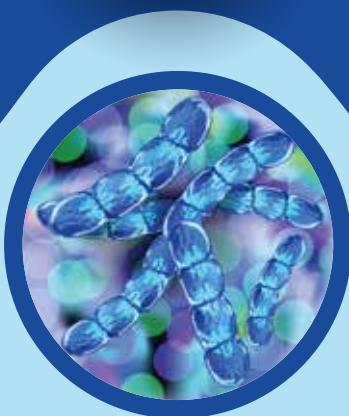




# PNEUMO SHOTS



## COPD and Beyond: Maximizing the Benefits of Pneumococcal Vaccination

### Burden of pneumococcal disease in India



In India, the **incidence of CAP is 4 million cases/year** with 20% requiring hospitalization.<sup>1</sup>



The most prevalent clinical conditions associated with IPD in India are **pneumonia (39%)**, **meningitis (24.3%)**, and **septicemia (18.4%)**.<sup>2</sup>

Pneumococcal pneumonia can be prevented through pneumococcal vaccination. Currently, two **pneumococcal vaccines-PCV13 and PPSV23-are approved for use in adults in India**.<sup>3</sup>



**PCV13 should be administered first followed by PPSV23 as PCV13 establishes an immunological state**, enabling both a recall response and an enhanced antipneumococcal response upon subsequent administration of PPSV23.<sup>4</sup>

### Immunogenicity and safety of PCV13 in the Indian population



Open-label<sup>5</sup>



Single-arm<sup>5</sup>



Multicenter;  
12 sites, 6 states<sup>5</sup>



1000 participants,  
50 to 65 years<sup>5</sup>



- PCV13 elicited robust immune responses against all 13 pneumococcal serotypes.
- Significant geometric mean fold rises (range, 6.6–102.7) in functional antibody levels 1 month after PCV13 vaccination<sup>5</sup>



**No deaths or SAEs** were reported. None of the AEs led to withdrawal from the study.<sup>5</sup>

**PCV13 is well tolerable and immunogenic when administered to adults in India, which indicates that a single dose of PCV13 has the potential to help protect against vaccine-type pneumococcal disease in adults.<sup>5</sup>**

## Benefits of PCV13 to COPD patients\*

### Comparative effectiveness of PCV13 and PPV23 in COPD patients<sup>6</sup>

**Subjects and the study design:** An open-label, prospective, observational cohort study involving 302 male patients aged ≥45 years. Patients were allocated into three groups: patients vaccinated with the 23-valent vaccine (PPV23 group), those vaccinated with the 13-valent vaccine (PCV13 group), and vaccine-naïve patients (control group).

#### Effectiveness of PCV13 vs. PPSV23



##### Prevention of pneumonia

Pneumonia after 5 years was reported in **3.3% of patients receiving PCV13 and 47% receiving PPSV23.**<sup>6</sup>



##### Reduced rate of COPD exacerbations

COPD exacerbations after 5 years were reported in **23.6% of patients receiving PCV13 and 81.3% receiving PPSV23.**<sup>6</sup>



##### Improved quality of life

Vaccination with PCV13 significantly **reduced and maintained the BODE index** over the 5-year follow-up period.<sup>6</sup>

While **the positive effect persists for 5 years** with PCV13, it gradually declines from year 2 with PPV23.<sup>6</sup>

Only PCV13 is **characterized by persistent clinical effectiveness during the 5-year follow-up period.**<sup>6</sup>

**Patients who received PPV23 have significantly higher risks of having pneumonia episodes** more frequently during the long-term follow-up.<sup>6</sup>

### Hospitalization outcomes in PCV13 vaccinated versus unvaccinated COPD subjects in India<sup>7</sup>

**Subjects and the study design:** A prospective analytical study of 120 patients hospitalized with an acute exacerbation of COPD between Sep 2019 and Sep 2021. The patients were recruited into two groups: pneumococcal-vaccinated (n=60) as well as -unvaccinated group (n=60).

#### Clinical outcomes

p=0.002

**30%**

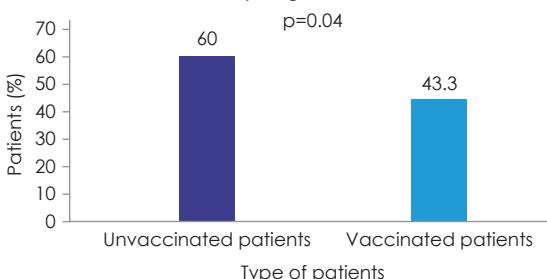
**Vaccinated patients needed ICU admission**

**58.3%**

**Unvaccinated patients needed ICU admission**

Parameters	Vaccinated patients	Unvaccinated patients	p-value
Length of ICU stay (days)	0.67±1.11	1.77±1.89	0.001
Length of hospital stay (days)	4.50±1.64	5.47±2.03	0.005

#### Patients requiring assisted ventilation<sup>7</sup>



**COPD patients with prior PCV13 showed improved outcomes during hospitalization for acute exacerbation.<sup>7</sup>**

Adapted from: Venkitakrishnan R, et al. ERJ Open Res. 2023;9(3):00476-2022.

\*Kindly note that this is an RWE study and these studies should be read in concordance with RCT studies.

# Cost effectiveness of PCV13 in Adults

Country	Result
Japan <sup>8</sup>	<ul style="list-style-type: none"><li>• 10.4123 QALY for PCV13 and 10.4088 QALY for PPV23</li><li>• On comparing, PCV13 with PPV23, ICER estimated at 500,255JPY per QALY gained.</li></ul>
South Africa <sup>9</sup>	<ul style="list-style-type: none"><li>• PCV13 compared to PPSV23 is highly cost-effective</li><li>• Public sector cohorts with ICER of \$771/QALY and \$956/QALY</li><li>• Private sector cohort with ICER of \$626/QALY</li></ul>
United States <sup>10</sup>	The addition of one dose of PCV13 to the PPSV23 averted 93 deaths, saved 1360 QALY, and saved \$5.2 million per cohort.
Thailand <sup>11</sup>	PCV13 was a cost-effective vaccine, with an ICER of 233.63 USD/QALY gained and 627.24 USD/QALY gained, respectively as compared with PPSV23.

**PCV13 is shown to be a more cost-effective alternative to PPV23 in reducing both disease and cost.<sup>8-11</sup>**

## Conclusion

A single dose of PCV13 could offer protection against vaccine-type pneumococcal disease in adults.<sup>5</sup>

COPD patients hospitalized for acute exacerbation have improved hospitalization outcomes post-PCV13 vaccination.<sup>7</sup>

PCV13 vaccination is a more cost-effective alternative than PPSV23 for older adults.<sup>8-11</sup>

AE: Adverse event; BODE: Body mass index, airflow obstruction, dyspnea, and exercise capacity; CAP: Community-acquired pneumonia; COPD: Chronic obstructive pulmonary disease; DALY: Disability-adjusted life year; GDP: Gross domestic product; GMT: Geometric mean titer; ICER: Incremental cost-effectiveness ratio; ICU: Intensive care unit; IPD: Invasive pneumococcal disease; PCV13: 13-valent pneumococcal conjugate vaccine 13; PPSV23: 23-valent pneumococcal polysaccharide vaccine; QALY: Quality adjusted life year; RCT: Randomized control trial; RWE: Real-world evidence; SAE: Serious adverse event; USD: US Dollars.

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