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Seropersistence of a pentavalent meningococcal ACYWX conjugate vaccine (NmCV-5) in Africa

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Background

A cost effective pentavalent meningococcal ACYWX conjugate vaccine (NmCV-5) has been licensed and will be available to address epidemics of meningococcal disease in Sub-Saharan Africa. A single dose of NmCV-5 is safe and immunogenic in individuals between one- and 85-years-of-age. However, the optimal future use of this vaccine requires knowledge of the persistence of the immune responses generated.

Aim/Methods

A phase 3, observer-blind clinical trial, comparing a single dose of NmCV-5 to a licensed quadrivalent ACYW conjugate vaccine (Menactra™, Sanofi Pasteur) was conducted in 2- to 29-year-olds in Mali and The Gambia from 2019 to 2021. Among the original 1800 participants, a subset of 786 participants were further evaluated for immune responses by rabbit complement serum bactericidal assay (rSBA) at 6 and 12 months after immunization.

Results

At 6 months, 100% of participants who received NmCV-5 had rSBA titers ≥ 128 for serogroups A, W, Y, X. 96.7% of participants had a rSBA titer ≥ 128 for serogroup C. At 12 months, 100% of participants had rSBA titers ≥ 128 for serogroups A, W, and Y. 99.8% and 90.9% of participants had rSBA titers ≥ 128 for serogroups X and C respectively. Geometric mean titers declined after 28 days, but remained higher than baseline for all serogroups at 12 months, with a range of 985 (95% CI: 847-1145) for serogroup C to 8203 (95% CI: 7417-9072) for serogroup W in NmCV-5 recipients. Geometric mean titers were significantly higher for NmCV-5 compared to the licensed quadrivalent ACYW for the four common serogroups.

Conclusions

The immune responses following a single dose of NmCV-5 are maintained for at least 12 months. Further investigation is needed to measure protection at later timepoints. Understanding the persistence of the responses to NmCV-5 will affect expectations on how the vaccine will protect individuals over time, block carriage and generate lasting herd protection.