Il vaccino anti-pneumococco 20-valente

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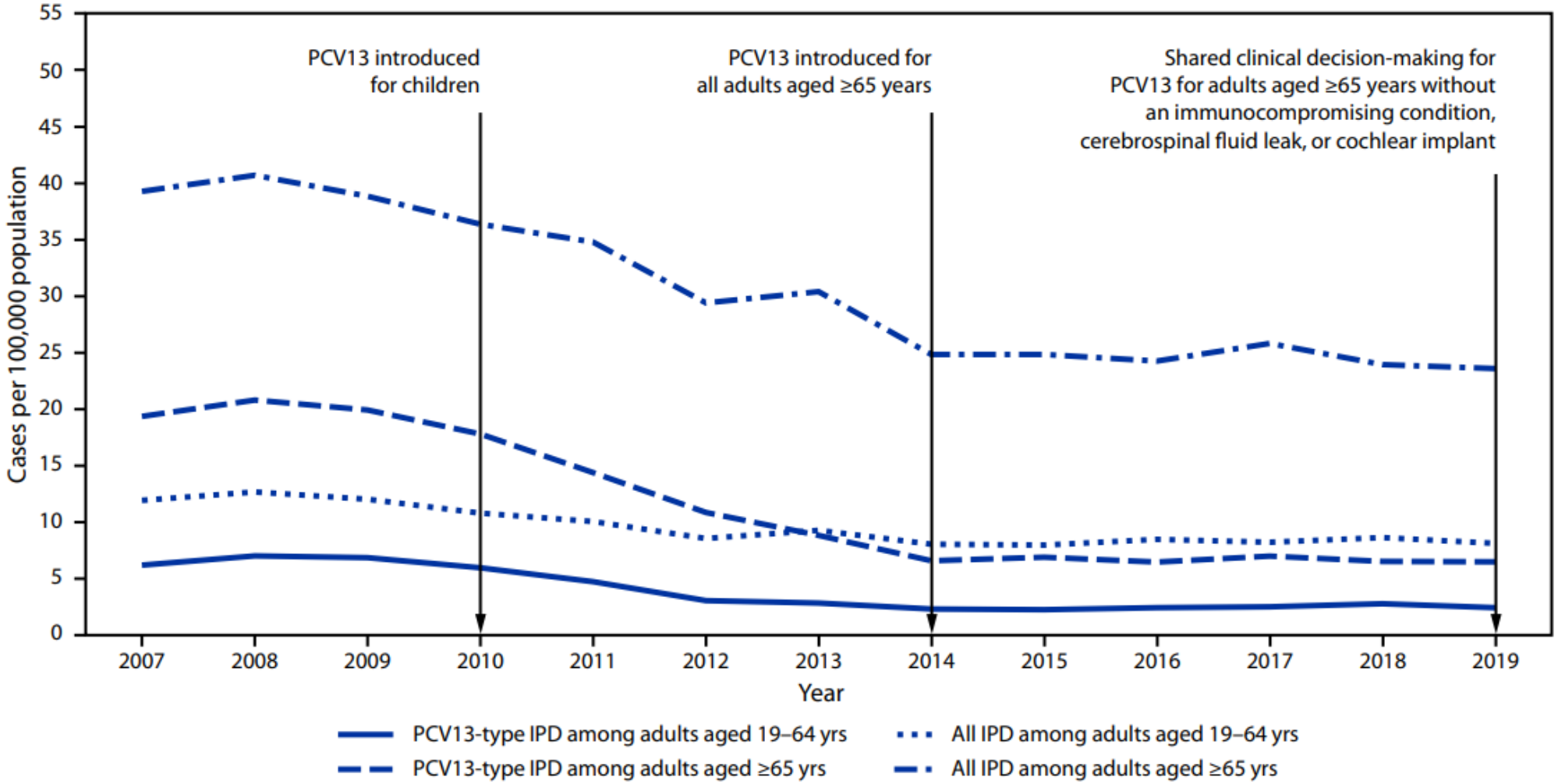
COI DISCLOSURE

- AG received consultancy fees from Mylan and Jansen
- AG received educational and grant support from Gilead
- AG received educational support from ViiV

FIGURE. Incidence of all invasive pneumococcal disease and 13-valent pneumococcal conjugate vaccine-type* invasive pneumococcal disease among adults aged ≥19 years, by invasive pneumococcal disease type and age group — United States, 2007–2019†



Abbreviations: IPD = invasive pneumococcal disease; PCV13 = 13-valent pneumococcal conjugate vaccine.

* Includes serotype 6C, which shows cross-protection from 6A antigen in PCV13 and was grouped with PCV13 serotypes for IPD incidence.

† Active Bacterial Core surveillance, 2021.

Epidemiologia IPD USA

- During 2018– 2019, the incidence of all IPD in adults aged ≥65 years was 24 per 100,000 population, and PCV13 serotypes accounted for 27% of cases; additional serotypes unique to PCV15,*** PCV20,††† and PPSV23§§§ caused 15%, 27%, and 35% of IPD, respectively.
- In adults aged 19–64 years with certain underlying conditions, PCV13 serotypes accounted for 30% of IPD; serotypes unique to PCV15, PCV20, and PPSV23 caused 13%, 28%, and 43% of IPD, respectively.

*** Serotypes 22F and 33F, in addition to PCV13 serotypes.

††† Serotypes 8, 10A, 11A, 12F, 15B, 22F, and 33F, in addition to PCV13 serotypes.

§§§ Serotypes 2, 8, 9N, 10A, 11A, 12F, 15B, 17F, 20, 22F, and 33F, in addition to PCV13 serotypes.

Caratteristiche del vaccino

- PREVNAR 20 includes capsular polysaccharide conjugates for the 13 serotypes (1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F and 23F) already included in Prevnar 13® (Pneumococcal 13-valent Conjugate Vaccine [Diphtheria CRM_{197} Protein]).
- The vaccine also contains capsular polysaccharide conjugates for seven additional serotypes (8, 10A, 11A, 12F, 15B, 22F and 33F) that cause invasive pneumococcal disease (IPD), and have been associated with high case-fatality rates, antibiotic resistance, and/or meningitis.
- Approximately 50% of serotypes covered causing IPD

Evidenze PCV 20

- A phase II study among adults aged 60–64 years and two phase III RCTs among adults aged ≥18 years evaluated immunogenicity and safety of PCV20 compared with PCV13 and with PPSV23 for the seven additional serotypes included in PCV20
- These studies included adults with stable medical conditions, but none included adults with immunocompromising conditions.

Essink B, Sabharwal C, Xu X, et al. 3. Phase 3 pivotal evaluation of 20-valent pneumococcal conjugate vaccine (PCV20) safety, tolerability, and immunologic noninferiority in participants 18 years and older. Open Forum Infect Dis 2020;7(Supplement_1):S2. https://doi.org/10.1093/ ofid/ofaa417.002 22.

Klein NP, Peyrani P, Yacisin K, et al. A phase 3, randomized, double-blind study to evaluate the immunogenicity and safety of 3 lots of 20-valent pneumococcal conjugate vaccine in pneumococcal vaccine-naive adults 18 through 49 years of age. Vaccine 2021;39:5428–35. PMID:34315611 https://doi.org/10.1016/j.vaccine.2021.07.004 23.

Hurley D, Griffin C, Young M Jr, et al. Safety, tolerability, and immunogenicity of a 20–valent pneumococcal conjugate vaccine (PCV20) in adults 60 to 64 years of age. Clin Infect Dis 2021;73:e1489–97. PMID:32716500 https://doi.org/10.1093/cid/ ciaa1045

Clinical Infectious Diseases

MAJOR ARTICLE

Safety, Tolerability, and Immunogenicity of a 20-Valent Pneumococcal Conjugate Vaccine (PCV20) in Adults 60 to 64 Years of Age

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Background. Pneumococcal conjugate vaccines (PCVs) have significantly decreased pneumococcal disease worldwide; however, expanding serotype coverage may further reduce disease burden. A 20-valent PCV (PCV20) containing capsular polysaccharide conjugates of serotypes present in the 13-valent PCV (PCV13) and 7 new serotypes (8, 10A, 11A, 12F, 15B, 22F, and 33F) is currently in development. This phase 2 study evaluated safety, tolerability, and immunogenicity of PCV20 in adults without prior pneumococcal vaccination.

Methods. In this randomized, active-controlled, double-blinded trial, 444 adults 60 through 64 years of age were randomized to receive either a single dose of PCV20 followed 1 month later by saline placebo or a single dose of PCV13 followed 1 month later by 23-valent polysaccharide vaccine. Local injection site reactions, select systemic symptoms, and adverse events (AEs) were recorded. Immunogenicity was assessed by measuring serotype-specific opsonophagocytic activity (OPA) titers before and approximately 1 month after each vaccination.

Results. Local reaction and systemic event rates were similar after vaccination with PCV20 or PCV13; no serious vaccine-related AEs were reported. In the PCV20 group, functional immune responses as measured by OPA were robust for all 20 serotypes included in the vaccine, with geometric mean fold rises from baseline ranging from 6.0 to 113.4.

Conclusions. PCV20 was well tolerated in adults 60 to 64 years of age, with a safety profile consistent with historical experience of PCVs in this age group. Substantial OPA responses were elicited against all serotypes. Results demonstrate the potential for PCV20 to expand pneumococcal disease protection.

Clinical Trials Registration. NCT03313037.

Keywords. adult; immunogenicity and safety; 20-valent pneumococcal conjugate vaccine; *Streptococcus pneumoniae*; clinical trial.

Population

Men and women were eligible for inclusion if they were generally healthy, including those with a diagnosis of preexisting stable disease (disease not requiring change in therapy or hospitalization ≤3 months before receipt of the investigational product).

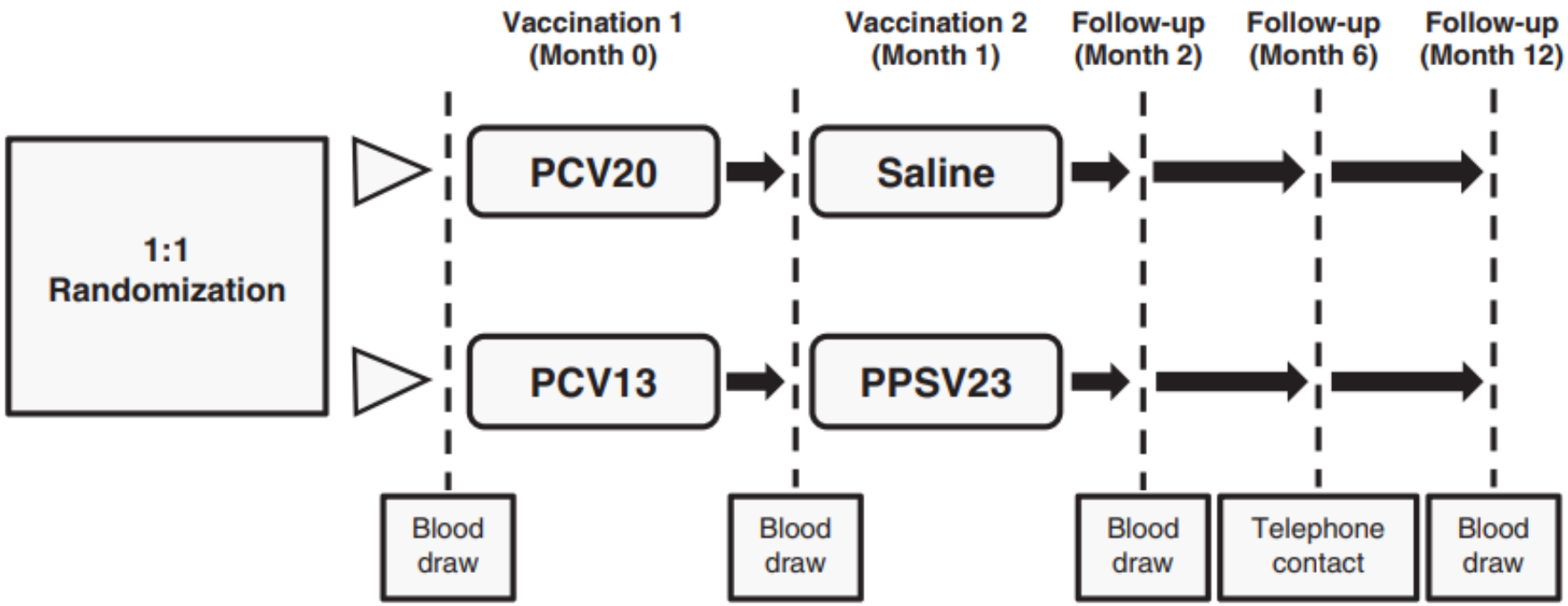


Figure 1. Study design. Immune responses measured at 12 months following vaccination 1 are not reported here. Abbreviations: PCV13, 13-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine.

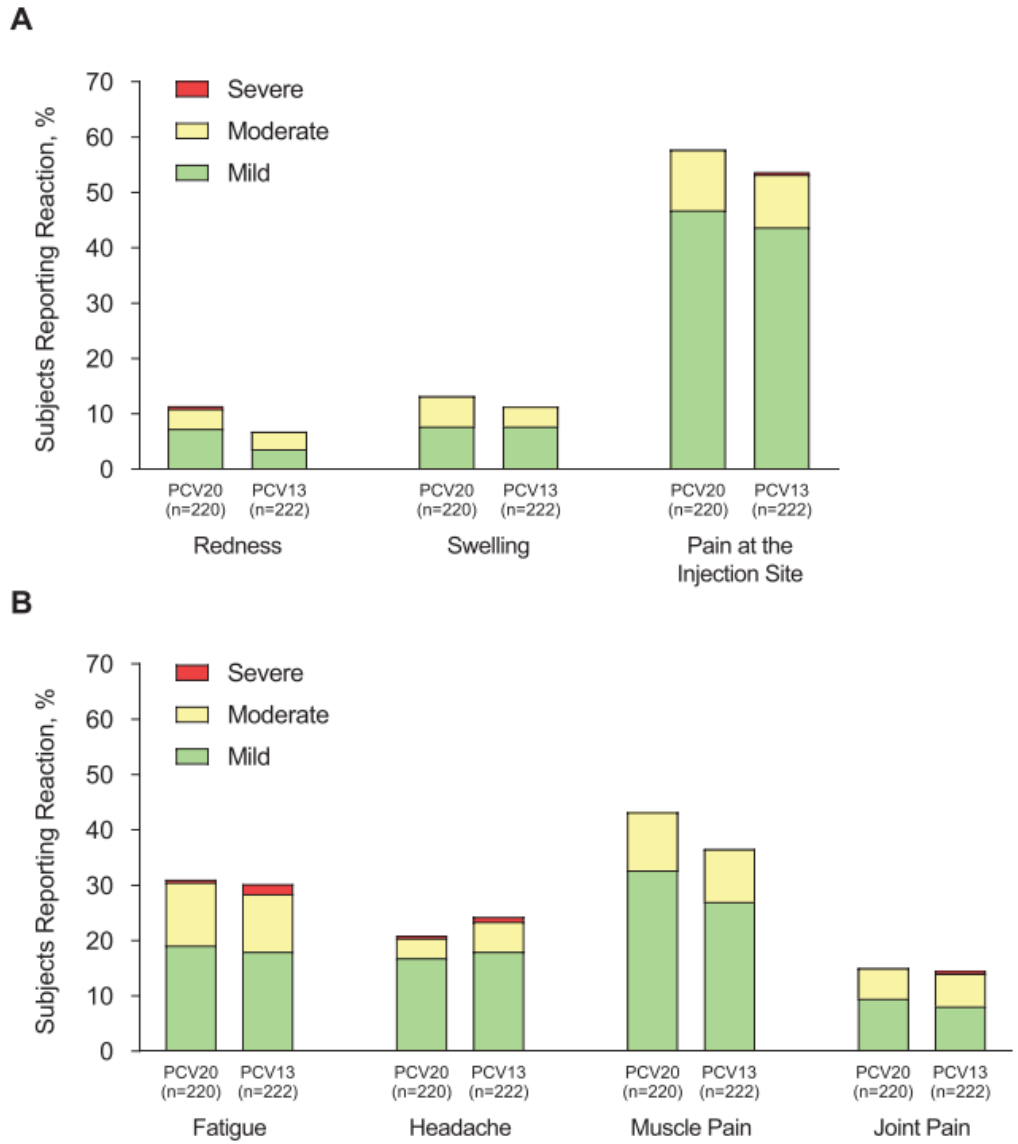
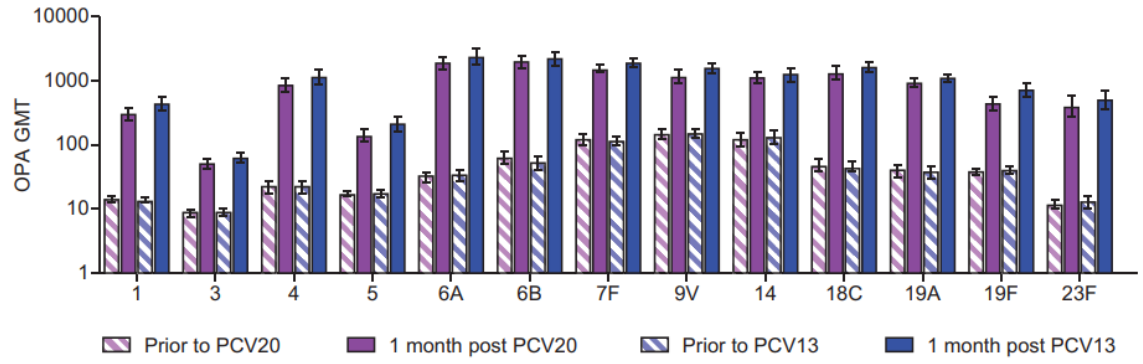


Figure 3. Prompted reactogenicity events including (*A*) local reactions within 10 days of vaccination, and (*B*) systemic events within 7 days of vaccination. The single report of fever is not included. Abbreviations: PCV13, 13-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine.

A

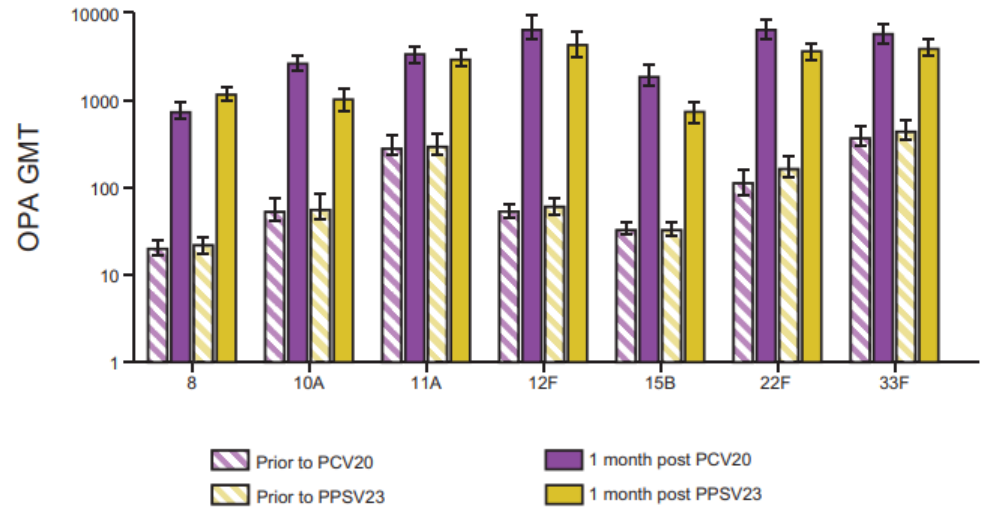


B

GMFRs in Functionality Antibody From Baseline to 1 Month After Vaccination														
Serotype		1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F
PCV20	GMFR	21.2	6.0	37.8	8.3	58.6	29.6	12.2	7.7	8.5	26.8	23.3	11.8	33.6
	95% CI	16.96, 26.60	5.02, 7.23	27.4, 52.10	6.55, 10.54	44.15, 77.73	22.56, 38.96	9.86, 15.22	6.15, 9.57	6.35, 11.26	19.96, 35.85	17.96, 30.19	8.93, 15.47	24.19, 46.54
PCV13	GMFR	33.5	7.1	51.0	11.6	68.6	38.8	15.8	10.1	9.6	35.2	30.9	18.4	39.8
	95% CI	25.77, 43.65	5.85, 8.60	36.04, 72.27	9.09, 14.86	49.49, 95.20	28.52, 52.66	12.57, 19.82	7.95, 12.74	7.20, 12.89	26.02, 47.50	23.70, 40.37	14.19, 23.87	28.85, 54.88

Figure 4. OPA (*A*) GMTs and (*B*) GMFRs for the PCV13 serotypes before and 1 month after vaccination. LLOQs for individual serotypes were as follows: serotype 1, 18; serotype 3, 12; serotype 4, 21; serotype 5, 29; serotype 6A, 37; serotype 6B, 43; serotype 7F, 113; serotype 9V, 141; serotype 14, 35; serotype 18C, 31; serotype 19A, 18; serotype 19F, 48; serotype 23F, 13. Abbreviations: GMFR, geometric mean fold rise; GMT, geometric mean titer; LLOQ, lower limit of quantitation; OPA, opsonophagocytic activity; PCV13, 13-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine.

A



B

GMFRs in Functionality Antibody From Baseline to 1 Month After Vaccination								
Serotype		8	10A	11A	12F	15B	22F	33F
PCV20	GMFR	37.1	49.3	11.2	113.4	57.1	55.4	14.0
	95% CI	27.71, 49.71	35.18, 68.95	8.16, 15.31	81.47, 157.90	41.74, 78.07	38.88, 79.01	9.96, 19.62
PPSV23	GMFR	56.9	17.1	9.8	77.0	21.3	20.3	8.9
	95% CI	42.90, 74.46	12.15, 24.15	7.41, 13.06	55.04, 107.64	15.30, 29.71	14.69, 27.96	6.67, 11.84

Figure 5. OPA (*A*) GMTs and (*B*) GMFRs for the 7 additional serotypes before and 1 month after vaccination. LLOQs for individual serotypes were as follows: serotype 8, 16; serotype 10A, 14; serotype 11A, 32; serotype 12F, 51; serotype 15B, 36; serotype 22F, 28; serotype 33F, 49. Abbreviations: CI, confidence interval; GMFR, geometric mean fold rise; GMT, geometric mean titer; LLOQ, lower limit of quantitation; OPA, opsonophagocytic activity; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine.

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A phase 3, randomized, double-blind study to evaluate the immunogenicity and safety of 3 lots of 20-valent pneumococcal conjugate vaccine in pneumococcal vaccine-naive adults 18 through 49 years of age

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ABSTRACT

Introduction: Introduction of pneumococcal conjugate vaccines (PCVs), including the 13-valent PCV (PCV13), has considerably reduced pneumococcal disease burden. However, additional serotypes not in PCV13 continue to present a substantial disease burden. The 20-valent PCV (PCV20) was developed to expand protection against pneumococcal disease beyond PCV13. As part of the phase 3 clinical development program, the current study assessed consistency of immune responses across 3 lots of PCV20 and described the safety profile of PCV20.

Methods: This phase 3, randomized, multicenter, double-blind study of pneumococcal vaccine-naive adults 18–49 years of age randomized 1710 participants in a 2:2:2:1 ratio to receive 1 of 3 lots of PCV20 or PCV13. Immunogenicity was assessed through serotype-specific opsonophagocytic activity (OPA) titers before and approximately 1 month (28–42 days) after vaccination. Reported local reactions within 10 days, systemic events within 7 days, adverse events (AEs) within 30 days, and serious AEs (SAEs) and newly diagnosed chronic medical conditions (NDCMCs) within 6 months after vaccination were evaluated.

Results: Equivalence in immune responses (OPA geometric mean titers) for all 20 vaccine serotypes was demonstrated across the 3 PCV20 lots. Robust responses, assessed by OPA geometric mean fold rises, percentage of participants achieving ≥4-fold rises, and percentage of participants with OPA titers ≥lower limit of quantitation, were observed after PCV20. Reported rates of local reactions, systemic events, and AEs were similar between the pooled PCV20 lots and PCV13; most events were mild or moderate. Reported rates of SAEs and NDCMCs were low and similar between the PCV20 and PCV13 groups.

Conclusions: Three different lots of PCV20 demonstrated robust and consistent immunogenicity. The safety and tolerability of PCV20 was acceptable and similar to that of PCV13. (Clinicaltrials.gov: NCT03828617).

Population

Men and women 18–49 years of age with no prior pneumococcal vaccination (pneumococcal vaccine-naive), including those with pre-existing stable disease (ie, not requiring significant change in therapy in the previous 6 weeks or hospitalization for worsening disease within 12 weeks before receipt of the vaccine), were eligible for inclusion.

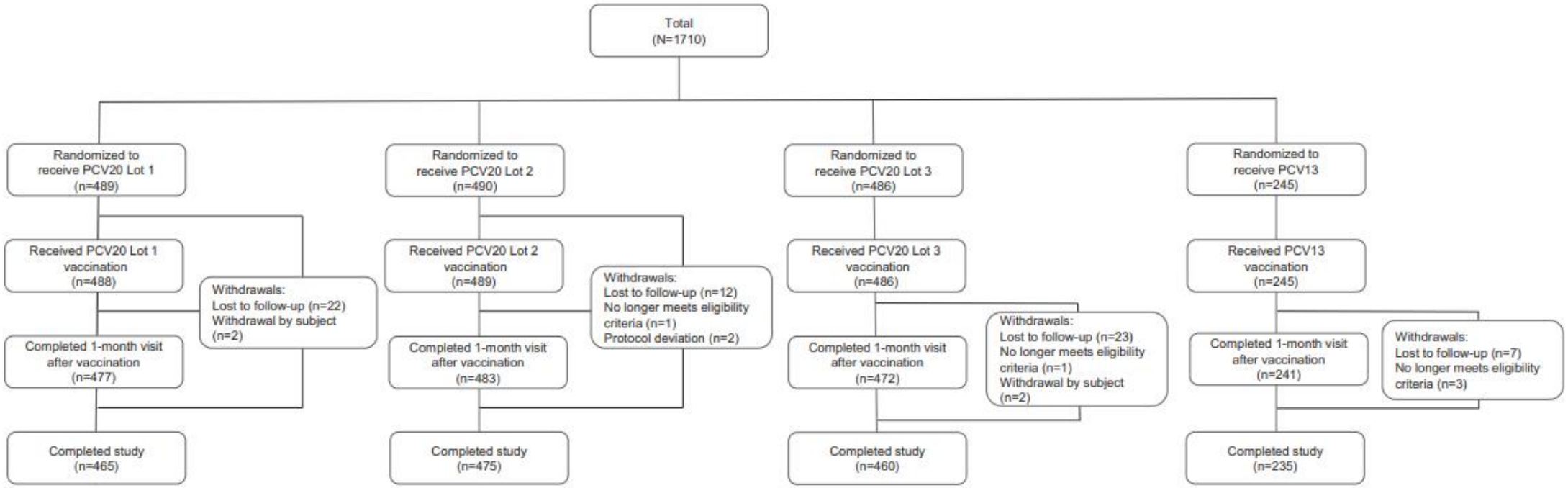


Fig. 1. Participant disposition. PCV13 = 13-valent pneumococcal conjugate vaccine; PCV20 = 20-valent pneumococcal conjugate vaccine. Two randomized participants were not vaccinated; 1 participant randomized to receive PCV20 Lot 2 was unable to provide the required blood sample, and 1 participant randomized to receive PCV20 Lot 1 had concerns about the side effects.

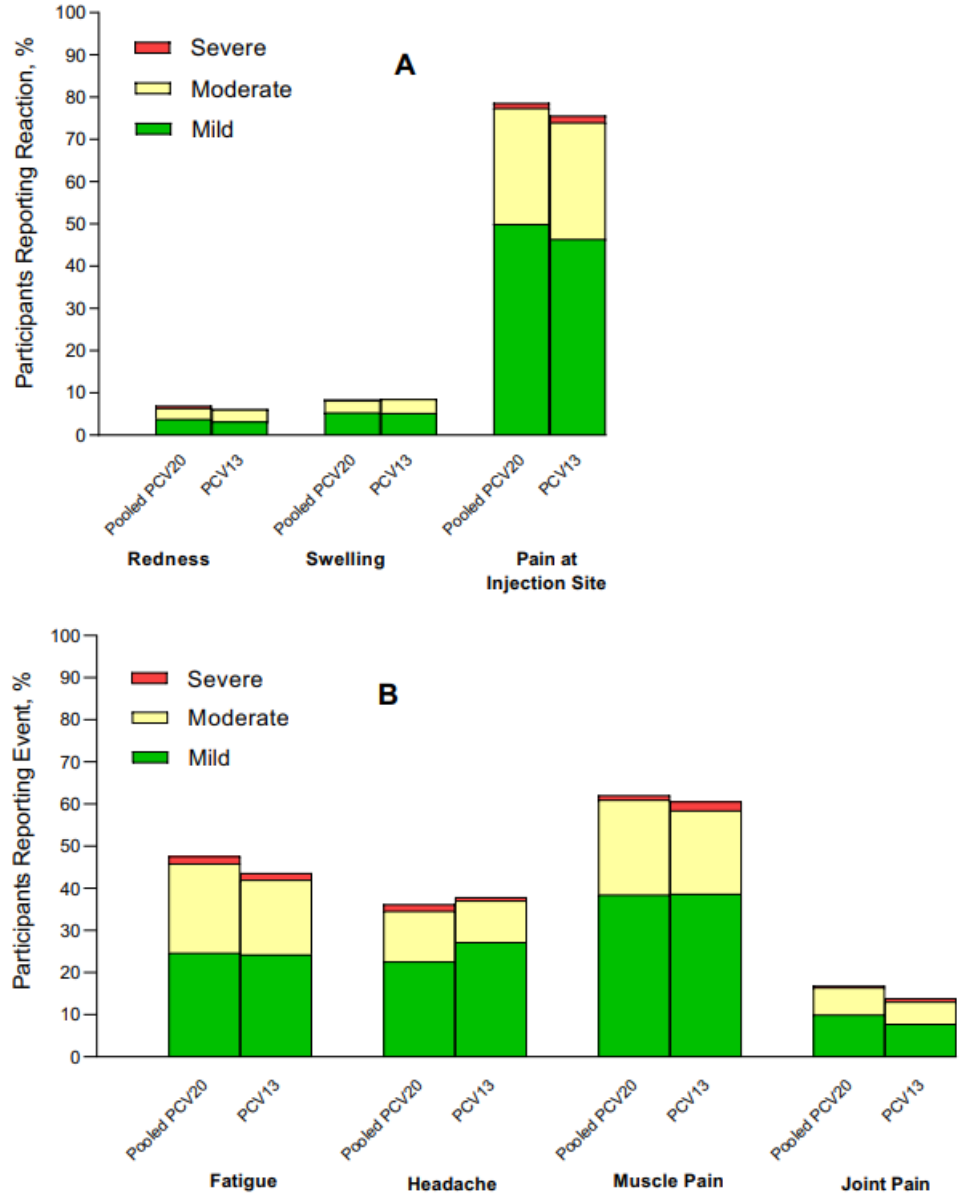
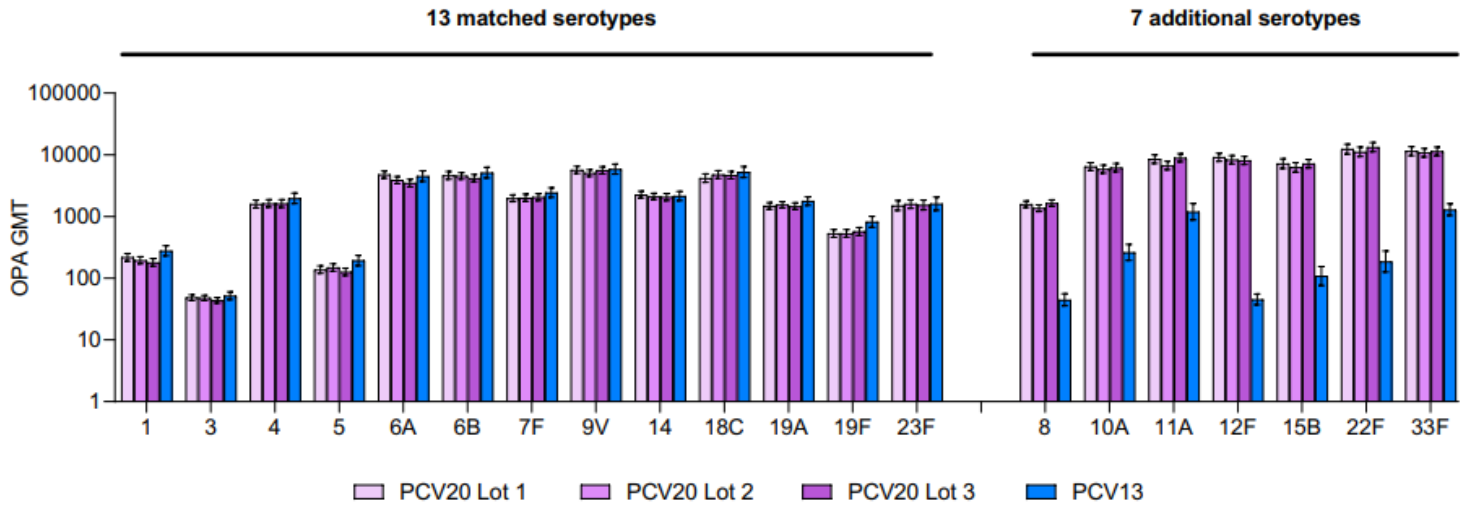


Fig. 5. Prompted reactogenicity events including (A) local reactions within 10 days of vaccination and (B) systemic events within 7 days of vaccination. PCV13 = 13-valent pneumococcal conjugate vaccine; PCV20 = 20-valent pneumococcal conjugate vaccine. Safety data were compared between the pooled PCV20 and PCV13 groups. Fever is not included in this figure but was reported by 1.2% of pooled PCV20 recipients and 0.8% of PCV13 recipients. The grading scale for prompted events was based on the US Food and Drug Administration Center for Biologics Evaluation and Research guidelines on toxicity grading scales for healthy adult volunteers enrolled in preventative vaccine clinical trials. Local reactions and systemic events were categorized as mild, moderate, or severe (Grade 1–3); investigator confirmation was required for classification as Grade 4.

A



B

GMFRs From Baseline to 1 Month After Vaccination

Serotype		13 matched serotypes													7 additional serotypes						
		1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	8	10A	11A	12F	15B	22F	33F
PCV20 Lot 1	GMFR	20.2	5.0	77.6	8.7	157.2	72.5	18.3	25.4	18.2	80.4	35.9	14.0	99.5	38.3	20.8	6.9	175.5	112.5	83.8	8.3
	95% CI	17.6, 23.1	4.4, 5.5	63.8, 94.4	7.5, 10.0	132.6, 186.3	59.9, 87.8	15.5, 21.7	21.1, 30.7	14.8, 22.3	63.9, 101.2	29.9, 43.2	12.0, 16.5	80.4, 123.1	31.3, 46.8	16.6, 26.1	5.4, 8.9	141.3, 217.9	83.8, 150.9	59.2, 118.6	6.7, 10.4
PCV20 Lot 2	GMFR	17.8	5.0	94.7	9.4	119.6	75.4	19.5	23.3	16.3	95.0	39.1	14.7	125.1	38.8	19.0	5.0	174.6	84.2	63.3	8.6
	95% CI	15.6, 20.3	4.5, 5.5	79.4, 112.9	8.2, 10.7	100.5, 142.3	62.9, 90.4	16.5, 23.0	19.4, 27.9	13.2, 20.0	76.6, 117.7	32.4, 47.1	12.6, 17.2	102.4, 152.7	32.1, 46.9	15.2, 23.7	3.9, 6.4	140.8, 216.7	64.5, 110.0	46.8, 85.7	7.0, 10.6
PV20 Lot 3	GMFR	17.3	4.6	81.0	8.0	128.4	70.5	19.0	21.6	18.1	79.9	41.8	15.4	120.9	46.1	20.2	5.3	175.7	91.7	77.8	7.4
	95% CI	15.0, 19.8	4.1, 5.1	67.0, 97.8	6.9, 9.1	107.6, 153.1	58.1, 85.6	16.1, 22.5	17.7, 26.4	14.6, 22.3	63.8, 100.0	34.9, 50.2	13.1, 18.0	97.9, 149.5	37.9, 56.0	15.9, 25.6	4.2, 6.7	141.6, 218.1	69.4, 121.3	56.8, 106.6	6.0, 9.1
PCV13	GMFR	26.6	5.6	105.3	12.6	146.5	77.6	27.4	23.4	20.7	92.8	40.6	22.5	133.2	1.3	1.0	1.0	1.1	1.5	1.1	1.1
	95% CI	21.9, 32.4	4.8, 6.6	80.9, 137.1	10.4, 15.2	115.5, 185.8	58.7, 102.6	21.7, 34.6	17.9, 30.7	15.2, 28.1	69.2, 124.5	31.3, 52.5	18.1, 27.8	100.4, 176.7	1.1, 1.5	0.9, 1.2	0.8, 1.3	0.9, 1.2	1.2, 1.9	0.9, 1.4	0.9, 1.2

Fig. 3. Pneumococcal OPA (A) GMTs 1 month after vaccination and (B) GMFRs from baseline to 1 month after vaccination for the PCV20 serotypes. GMFR = geometric mean fold rise; GMT = geometric mean titer; LLOQ = lower limit of quantitation; OPA = opsonophagocytic activity; PCV13 = 13-valent pneumococcal conjugate vaccine; PCV20 = 20-valent pneumococcal conjugate vaccine. Assay results below the LLOQ were set to 0.5 × LLOQ in the analysis. The PCV13 group was included in the study as a safety control; immunogenicity assessments of this group were included to maintain blinding and for descriptive purposes.

Clinical Infectious Diseases

MAJOR ARTICLE

Pivotal Phase 3 Randomized Clinical Trial of the Safety, Tolerability, and Immunogenicity of 20-Valent Pneumococcal Conjugate Vaccine in Adults Aged ≥18 Years

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[1]Meridian Clinical Research, Omaha, Nebraska, USA; [2]Vaccine Research and Development, Pfizer Inc, Pearl River, New York, USA; [3]PMG Research of Wilmington, Wilmington, North Carolina, USA; [4]Cincinnati Children's Hospital, Cincinnati, Ohio, USA; [5]Vaccine Research and Development, Pfizer Inc, Collegeville, Pennsylvania, USA; and [6]Syneos Health, Somerset, New Jersey, USA

Background. Pneumococcal conjugate vaccines (PCVs) have significantly reduced pneumococcal disease, but disease from non-PCV serotypes remains. The safety, tolerability, and immunogenicity of a 20-valent PCV (PCV20) were evaluated.

Methods. This pivotal phase 3, randomized, double-blind study enrolled adults into 3 age groups (≥60, 50–59, and 18–49 years) at US and Swedish sites. Participants were randomized to receive 1 PCV20 or 13-valent PCV (PCV13) dose. After 1 month, participants aged ≥60 years also received 1 dose of saline or 23-valent polysaccharide vaccine (PPSV23). Safety assessments included local reactions, systemic events, adverse events, serious adverse events, and newly diagnosed chronic medical conditions. Opsonophagocytic activity geometric mean titers 1 month after PCV20 were compared with 13 matched serotypes after PCV13 and 7 additional serotypes after PPSV23 in participants aged ≥60 years; noninferiority was declared if the lower bound of the 2-sided 95% confidence interval for the opsonophagocytic activity geometric mean titer ratio (ratio of PCV20/saline to PCV13/PPSV23 group) was >0.5. PCV20-elicited immune responses in younger participants were also bridged to those in 60–64-year-olds.

Results. The severity and frequency of prompted local reactions and systemic events were similar after PCV20 or PCV13; no safety concerns were identified. Primary immunogenicity objectives were met, with immune responses after PCV20 noninferior to 13 matched serotypes after PCV13 and to 6 additional PPSV23 serotypes in participants aged ≥60 years; serotype 8 missed the statistical noninferiority criterion. PCV20 induced robust responses to all 20 vaccine serotypes across age groups.

Conclusions. PCV20 was safe and well tolerated, with immunogenicity comparable to that of PCV13 or PPSV23. PCV20 is anticipated to expand protection against pneumococcal disease in adults.

Clinical Trials Registration. NCT03760146.

Keywords. clinical trial; pneumococcal conjugate vaccine; *Streptococcus pneumoniae*.

Population

The study population comprised ≥18-year-olds in 3 cohorts based on age at enrollment (≥60, 50–59, and 18–49 years). Participants were to be generally healthy or with a stable underlying disease.

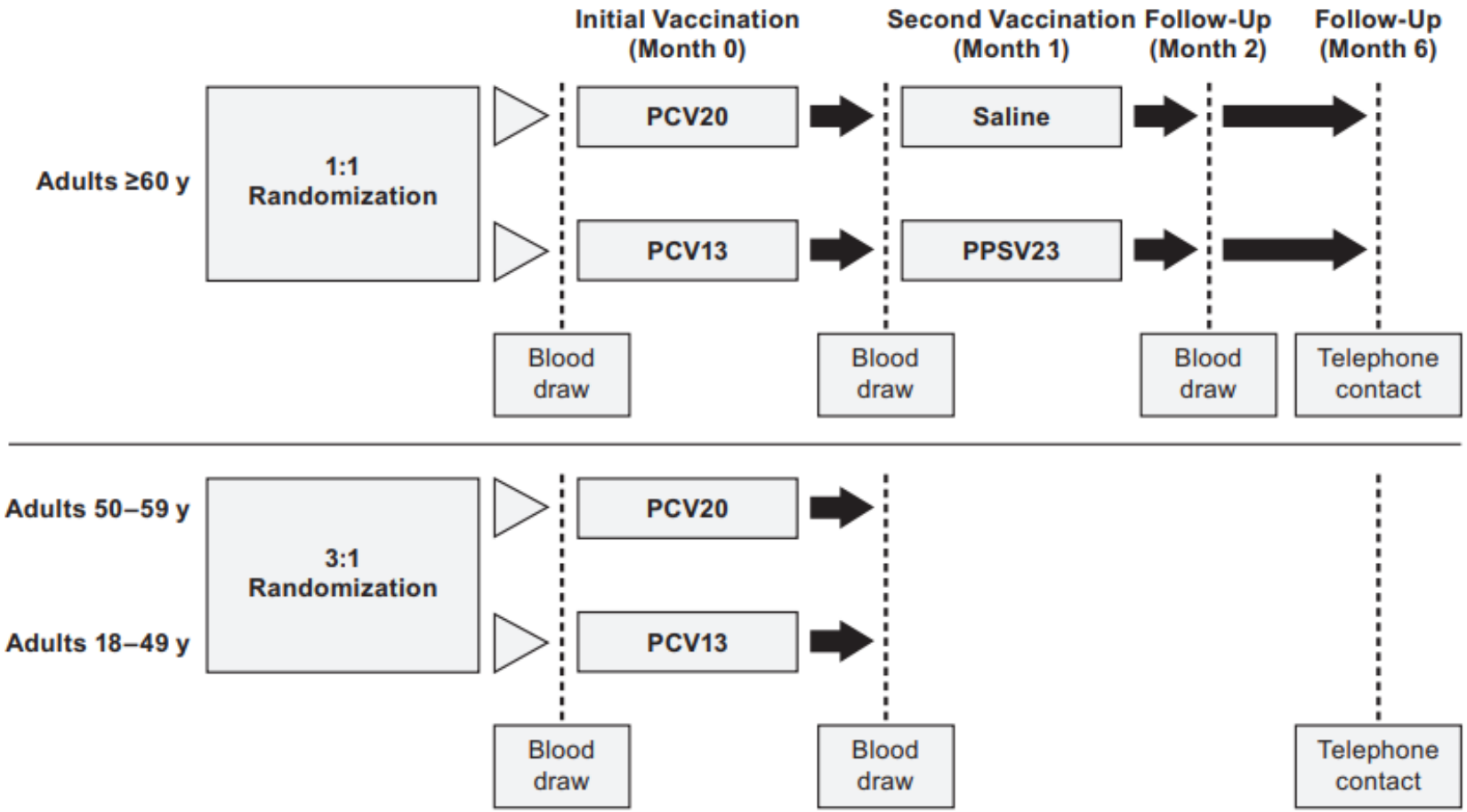


Figure 1. Study design. Abbreviations: PCV13, 13-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine.

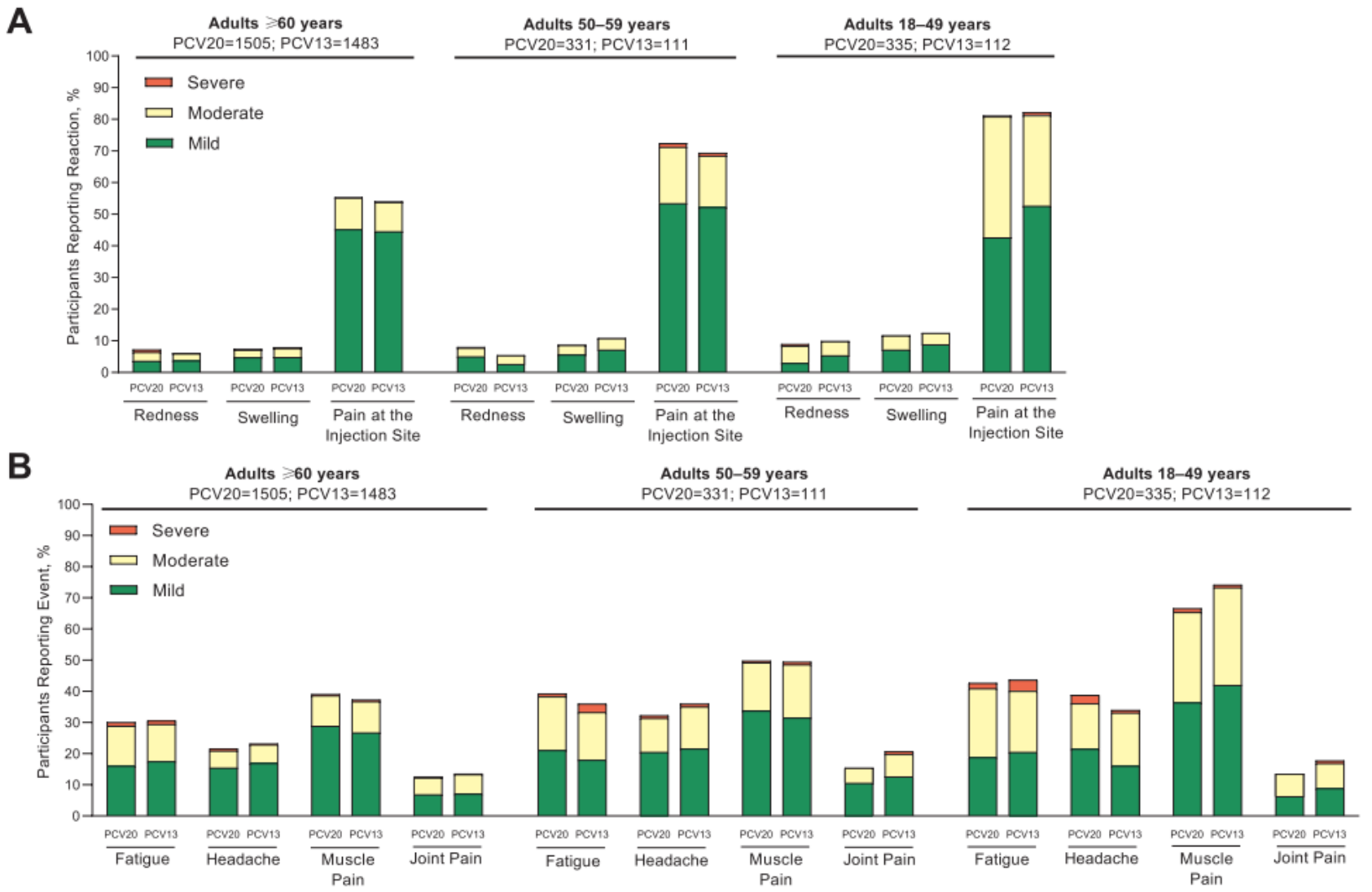
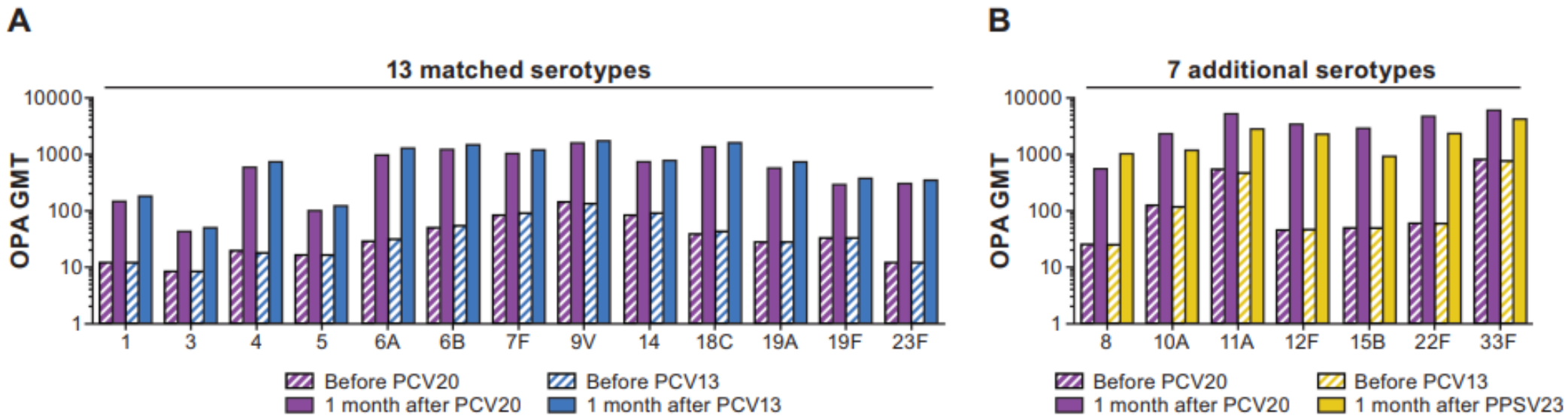


Figure 5. Prompted reactogenicity events in participants aged ≥18 years, including local reactions within 10 days of vaccination (*A*) and systemic events within 7 days of vaccination (*B*). The frequency and severity of local reactions within 10 days after 20-valent or 13-valent pneumococcal conjugate vaccine (PCV20 or PCV13) were similar within each cohort.



GMFRs From Baseline to 1 Month After Vaccination														
Serotype		1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F
PCV20	GMFR	12.6	4.8	31.2	6.1	34.3	23.8	12.2	11.0	9.3	33.8	21.0	8.6	24.9
PCV13	GMFR	15.4	5.8	39.3	7.2	42.6	26.5	13.5	12.5	8.3	37.7	25.9	10.8	30.7

GMFRs From Baseline to 1 Month After Vaccination								
Serotype		8	10A	11A	12F	15B	22F	33F
PCV20	GMFR	22.1	18.5	9.3	72.4	55.4	78.5	7.5
PPSV23	GMFR	40.4	10.1	6.0	47.3	18.2	37.9	5.7

Figure 4. Pneumococcal opsonophagocytic activity (OPA) geometric mean titers (GMTs) and geometric mean fold rises (GMFRs) in participants aged ≥60 years for the 13 matched (*A*) and 7 additional (*B*) serotypes before and 1 month after vaccination. Substantial increases in OPA GMTs from baseline to 1 month after vaccination were observed in both groups. Assay results below the lower limit of quantitation (LLOQ) were set to 0.5 × LLOQ. The numbers of subjects with valid and determinate assay results for the specified serotypes varied by serotype and were 1360–1425 for 20-valent pneumococcal conjugate vaccine (PCV20) and 1294–1418 for 13-valent pneumococcal conjugate vaccine (PCV13) for the 13 matched serotypes and 973–1353 for PCV20 and 993–1293 for 23-valent pneumococcal polysaccharide vaccine (PPSV23) for the 7 additional serotypes.

Cost-effectiveness

- Economic models assessed cost-effectiveness of the new policy options compared with existing recommendations.
- Three economic models assessed PCV20 alone for all adults aged ≥65 years; cost-effectiveness estimates ranged from cost-saving to $39,000 per quality-adjusted life-year (QALY) gained.
- Two economic models assessed use of PCV15 in series with PPSV23 for all adults aged ≥65 years; estimates ranged from cost-saving to $282,000 per QALY gained.
- The CDC model found cost savings in all scenarios for use of either PCV20 alone or PCV15 in series with PPSV23 for all adults aged ≥65 years. Cost estimates of policy options for adults aged 19–64 years with certain underlying medical conditions ranged from $11,000 to $292,000 per QALY gained for PCV20 and from $250,000 to $656,000 for PCV15 in series with PPSV23.

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ORIGINAL RESEARCH

Public health and budgetary impact of 20-valent pneumococcal conjugate vaccine for adults in England

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ABSTRACT

Background: Despite use of 23-valent pneumococcal polysaccharide vaccine (PPV23) in England, disease burden among at-risk adults remains high. We evaluated the public health and budgetary impact of 20-valent pneumococcal conjugate vaccine (PCV20) compared to the current adult pneumococcal vaccination program.

Methods: Five-year outcomes and costs of invasive pneumococcal disease (IPD) and community-acquired pneumonia (CAP) among adults aged 65–99 years and adults aged 18–64 years with underlying conditions in England were projected using a deterministic cohort model. Hypothetical vaccination with PCV20 versus PPV23 was compared from the National Health Service (NHS) perspective.

Results: Replacing PPV23 with PCV20 would prevent 785 IPD hospitalizations, 11,751 CAP hospitalizations, and 1,414 deaths over 5 years, and would reduce medical care costs by £48.5 M. With vaccination costs higher by £107.2 M, projected net budgetary impact is £58.7 M. The budgetary impact would be greatest in year 1 (£26.3 M), and would decrease over time (to £1.6 M by year 5). The average budget increase (£11.7 M/year) represents <0.01% of the Department of Health and Social Care total budget and <3% of the vaccine budget.

Conclusions: Use of PCV20 among adults currently eligible for PPV23 in England would substantially reduce the burden of pneumococcal disease, with modest budgetary impact.

ARTICLE HISTORY

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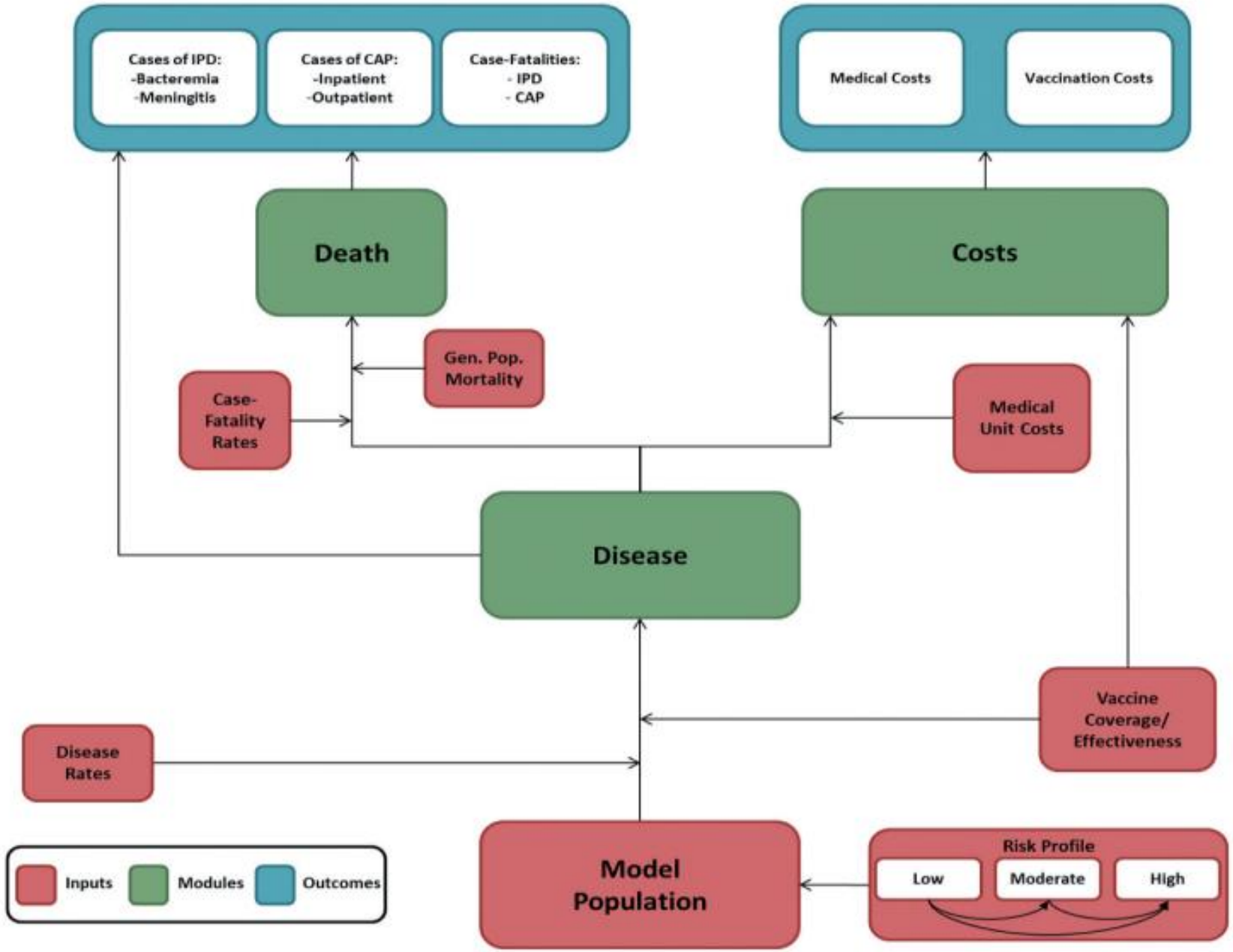
KEYWORDS

Streptococcus pneumoniae; vaccination; immunization; budgetary impact; public health


Cases of IPD:
-Bacteremia
-Meningitis
Cases of CAP:
-Inpatient
-Outpatient
Case-Fatalities:
- IPD
- CAP
Medical Costs
Vaccination Costs
Death
Costs
Gen. Pop. Mortality
Case-Fatality Rates
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Vaccine Effectiveness of a 20-Valent Pneumococcal Conjugate Vaccine Against Vaccine-Type CAP Using a Testing-Negative Design

The safety and scientific validity of this study is the responsibility of the study sponsor and investigators. Listing a study does not mean it has been evaluated by the U.S. Federal Government. Know the risks and potential benefits of clinical studies and talk to your health care provider before participating. Read our disclaimer for details.

ClinicalTrials.gov Identifier: NCT05452941

Recruitment Status : Not yet recruiting
First Posted : July 12, 2022
Last Update Posted : July 12, 2022

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Study Details | Tabular View | No Results Posted | Disclaimer | How to Read a Study Record

Study Description

Go to

Brief Summary:
This is a Phase 4, multicenter real-world effectiveness study conducted at investigator hospital sites in the United States. This study is a post-approval evaluation of the effectiveness of 20-valent pneumococcal conjugate vaccine (20vPnC) against vaccine-type (VT) radiologically-confirmed community-acquired pneumonia (RAD+CAP). The primary objective of the study is to determine vaccine effectiveness (VE) of 20vPnC against RAD+CAP caused by the 7 additional serotypes contained in 20vPnC beyond licensed 13-valent pneumococcal conjugate vaccine (13vPnC; serotypes 8, 10A, 11A, 12F, 15B, 22F, and 33F) plus 15C among adults ≥65 years of age.

Study Description

Go to

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Condition or disease
Pneumonia

Detailed Description:

This is an observational test-negative design study in which all study participants are adults ≥65 years of age hospitalized with RAD+CAP at one of the study sites. The only protocol-specified study procedure is a non-invasive urine specimen collection for pneumococcal detection using BinaxNOW® S. pneumoniae and the serotype-specific urinary antigen detection (UAD) assays. Cases and controls will be differentiated by the presence of vaccine serotypes that are identified by any method, including Quellung reaction of pneumococcal isolates obtained from standard of care (SOC) cultures from blood or high-quality respiratory tract specimens, or serotype specific UAD assays performed on urine specimens. The serotype-specific UAD assays, termed UAD-1 and UAD-2, detect the 13 serotypes in 13vPnC (1, 3, 4, 5, 6A/C, 6B/D, 7F/A, 9V/A, 14, 18C/A/ B/ F, 19A, 19F, 23F) (UAD-1) and 11 additional serotypes (2, 8, 9N, 10A/39, 11A/D/F, 12F, 15B/C, 17F/A, 20A/B, 22F/A, 33F/A) (UAD-2). For the primary objective, cases will be defined as participants hospitalized for RAD+CAP in whom the 7 additional serotypes in 20vPnC beyond 13vPnC plus 15C are identified. All other participants who meet study inclusion criteria but for whom 20vPnC serotypes are not identified from any source and all other RAD+CAP of non-pneumococcal etiologies will serve as test-negative controls.

Study Design

Go to

Study Type :	Observational
Estimated Enrollment :	12500 participants
Observational Model:	Case-Control
Time Perspective:	Prospective
Official Title:	A Phase 4 Study Using a Test-Negative Design to Evaluate the Effectiveness of a **20-valent Pneumococcal Conjugate Vaccine** Against **Vaccine-**type Radiologically-confirmed Community-acquired Pneumonia in Adults >/= 65 Years of Age
Estimated Study Start Date :	October 5, 2022
Estimated Primary Completion Date :	June 4, 2027
Estimated Study Completion Date :	June 4, 2027

Resource links provided by the National Library of Medicine

NIH NLM

MedlinePlus related topics: Pneumonia Vaccines

U.S. FDA Resources

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	
		19–64	≥65
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*

Abbreviations: CSF = cerebrospinal fluid; PCV15 = 15-valent pneumococcal conjugate vaccine; PCV20 = 20-valent pneumococcal conjugate vaccine; PPSV23 = 23-valent pneumococcal polysaccharide vaccine.

* Adults with immunocompromising conditions, cochlear implant, or CSF leak might benefit from shorter intervals such as ≥8 weeks. These vaccine doses do not need to be repeated if given before age 65 years.

† Includes congestive heart failure and cardiomyopathies.

§ Adults with immunocompromising conditions, cochlear implant, or CSF leak might benefit from shorter intervals such as ≥8 weeks.

¶ Includes chronic obstructive pulmonary disease, emphysema, and asthma.

** Indicates immunocompromising conditions.

†† Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).

§§ Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.

Grazie per l’attenzione