Antibody persistence and booster response in adolescents and young adults 4 and 7.5 years after immunization with 4CMenB vaccine

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Background: Data on duration of protection against invasive meningococcal disease post-vaccination with the recombinant, 4-component, meningococcal serogroup B vaccine (4CMenB) are limited. We evaluated bactericidal activity persistence in adolescents/young adults up to 7.5 years post-primary vaccination with 4CMenB, and response to a booster dose compared with vaccine-naïve controls. Methods: This open-label, multicenter study (NCT02446743) enrolled 15?24 year-old-previously vaccinated participants from Canada, Australia (group Primed_4y) 4 years post-priming with 4CMenB (2 doses; 0,1-month schedule), and Chile (Primed_7.5y) 7.5 years after priming with 4CMenB (2 doses; 0,1/0,2/0,6-month schedule) and vaccine-naïve participants of similar age (Naïve_4y and Naïve_7.5y groups). Primed participants received a booster dose;
vaccine-naïve participants received 2 catch-up doses of 4CMenB, 1 month apart. We evaluated antibody persistence and immune responses using hSBA in terms of geometric mean titers and percentages of participants with hSBA titers ≥4, the kinetics of bactericidal activity post-booster (previously vaccinated) or post-2 doses (vaccine-naïve), and safety. Results: Antibody levels declined at 4 (Primed_4y) and 7.5 (Primed_7.5y) years post-primary vaccination, but remained higher than in vaccine-naïve participants at baseline (≥44% vs 13% [fHbp]; ≥84% vs ≥24% [NadA]; ≥29% vs ≥14% [PorA]) for all vaccine antigens except NHBA (≥81% vs ≥79%). One month post-booster and post-second dose, 93?100% of primed and 79?100% of vaccine-naïve participants had hSBA titers ≥4 for all antigens. Kinetics of the antibody response were similar across groups with an early robust response observed 7 days post-booster/second dose. No vaccine-related serious adverse event was reported. Conclusion: For all antigens except NHBA, a higher proportion of primed participants had hSBA titers ≥4, at 4 and 7.5 years post-vaccination, compared with vaccine-naïve participants. A more robust immune response after booster compared to a first dose in vaccine-naïve individuals, showed effective priming in an adolescent/young adult population. No safety or new reactogenicity issues were identified.