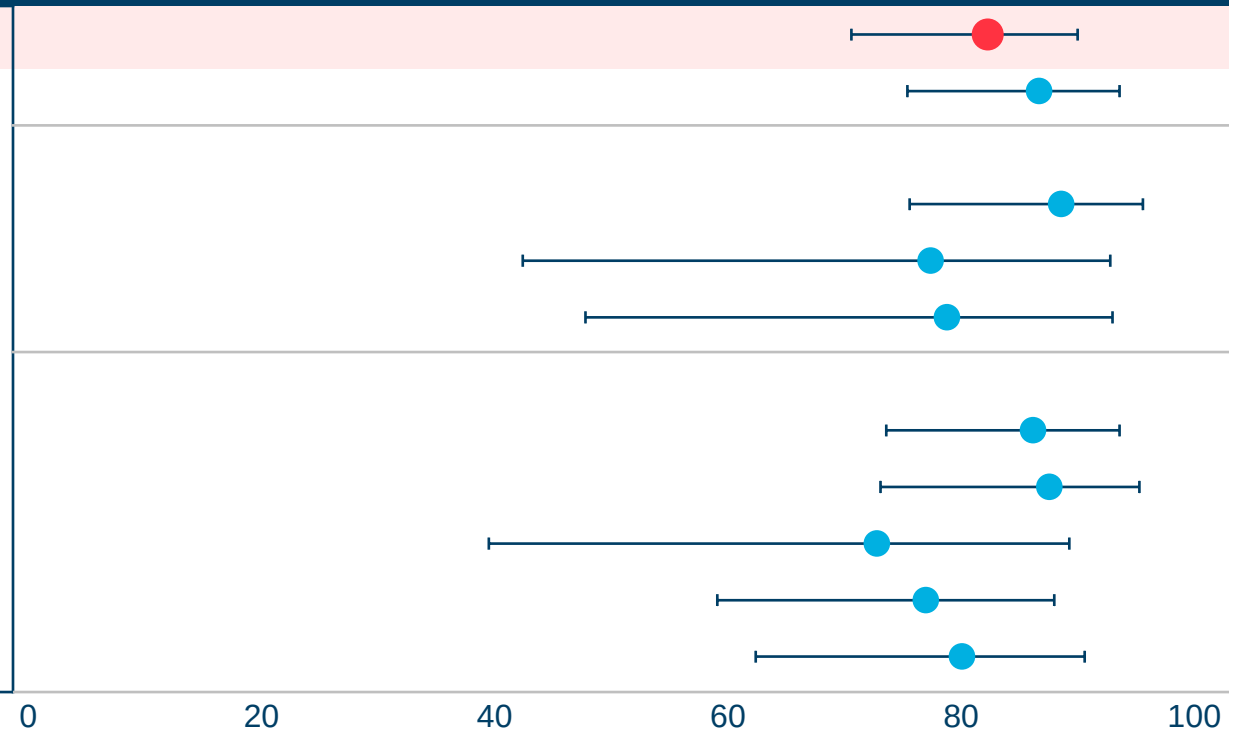
CI, confidence interval; RSV, respiratory syncytial virus; RSVpreF, respiratory syncytial virus prefusion F; UK, United Kingdom.

1. GOV UK. Accessed February 21, 2025. https://www.gov.uk/government/publications/respiratory-syncytial-virus-rsv-programme-information-for-healthcare-professionals/rsv-vaccination-of-older-adults-information-for-healthcare-practioners. 2. Hameed SS, et al. *Lancet Infect Dis*. 2025;25(3):256-258. doi:10.1016/S14733099(25)00064-7. 3. Mensah A, et al. *Lancet.* 2025;405(10485):1139-1140. https://doi.org/10.1016/S0140-6736(25)00346-0 4. Gov.uk [Internet]. Surveillance of respiratory syncytial virus: winter 2024 to 2025; 2025 Jul 31 [cited 2025 Sep 15]. Available from: https://www.gov.uk/government/publications/surveillance-of-respiratory-syncytial-virus-winter-2024-to-2025/surveillance-of-respiratory-syncytial-virus-winter-2024-to-2025. 5. Symes, R.et al. *Lancet Infect Dis*. 2025 https://doi.org/10.1016/S1473-3099(25)00546-8.

UKHSA: Hospital-based Acute Respiratory Infection Sentinel Surveillance (HARISS)

Estimated RSVpreF VE against RSV-related ARI hospitalizations, 2024/2025–England, UK

Cohort	Adjusted VE*, % (95% CI)
Overall	**82.3** (70.6, 90.0)
Severe disease including oxygen use†	**86.7** (75.4, 93.6)
Reason for Admission	
Admitted with LRTI	**88.6** (75.6, 95.6)
Lung disease exacerbation (no LRTI)	**77.4** (42.4, 92.8)
Lung, heart disease, or frailty exacerbation (no LRTI)	**78.8** (47.8, 93.0)
Comorbidity Group	
Immunocompetent	**86.2** (73.6, 93.6)
Immunocompetent (no liver or renal disease)	**87.6** (73.1, 95.3)
Immunosuppressed	**72.8** (39.5, 89.3)
Chronic heart and vascular disease	**77.0** (59.1, 88.0)
Chronic respiratory disease	**80.1** (62.4, 90.6)



Results support real-world effectiveness of RSVpreF against RSV-associated hospitalizations in older adults, including adults admitted for exacerbations of chronic illness and immunosuppressed individuals

*Vaccine effectiveness adjusted for days from the start of the surveillance period to hospital presentation using splines, and presence of at least one comorbidity and/or immunosuppression. †Severe disease includes adults indicated as requiring during admission: oxygen supplementation, high-flow nasal oxygen, non-invasive ventilation or continuous positive airway pressure, invasive ventilation or mechanical ventilation, and intensive care unit admission, and adults that died within 30 days of admission to hospital.

ARI, acute respiratory illness; CI, confidence interval; LRTI, lower respiratory tract infection; RSV, respiratory syncytial virus; RSVpreF, RSV Perfusion F; UK, United Kingdom; UKHSA, United Kingdom Health Security Agency; VE, vaccine effectiveness.

Vaccine effectiveness of a bivalent respiratory syncytial virus (RSV) pre-F vaccine against RSV-associated hospital admission among adults aged 75–79 years in England: a multicentre, test-negative, case–control study
Symes R, et al. *Lancet Infect Dis*. Published online October 27, 2025. doi:10.1016/S1473-3099(25)00546-8

Early Safety Findings Among Persons Aged ≥60 Years Who Received a Respiratory Syncytial Virus Vaccine — United States, May 3, 2023–April 14, 2024

TABLE 3. Events reported to the Vaccine Adverse Event Reporting System for persons aged ≥60 years after receipt of a respiratory syncytial virus vaccine — United States, May 3, 2023–April 14, 2024

	Vaccine, no. reporting (%)			
Event	GSK	Pfizer	Do not know/Cannot recall	Total
Total participants	**2,193**	**919**	**88**	**3,200**
Events among nonserious reports[*,†]	2,026 (92.5)	821 (89.1)	72 (81.8)	**2,919 (91.2)**
Arthralgia	183 (9.0)	85 (10.4)	7 (9.7)	**240 (8.2)**
Erythema	186 (9.2)	57 (6.9)	4 (5.6)	**384 (13.2)**
Fatigue	235 (11.6)	102 (12.4)	18 (25.0)	**355 (12.2)**
Fever	215 (10.6)	83 (10.1)	9 (12.5)	**247 (8.5)**
Headache	261 (12.9)	105 (12.8)	10 (13.9)	**376 (12.9)**
Injection site erythema	261 (12.9)	66 (8.0)	2 (2.8)	**275 (9.4)**
Injection site pain	291 (14.4)	72 (8.8)	7 (9.7)	**370 (12.7)**
Injection site swelling	187 (9.2)	51 (6.2)	2 (2.8)	**376 (12.9)**
Pain	276 (13.6)	85 (10.4)	12 (16.7)	**373 (12.8)**
Pain in extremity	282 (13.9)	94 (11.4)	8 (11.1)	**384 (13.2)**
Events among serious reports[§,¶]	167 (7.6)	98 (10.7)	16 (18.2)	**281 (8.8)**
Allergic reaction[**]	3	4	0	**7**
Anaphylaxis	1	1	0	**2**
Arrhythmia, other	4	1	1	**6**
Atrial fibrillation[††]	8	3	3	**14**
Congestive heart failure	2	2	0	**4**
Dyspnea or cough	3	2	0	**5**
Encephalitis or aseptic meningitis	5	5	1	**11**
Guillain-Barré syndrome[§§]	18	19	0	**37**
Injection site pain or reaction[¶¶]	4	0	0	**4**
Immune thrombocytopenia[***]	5	6	0	**11**
Myocardial infarction	3	1	0	**4**
Pneumonia	5	3	1	**9**
Rash	1	2	1	**4**
RSV infection	3	2	0	**5**
Sepsis, bacteremia, or both	6	5	0	**11**
Shoulder pain	7	1	3	**11**
Stroke or transient ischemic attack	13	10	1	**24**
Syncope	6	1	0	**7**
Thromboembolic event, other[†††]	7	4	2	**13**
Transverse myelitis	2	1	0	**3**
Unevaluable	2	2	0	**4**
Death[§§§]	22	11	2	**35**

Anne M. Hause, MMWR | May 30, 2024 | Vol. 73 | No. 21

At least 10.6 million adults aged ≥60 years received a recommended RSV vaccine **(GSK 7.2 million, Pfizer 3.4 million)**

Injection site symptoms:
V-safe *16,220 participants*
2,808 (43.9%) GSK and
787 (20.3%) Pfizer vaccine.
VAERS *3,300 reports*
68.5% for GSK and 28.8% for Pfizer

VAERS Among the 28 reports of GBS after vaccination

GSK = 7 per 1 million doses
Pfizer = 9 per 1 million doses

https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/fda-requires-guillain-barre-syndrome-gbs-warning-prescribing-information-rsv-vaccines-abrysvo-and

*ยังไม่มีคำแนะนำเกี่ยวกับการให้วัคซีนโดสกระตุ้น

IDAT 2025: RSV Vaccine Recommendation

Recommend
≥ 75 years old

Consider
60 (50)-74 years old
With certain risk factors or underlying medical conditions[a]

Bivalent RSVPreF or RSVPreF3 Vaccine
1 dose

ฉีดวัคซีนชนิดใดก็ได้ ก่อนเข้าสู่ช่วงระบาดในประเทศไทย
คือเดือนกรกฎาคมถึงเดือนพฤศจิกายน แต่สามารถฉีดได้ตลอดทั้งปี

Recommend Pregnant Women
GA 24-36 weeks
(Preferred GA 28-32 weeks)

Bivalent RSVPreF vaccine
1 dose[b]

[a]ความเสี่ยงต่อการติดเชื้อRSVที่รุนแรงได้แก่ โรคปอดเรื้อรัง โรคหัวใจเรื้อรัง ผู้ที่มีภาวะภูมิคุ้มกันบกพร่องปานกลางถึงรุนแรง โรคเบาหวานที่มีการทำลายของอวัยวะอื่น (end–organ damage) โรคอ้วน (ดัชนีมวลกายตั้งแต่ 40 กก./ตร.ม.) โรคตับ โรคไตเรื้อรังระยะ 4–5 หรือได้รับการบำบัดทดแทนไต

[b]แนะนำอย่างยิ่งในกรณีที่คาดว่าทารกจะมีอายุน้อยกว่า 6 เดือนในช่วงที่มีการระบาดในประเทศไทยช่วงเดือนกรกฎาคม ถึง เดือนพฤศจิกายน

IDAT. Recommended Adult and Elderly Immunization Schedule 2025.

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Thank you

Fast tract Vaccination:
iRedcross website