National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Factsheet Meningococcal ACWY disease
PIENTER 3 study results

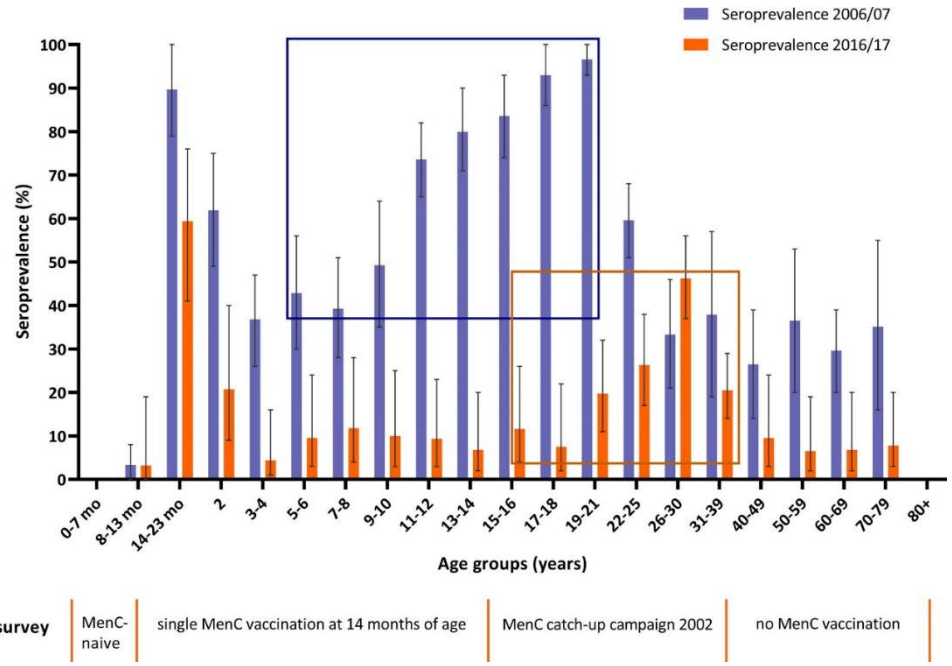
Background

Meningococcal serogroup C (MenC) vaccination was introduced in 14-month-old children in the Netherlands in 2002, alongside a mass campaign for 1–18 year-olds. Due to an outbreak of serogroup W disease, MenC vaccination was replaced by MenACWY vaccination in 2018, next to introduction of a booster at 14 years of age and a catch-up campaign for 14–18 year-olds. We assessed meningococcal ACWY antibodies across the Dutch population in 2016/17 (PIENTER3) and 2020 (PICO1). MenC seroprevalence in 2016/17 was compared with seroprevalence in 2006/7 (PIENTER2).

Results

We observed low MenC antibody levels in most age groups in 2016/17. Only recently vaccinated 14–23 month-olds and individuals who were vaccinated as teenagers in 2002 had higher MenC antibody levels, with seroprevalence of 59% and 20–46%, respectively (Figure). Antibody levels against meningococcal serogroup A, W and Y were low both in 2016/17 and in 2020, although MenW antibody levels were higher in the vaccine-eligible age group of 15-19 years than in other age groups in 2020 (0.8 ug/ml versus 0.1 ug/ml). In 2020, only eight of 1782 participants (0.45%) had a MenACWY antibody profile that suggested a natural infection with MenW in the years 2017–2020. These eight participants were aged between 19 and 59 years.

Figure. Meningococcal serogroup C (MenC) seroprevalence determined by rSBA assay (titer ≥ 8 defined as seroprotected) per age group with 95% confidence intervals in 2006/07 and 2016/17. Purple (left) box represents age groups with MenC vaccine-eligible (for the mass campaign in 2002) individuals in 2006/07. Orange (right) box represents age groups consisting (partly) of MenC vaccine-eligible (for the mass campaign in 2002) individuals in 2016/17. *the age group of individuals aged 31–39 years also contains vaccine-noneligible individuals. Abbreviations: mo = months.*



Conclusion / discussion

We found that the majority of both children and adults in the Netherlands were poorly protected against MenACWY in 2016/17 and we showed waning of MenC immunity that was induced by the mass campaign in 2002. These results underline the importance of the teenager MenACWY booster vaccination that was implemented in 2020 in the NIP as this will improve the duration of seroprotection in this cohort and might provide indirect protection for cohorts with low antibody levels. We also found that naturally-acquired MenW immunity was limited in 2020 despite the recent serogroup W outbreak.

Publication

Seroprevalence of meningococcal ACWY antibodies across the population in the Netherlands: Two consecutive surveys in 2016/17 and 2020.
Ohm M, Knol MJ, Vos ERA, Bogaard MJM, van Rooijen DM, Sanders EAM, de Melker HE, van der Klis FRM, Berbers GAM.
Vaccine 2022; 40(1):59-66.