World Health Organization

MI4A
MARKET INFORMATION FOR ACCESS TO VACCINES

GLOBAL MARKET STUDY
MENINGOCOCCAL MENINGITIS VACCINES

Key Takeaways

- The meningococcal vaccine market is diverse and complex, with regional variations in serogroup distribution, significant use outside of routine immunization, and 29 marketed products targeting various combinations of the six serogroups (A, B, C, W, X, Y)
- Discontinued production of polysaccharide vaccines has reduced country access, particularly for MICs
- Without increases in production, available supply of conjugate MenACWY will be insufficient to meet demand growth triggered by rising incidence of serogroups C and W and reduced availability of polysaccharide vaccines
- LICs, MICs and the Global Stockpile struggle to access multivalent and conjugate vaccines due to limited global access to supply for polysaccharide vaccines as well as high cost for conjugate vaccines
- Several multivalent, conjugate vaccines by Indian and Chinese manufacturers are in the pipeline and, if prequalified or registered in many geographies and made available at acceptable prices, could increase global access
- The mid- to long-term assessment of this market will be developed following the completion of the *Global Roadmap to Defeating Meningitis by 2030*

QUICK STATS

NUMBER OF TYPES

12 vaccine types

29 distinct products

TOTAL NUMBER OF SUPPLIERS

17

2019 ESTIMATED GLOBAL SUPPLY

~200M doses

2019 FORECASTED GLOBAL DEMAND

~170M doses

2017 REPORTED PRICE RANGE

US $0.51–$100 (median: $19.25)

Context and Rationale

Despite broad and effective engagement from the global health community in meningitis A (MenA) vaccination in the meningitis belt, low manufacturing capacity and high prices across other meningococcal vaccine types[1] have impeded access to these vaccines over the past several years. A more in-depth understanding will benefit addressing these long-standing access issues and the development of the WHO's *Global Roadmap to Defeating Meningitis by 2030*, which will set goals for disease control and vaccination for meningococcal meningitis on a global level. This study seeks to provide a baseline understanding of the global landscape of supply and demand, outline market trends that may impact future supply and demand and identify actions to improve access for meningococcal vaccines in the short term.[2]

Supply and Price

While the meningococcal vaccine product landscape is highly varied, with 17 manufacturers[3] producing 29 marketed products across 12 distinct vaccine types (Table 1), few products are truly interchangeable, resulting in segmented supply for most vaccine types and in particular for MenACWY, which is the most desirable combination given its broader serotype coverage.

Overall, 12 of the 29 available products are manufactured by Chinese suppliers and currently only available in China. For MenACWY specifically, nine products are available across polysaccharide and conjugate, but conjugate products are recommended for use in routine immunization activities, and though the three conjugate products are available and are widely registered, the high price and low manufacturing capacity limits access for countries.[4] In 2017, the median price reported by countries for the three conjugate MenACWY vaccines was US$ 36.53.

Four vaccine products – conjugate MenA and three conjugate MenACWY vaccines – are currently prequalified (PQ'd). Recently, withdrawal of polysaccharide vaccines that were PQ'd has caused access issues for the Global Stockpile managed by the International Coordinating Group (ICG) and for some countries where the products had been registered and where alternative sources were not easily accessible.

[1] Vaccine type refers to the serogroup coverage and structure (whether subcapsular, polysaccharide, or conjugate) of the vaccine. There may be multiple products from different manufacturers for each vaccine type.

[2] This market study does not provide a mid- or long-term perspective of the market evolution and actions needed for meningococcal vaccines, as this evolution will be informed by the *Defeating Meningitis* strategy. Future updates to this study will incorporate a longer-term perspective once these targets and reliable epidemiological data become available.

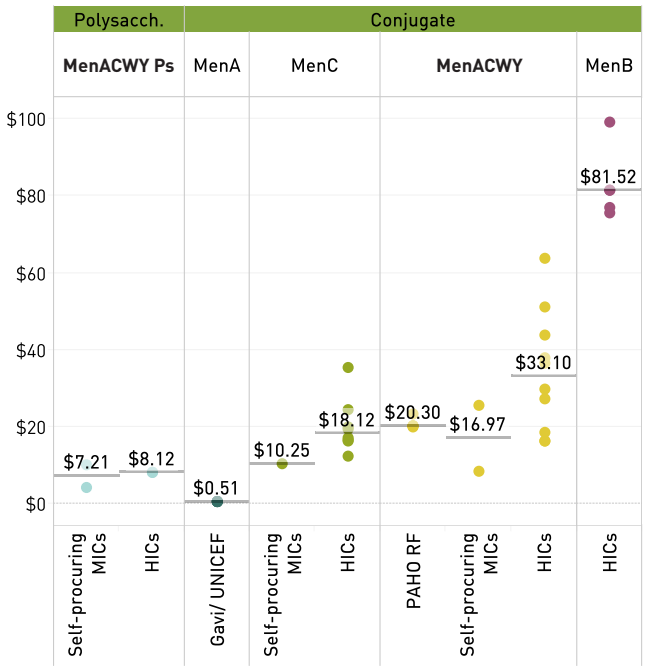
[3] CNBG (China National Biotech Group) operates four different companies producing or developing meningococcal vaccines. Each company is independent in its efforts and capacity and therefore is counted as a separate entity irrespective of the ownership and common strategic direction.

[4] WHO Meningococcal Vaccines Position Paper, 2011.

TAB. 1: MARKETED MENINGOCOCCAL VACCINE COMBINATIONS

	Vaccine Type	Marketed Products	Products in Pipeline
Conjugate	MenA	1	-
	MenAC	3	3
	MenAC+Hib	1	1
	MenACWY	3	6
	MenC	3	-
	MenC+Hib	1	-
Subcap.	MenB	2	1
	MenBC	1	-
Polysaccharide	MenA	1	-
	MenAC	6	1
	MenACW	1	-
	MenACWY	6	2

FIG. 1: MENINGOCOCCAL VACCINES 2017 PRICING
(MEDIAN PRICE LABELED)

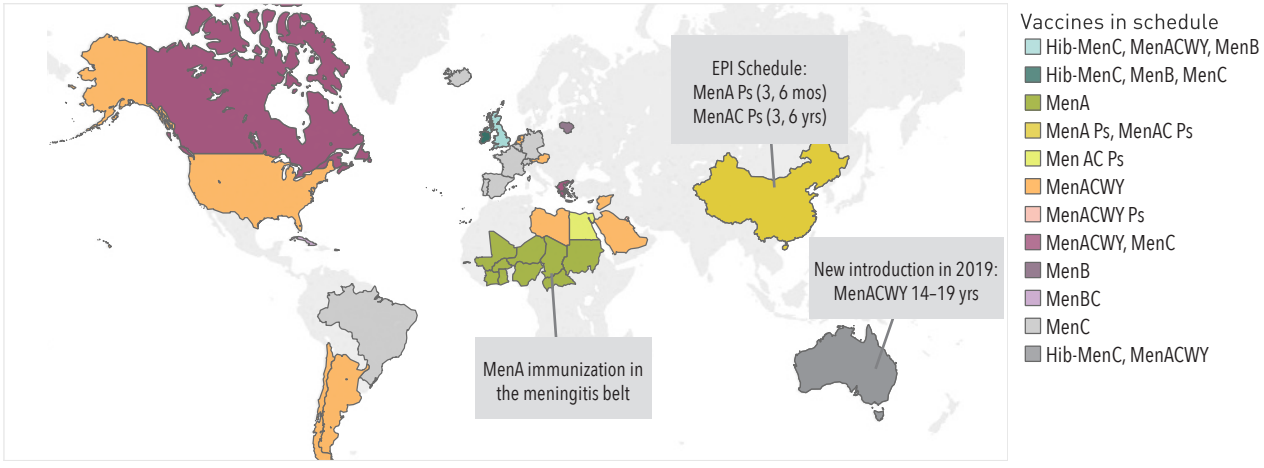


Improvement in the supply conditions may come from the very rich meningococcal product pipeline that accounts for 21 products in clinical development, particularly in China (with nine products in Phase 3 or closer to registration). Several of these products are quadrivalent. Depending on the manufacturers' registration strategies and intention or ability to achieve prequalification, these development efforts may result in an improvement of the supply conditions in the mid-term for those critical combinations.

Demand

Demand[5] for meningococcal vaccines is characterized by significant use outside of routine immunization: subnational use, immunization of special risk groups such as military personnel or travelers, private market use, or recommended but not-reimbursed immunization. In 2019, in addition to the 39 mostly HIC and meningitis belt countries that use meningococcal vaccines in national immunization programs (NIPs), 27 countries (primarily non-Gavi MICs) use meningococcal vaccines only for special risk groups. National routine use in 2019 accounts for approximately 100 million doses. Across all countries except China, non-routine use (excluding campaigns) accounts for an estimated 9 million doses in 2019. For some countries, the decision to not introduce the vaccine into the NIP is based on a perception of low national burden of disease and on limited availability of data. However, other countries in AFR and EMR have indicated interest in introducing a multivalent, conjugate vaccine into routine NIPs, but have struggled to access these vaccines due to the high price and limited availability.

FIG. 2: MAP OF MENINGOCOCCAL NATIONAL ROUTINE IMMUNIZATION PROGRAMS (AS OF JAN. 2019)



[5] *Demand* refers to the estimated number of doses countries would need to procure to meet all immunization program needs, whether these are routine – national or subnational – campaigns/SIAs, or for special risk groups only, and includes wastage and buffer.

Based on current immunization programs and planned introductions or expansions, global demand for meningococcal vaccines is estimated to reach 172 million doses in 2019 (Figure 3). China is the largest market segment, accounting for 34% of global demand, primarily for polysaccharide products which currently comprise 84% of China's demand. Excluding China and the meningitis belt,[6] the remaining 45 million doses of demand is almost entirely from self-procuring MICs and HICs, primarily for MenC conjugate and MenACWY conjugate. In 2018, 3.2 million doses were available in the Global Stockpile, compared with 5 million doses that experts forecast will be needed each year in the future, with more C- and W-containing vaccines needed to address rising incidence of those serogroups.[7] Overall, demand for MenACWY conjugate is estimated to increase over the short- and mid-term, as HICs and MICs show growing preference for immunization strategies targeting multiple serogroups and as Hajj pilgrims increasingly use MenACWY conjugate due to withdrawal of polysaccharide products.

Supply-Demand Balance

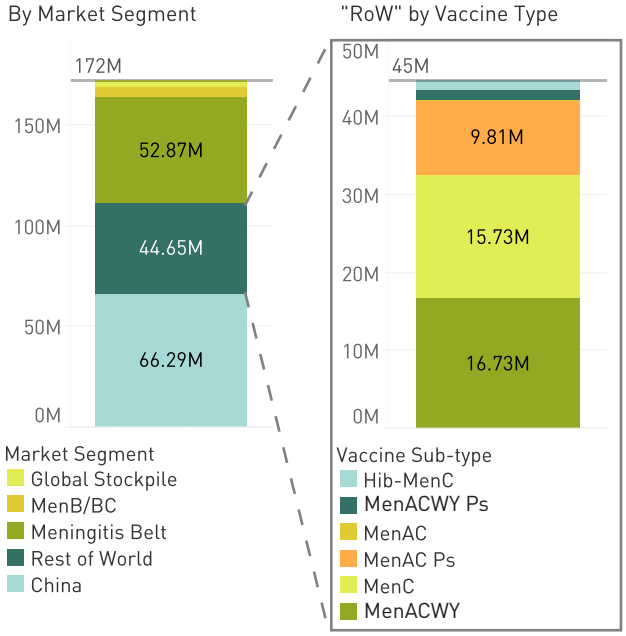
Across key market segments, the supply-demand balance highlights are as follows:

Meningitis belt – For MenA, supply is exclusively reliant on one supplier. The supplier's capacity is sufficient to meet demand, though careful management of timing of ordering and in countries roll-out may still be required. Meningitis belt countries have indicated strong interest in multivalent products, but have been inhibited in adoption due to price, funding and availability. In the future, supply in this segment may continue to rely on SII, with the licensure of the pentavalent MenACWYX conjugate likely to replace MenA use, either partially or totally. Future competition will depend on the appetite from manufacturers to serve this segment.

China – Supply and demand are reasonably balanced at the national level. Chinese suppliers currently focus only on meeting the demand needs of the domestic market, but some have indicated interest in seeking PQ. The dynamic product pipeline with several multivalent conjugate products in development may trigger changes in the future supply mix, depending on China's decision to adopt a conjugate multivalent vaccine into NIP.

A, C, Y, W-containing vaccines – Conjugate supply meets demand across the HICs that have the product in NIPs. Variation in NIP adoption in these countries will likely trigger supply changes, with manufacturers responding positively to demand from those high-priced markets. Outside of those countries, supply is very constrained and likely insufficient in the short term in view of limited interest from manufacturers to increase supply to serve other markets. The withdrawal of polysaccharide products by MNCs has in fact reduced supply availability and accessibility, and MICs that have been using polysaccharide vaccines face significant issues if they are unable to switch to a conjugate product. Potential interest from Chinese manufacturers in supplying outside of the domestic market may generate increased supply for this segment.

FIG. 3: 2019 GLOBAL DEMAND BY MARKET SEGMENT



Meningitis B – Similarly, and more markedly than for A, C, Y, W-containing vaccines, the supply and demand of MenB vaccines is limited to HICs and influenced by their adoption into NIPs. Increased uptake of MenB vaccines is anticipated in the coming years, but will likely be modest and limited to high-income markets given the high price and competing interest of introducing MenACWY conjugate. Future availability of the MenABCWY product may lead this market segment to merge with the A, C, Y, W-containing segment.

Stockpile – The Global Stockpile, in view of its very limited share of global demand, faces ongoing and immediate supply constraints for C- and W-containing products despite serving the critical function of global outbreak response. Future availability of new products currently in the pipeline, or PQ of polysaccharide and conjugate products from other manufacturers, could impact this supply dynamic.

TAB. 2: SUPPLY-DEMAND BALANCE BY MARKET SEGMENT

	Current	Short-term (2-3 yrs)	Mid-term (4-5 yrs)	Long-term (6+ yrs)
Meningitis Belt (MenA only)	●	●	●	●
China	●	●	●	●
Rest of World - MenC	●	●	●	●
Rest of World - MenACWY	●	●	●	●
MenB/BC	●	●	●	●
Global Stockpile	●	●	●	●

THRESHOLDS: < 1.1 | > 1.1 and < 1.3 | > 1.3

[6] While MenA immunization comprises 31% of demand in 2019, after planned introductions are complete in 2021, demand in the meningitis belt will plateau and will account for approximately 24% of global demand per year.

[7] Trotter, Caroline. "Stockpile needs for epidemic meningitis response 2018-2022." (2017).

Areas for Action

In the near-term, WHO will:

- ○ Engage regional and country partners to understand country interest in different meningococcal meningitis vaccine products and potential timeline for new vaccine introductions and to understand barriers to access
- ○ Work with immunization partners to engage manufacturers to address areas of supply deficit
- ○ Explore broader options for demand and supply for the Global Stockpile: potential use of remaining stockpile doses at the end of a season in preventive campaigns in high risk areas and encouraging additional manufacturers to aim for PQ of polysaccharide and conjugate vaccines
- ○ Extend the timeline of global market analysis of meningococcal vaccines to cover the mid and long terms, once the *Defeating Meningitis by 2030 Roadmap* strategy and epidemiology data has sufficiently progressed

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Methodology & Data Sources

MI4A Technical Advisory Group of Experts: MI4A benefits from the expertise of a standing advisory group for input, review and validation of market analyses. The group includes members from regional Technical Advisory Groups on immunization, UNICEF SD, PAHO RF, Gavi, the Bill & Melinda Gates Foundation, JSI, and WHO SAGE, along with manufacturers (DCVMN and IFPMA) and independent experts.

Demand Resources: Historical procurement: WHO MI4A V3P/JRF (2013–2017) and UNICEF SD (2014–2017). Planned/projected country introductions: WHO JRF, Gavi Operational Forecast, and Global Vaccine Market Model (GVMM) Demand Module.

Supply Resources: MI4A annual data collection from manufacturers, high-level validation of output of analysis with studies from Gavi, CHAI and Bill & Melinda Gates Foundation, bilateral discussions with manufacturers on capacity drivers and pricing prospects, review of clinical trials information, review of available Cost of Goods (COGs) studies, review of manufacturing processes documentation (e.g. EMA), analysis of vaccine products registration.

Pricing: WHO MI4A V3P/JRF (2017 data).

Other Resources

ICG on Meningitis:
https://www.who.int/csr/disease/meningococcal/icg/en/

UNICEF Meningitis Meningococcal Vaccines Market Update:
https://www.unicef.org/supply/index_86285.html

Gavi Meningococcal Vaccine Roadmap Public Summary:
https://www.gavi.org/about/market-shaping/supply-and-procurement-roadmaps/

WHO Meningococcal Vaccines Position Paper:
https://www.who.int/immunization/policy/position_papers/meningococcal/en/