Meningococcal Groups A,B,C,W,Y Vaccine (PENMENVY) National Drug Monograph October 2025

VA Pharmacy Benefits Management Services and VA National Formulary Committee

The purpose of VA PBM Services drug monographs is to provide a focused drug review for making formulary decisions. Updates will be made if new clinical data warrant additional formulary discussion. The Product Information or other resources should be consulted for detailed and most current drug information.

FDA Approval Information[1]

Description/Mechanism of Action

- Protection against invasive meningococcal disease is conferred mainly by complement-mediated antibody-dependent killing of *N. meningitidis* strains.

Indication(s) Under Review in This Document

- Meningococcal Groups A,B,C,W,Y Vaccine (PENMENVY) is a vaccine indicated for active immunization to prevent invasive disease caused by *Neisseria meningitidis* serogroups A, B, C, W, and Y in individuals 10 through 25 years of age

Dosage Form(s) Under Review

- Injectable suspension for intramuscular use: a single dose after reconstitution of the Lyophilized MenACWY Component with the MenB Component, approximately 0.5ml

Clinical Evidence Summary

Efficacy Considerations [1-3]

- The efficacy of meningococcal Groups A,B,C,W,Y Vaccine, supporting its FDA approval, was evaluated from industry-sponsored studies, including two phase 3 randomized, controlled, observer-blind studies. Study 1 (V72_72, NCT04502693, Nolan et al[3]) evaluated the effectiveness, immunogenicity, and safety of MenABCWY when administered to healthy adolescents and young adults who were either meningococcal serogroups ACWY-conjugate vaccine (MenACWY) naïve or experienced. Study 2 (Study 019, NCT04707391, Nolan et al[2]) evaluated the effectiveness, immunogenicity, and safety of MenABCWY when administered to healthy adolescents and young adults who were MenACWY-experienced.
- Participants in Study 1 were 10-25 years of age and 15-25 years of age in Study 2
- Primary and key secondary immunogenicity objectives in Study 1 demonstrated the effectiveness of the serogroup A, B, C, W, and Y responses following MenABCWY administered according to a 0, 6-month schedule (MenABCWY [0, 6 months], Tables 3-5)

- Non-inferiority was not demonstrated for the PorA strain for 0, 2 or 0, 6 month comparison. PorA indicator strain is important because it represents the outer membrane vesicle (OMV) component of the vaccine and has bearing on cross-protection[8] (Table 4)
- The primary objectives in Study 2 were to demonstrate the noninferiority of MenABCWY 1 month postvaccination versus MenACWY-CRM and to evaluate reactogenicity and safety. Noninferiority of MenABCWY versus MenACWY-CRM was demonstrated following each MenABCWY dose (Table 6)

Table 1. Demographic characteristics of randomly allocated participants (Study 1) [3]

	MenABCWY group (n=1666)	4CMenB 0-2-6 group (n=900)	4CMenB 0-6 group (n=908)	MenACWY group (n=177)
Age in years	16.5 (4.7)	16.5 (4.7)	16.5 (4.7)	16.9 (4.6)
10-17 years	989 (59.4%)	534 (59.3%)	542 (59.7%)	102 (57.6%)
18-25 years	677 (40.6%)	366 (40.7%)	366 (40.3%)	75 (42.4%)
Male	728 (43.7%)	434 (48.2%)	461 (50.8%)	77 (43.5%)
Female	938 (56.3%)	466 (51.8%)	447 (49.2%)	100 (56.5%)
White	1498 (89.9%)	799 (88.8%)	793 (87.3%)	161 (91%)
Asian	71 (4.3%)	43 (4.8%)	60 (6.6%)	9 (5.1%)
Black or African American	61 (3.7%)	33 (3.7%)	29 (3.2%)	6 (3.4%)
Other	36 (2.2%)	25 (2.8%)	26 (2.9%)	1 (0.6%)
Previous MenACWY vaccination	215 (12.9%)	122 (13.6%)	119 (13.1%)	22 (12.4%)

n: (%) or mean (SD)

Table 2. Demographic characteristics of enrolled participants (Study 2)[2]

Characteristic	MenABCWY group (n=626)	MenACWY group (n=624)
Age in years, mean (SD)	17.2 (2.5)	17.2 (2.5)
15-17 years	450 (71.9%)	441 (70.7)
18-25 years	176 (28.1%)	180 (28.8%)
Male	283 (45.2%)	299 (47.9%)
Female	343 (54.8%)	325 (52.1%)
White	474 (75.7%)	467 (74.8%)
Black or African American	94 (15%)	86 (13.8%)
Asian	22 (3.5%)	33 (5.3%)
Other	36 (5.8%)	38 (6.1%)

SD: standard deviation

Table 3. Percentages of Tests with Bactericidal Activity Against Meningococcal Serogroup B Strains Following PENMENVY, BEXSERO, and MENVEO[1,3]

Group	Number of Participants	% of Tests with Bactericidal Activity (n/N)	Percent Difference PENMENVY – BEXSERO (0, 6 Months) (95% CI)
PENMENVY	754	82.5 (21,222 / 25,715)	-3.0 (-3.7#, -2.4)
BEXSERO (0, 6 Months)	764	85.6 (22,365 / 26,142)	
BEXSERO (0, 2, 6 Months)	747	86.7 (22,184 / 25,596)	-
MENVEO	133	21.0 (918 / 4,374)	-

n=number of tests with bactericidal activity, N=total number of tests, CI=confidence interval, # met predefined non-inferiority criterion

Table 4. Percentages of Participants with four-fold rise in human serum bactericidal antibody [hSBA] Seroresponse and Composite Response Against Meningococcal Serogroup B Indicator Strains Following PENMENVY and BEXSERO[1,3]

	% Seroresponse[1] (95% CI)		
Antigen (Indicator Strain)	**PENMENVY**	**BEXSERO (0, 6 Months)**	**Percent Difference PENMENVY – BEXSERO**
fHbp (M14459)	N = 675 73.2 (69.7, 76.5)	N = 654 78.1 (74.8, 81.2)	-5.0 (-9.6#, -0.3)
NadA (96217)	N = 671 92.7 (90.5, 94.5)	N = 655 95.9 (94.1, 97.3)	-3.2 (-5.8#, -0.7)
NHBA (M13520)	N = 678 61.8 (58.0, 65.5)	N = 659 69.7 (66.0, 73.1)	-7.9 (-12.9&, -2.8)
OMV (NZ98/254)	N = 642 42.2 (38.4, 46.1)	N = 624 58.3 (54.4, 62.2)	-16.1 (-21.5&, -10.6)

#: met predefined non-inferiority criterion; &: **did not meet predefined non-inferiority criterion**; CI: confidence interval

Table 5. Percentages of Participants with hSBA Seroresponses against meningococcal Serogroups A, C, W, and Y Strains following PENMENVY and MEMVEO, MenACWY-Naive[1]

Serogroup	% Seroresponse (95% CI)		Percent Difference PENMENVY – MENVEO (95% CI)
	PENMENVY	MENVEO	
A	N = 1,170 96.8 (95.7, 97.8)	N = 111 85.6 (77.6, 91.5)	11.3 (5.8#, 19.0)
C	N = 1,189 97.2 (96.1, 98.1)	N = 114 50.0 (40.5, 59.5)	47.2 (38.1#, 56.3)
W	N = 1,185 97.0 (95.9, 97.9)	N = 115 61.7 (52.2, 70.6)	35.3 (26.9#, 44.5)
Y	N = 1,196 96.7 (95.6, 97.7)	N = 119 69.7 (60.7, 77.8)	27.0 (19.4#, 35.8)

#: met predefined non-inferiority criterion; CI: confidence interval

Table 6. Percentages of Participants with hSBA Seroresponses against meningococcal Serogroups A, C, W, and Y Strains following PENMENVY and MENVEO, MenACWY-Experienced[2]

Serogroup	% Seroresponse (95% CI)		Percent Difference PENMENVY – MENVEO (95% CI)
	PENMENVY	MENVEO	
A	N = 168 95.8 (91.6, 98.3)	N = 501 95.2 (93.0, 96.9)	0.6 (-3.8#, 3.8)
C	N = 181 94.5 (90.1, 97.3)	N = 546 94.0 (91.6, 95.8)	0.5 (-4.1#, 4.0)
W	N = 181 95.6 (91.5, 98.1)	N = 544 93.9 (91.6, 95.8)	1.6 (-2.7#, 4.9)

Y	N = 180 95.0 (90.7, 97.7)	N = 537 94.4 (92.1, 96.2)	0.6 (-3.9#, 3.9)

#: met predefined non-inferiority criterion; CI: confidence interval

Safety Considerations[1]

Contraindications:

- Severe allergic reaction (e.g., anaphylaxis) to any other diphtheria toxoid-containing vaccine

Other warnings and precautions[1]

- Management of allergic reactions
- Syncope
- Limitation of vaccine effectiveness
- Altered immunocompetence
- Guillian-Barre syndrome

Table 7. Percentage of Participants Reporting Local and Systemic Reactions within 7 days (Study 1)[3]

Severe	Penmenvy (%) Dose 1 N=1638	Penmenvy (%) Dose 2 N=1428	Bexsero (%) Dose 1 N=894	Bexsero (%) Dose 2 N=759	Menveo (%) Dose 1 N=178
Pain	6	7	6	8	0
Fatigue	3	3	1	3	2
Headache	2	1	1	1	2
Myalgia	1	1	1	0.4	0
Nausea	0.3	0.3	1	0.4	1
Erythema	1	2	1	1	1
Swelling	2	2	1	2	1

Table 8. Percentage of Participants Reporting Local and Systemic Reactions within 7 days (Study 2)[2]

Severe	Penmenvy (%) Dose 1 N=608	Penmenvy (%) Dose 2 N=505-507	Menveo (%) Dose 1 N=600-601
Pain	3	3	0.3
Headache	1	1	0.7
Fatigue	1	2	0.5
Myalgia	0.2	0.4	0.2
Nausea	0.5	1	0.7

Other Therapeutic Options

Table 9.

Drug	Formulary status	Clinical Guidance/ Indication	Other Considerations
Meningococcal Groups A, B, C, W, and Y Vaccine (PENMENVY)	NF/TBD	Active immunization to prevent invasive disease caused by *Neisseria meningitidis* serogroups A, B, C, W, and Y in individuals 10 through 25 years of age	
Meningococcal Groups A, B, C, W, and Y Vaccine (PENBRAYA)	NF	Active immunization to prevent invasive disease caused by *Neisseria meningitidis* serogroups A, B, C, W, and Y in individuals 10 through 25 years of age	
Meningococcal Group B vaccine (BEXSERO)	F	Active immunization to prevent invasive disease caused by *Neisseria meningitidis* serogroup B. Approved for use in individuals aged 10 through 25 years	Does not provide protection against groups A, C, W & Y
Meningococcal (Groups A, C, Y, and W-135) oligosaccharide diphtheria CRM_{197} conjugate vaccine (MENVEO)	F	Active immunization to prevent invasive meningococcal disease caused by *Neisseria meningitidis* serogroups A, C, Y, and W-135 in individuals 2 months through 55 years of age.	Does not prevent *N. meningitidis* serogroup B infections
Meningococcal (Groups A, C, Y, W) Conjugate Vaccine (MenQuadfi)	F	Active immunization for the prevention of invasive meningococcal disease caused by *Neisseria meningitidis*	Does not prevent *N. meningitidis* serogroup B disease

		serogroups A, C, W, and Y in individuals 6 weeks of age and older	
Meningococcal (Groups A, C, Y and W-135) Polysaccharide Diphtheria Toxoid Conjugate Vaccine (MENACTRA)	NF	Active immunization to prevent invasive meningococcal disease caused by Neisseria meningitidis serogroups A, C, Y and W-135 in individuals 9 months through 55 years of age.	Does not prevent *N. meningitidis* serogroup B infections

Projected Place in Therapy

- Meningococcal disease is uncommon but potentially harmful disease. The CDC Immunization Schedule recommends vaccination against meningococcal disease based on age and high-risk conditions.
- The Meningococcal Groups A, B, C, W, and Y Vaccine is well tolerated with a low incidence of severe adverse reactions.
- The Meningococcal Groups A, B, C, W, and Y Vaccine (Penmenvy) combines the antigenic components of Meningococcal Group B vaccine (Bexsero) and Meningococcal (Groups A, C, Y, and W-135) oligosaccharide diphtheria CRM_{197} conjugate vaccine (Menveo), showed non-inferiority versus MenACWYcrm in MenACWY-naïve and experienced groups, immunological noninferiority vs MenB-4C, and provides a convenient way to simplify immunization.
- The Advisory Committee on Immunization Practices (ACIP) recommends MenABCWY vaccine (Penmenvy) may be used when both MenACWY and MenB are indicated at the same visit; 1) healthy persons aged 16–23 years (routine schedule) when shared clinical decision-making favors administration of MenB vaccine and 2) persons aged ≥10 years who are at increased risk for meningococcal disease (e.g., because of persistent complement deficiencies, complement inhibitor use, or functional or anatomic asplenia).

References

1. PENMENVY (Meningococcal Groups A, B, C, W, and Y Vaccine) [prescribing information]. GlaxoSmithKline. Durham, NC 2025.
2. Nolan T, Bhusal C, Hoberman A et al. Immunogenicity, reactogenicity, and safety of a pentavalent meningococcal ABCWY vaccine in adolescents and young adults who had previously received a meningococcal ACWY vaccine: a phase 3, randomized controlled clinical study. Clin Infect Dis 2025;80(4):752-760.
3. Nolan T, Bhusal C, Beran J et al. Breadth of immune response, immunogenicity, reactogenicity, and safety for a pentavalent meningococcal ABCWY vaccine in healthy adolescents and young adults: results from a phase 3, randomized, controlled observer-blinded trial. Lancet Infect Dis 2025;25(5):560-573.

4. BLA 125819/0 Meningococcal Groups A, B, C, W, and Y Vaccine (MenABCWY). CBER Integrated Review. February 14, 2025.
5. BEXSERO (Meningococcal Group B Vaccine) [prescribing information]. GlaxoSmithKline. Durham, NC 2024.
6. MENVEO [Meningococcal (Groups A, C, Y, and W-135) Oligosaccharide Diphtheria CRM_{197} Conjugate Vaccine] [prescribing information]. GlaxoSmithKline. Durham, NC 2025.
7. CDC Immunization Schedule 2025. https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html
8. Schillie S. GSK Pentavalent (MenABCWY) Vaccine: Review of Updated EtR and Work Group Considerations. https://www.cdc.gov/acip/downloads/slides-2025-04-15-16/02-Schillie-mening-508.pdf
9. PENBRAYA (Meningococcal Groups A, B, C, W, and Y Vaccine) [prescribing information]. Pfizer. New York, NY 2024.
10. MENACTRA (Meningococcal (Groups A, C, Y and W-135) Polysaccharide Diphtheria Toxoid Conjugate Vaccine) [prescribing information]. Sanofi Pasteur Inc. Swiftwater, PA 2018.
11. MenQuadfi (Meningococcal (Groups A, C, Y, W) Conjugate Vaccine) [prescribing information]. Sanofi Pasteur Inc. Swiftwater, PA 2025.

Prepared October 2025. Contact person: Matthew A. Fuller, Pharm.D., BCPP, National PBM Clinical Pharmacy Program Manager, VA Pharmacy Benefits Management Services (12PBM)