

Evaluation of the Efficacy of the Nm5CV Vaccine in Niger

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Background

Meningococcal meningitis remains a major public health concern across the African meningitis belt despite the successful elimination of serogroup A epidemics following the introduction of MenAfriVac. However, recurrent outbreaks due to serogroups C, W, and X continue to occur. Men5CV, a pentavalent conjugate vaccine targeting serogroups A, C, W, Y, and X, was prequalified by WHO in 2023 and introduced in Niger during reactive vaccination campaigns in 2024.

Methods

We conducted a matched case-control study in six health districts in Niger (Niamey I-V and Magaria) to assess the effectiveness of Men5CV against meningococcal meningitis. Cases were individuals aged 1-19 years with PCR-confirmed disease, residing in vaccination areas, and presenting symptom onset at least 10 days after the campaign. Recruitment occurred between May 2024 and July 2025. Four community controls matched by age, sex, and residence were enrolled for each case. Vaccination status was verified by vaccination card when available or self-reported. Logistic regression models were used to estimate crude and adjusted vaccine effectiveness.

Results

A total of 17 confirmed cases (14 serogroup C and 3 serogroup W) and 68 matched controls were included. Vaccination was reported in 41% of cases and 86% of controls, although documentation was limited. Crude vaccine effectiveness was 88% (95% CI: 62-96) against all meningococcal meningitis and 86% (95% CI: 50-96) against serogroup C. After adjustment for household crowding and recent

respiratory infections, effectiveness increased to 92% (95% CI: 72-98) overall and 91% (95% CI: 63-98) for serogroup C.

Conclusion

Men5CV demonstrated high effectiveness under real-world outbreak conditions overall. Limitations include reliance on self-reported vaccination, and absence of cases from other serogroups. Further studies are needed to evaluate long-term protection, carriage impact, and effectiveness against invasive disease across all vaccine-targeted serogroups.

The Men5CV vaccine was introduced during a reactive mass campaign in response to the meningitis outbreak in Niger in May 2024. This study provided an opportunity to assess its real-world individual effectiveness post-introduction.