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

Factsheet Measles, mumps and rubella Caribbean Netherlands
PIENTER 3 study results

Background

Given the unprecedented humanitarian situation in Venezuela other viral pathogens are expected to circulate more frequently in the region too. The National Immunization Program (NIP) in Caribbean Netherlands (CN) includes the measles-mumps-rubella (MMR) vaccine since 1988/89; however population immunity against these diseases has never been evaluated. Using our seroepidemiological data, we focused on identification of susceptible pockets, waning humoral immunity, and potential exposure (recently and in the pre-vaccination era) to these diseases on Bonaire, St. Eustatius and Saba.

Results

Robust antibody responses were observed after MMR-vaccination, and particularly after two doses a persistent humoral response was seen, underscoring the purpose of booster vaccination. Population-wide seroprevalence in CN for measles (94%) was higher than rubella and mumps (both 85%), and notably, all hovering around the levels for herd immunity. In those of NIP-eligible age, seropositivity for all diseases was below 90%, and especially low among children who became CN resident at an adolescent age (e.g., for measles, 72%), who mostly originated from Latin America and other non-Western countries. This is of particular concern for a highly transmissible pathogen as measles that necessitates high levels of population immunity. The observed susceptibility for rubella may also require close (direct) monitoring of women of childbearing age to prevent congenital rubella syndrome. Interestingly, rubella seroprevalence was lowest in non-NIP eligible adults from Dutch overseas territories and Suriname (75%), which is reflective of a unique island epidemiology, and very contrasting to the situation in the (European) Netherlands. Our data further indicated circulation of mumps among young adults on Bonaire (but not on St. Eustatius or Saba) which had not been detected via other means of surveillance.

Conclusion / discussion

In conclusion, MMR immunity is generally good in CN, but risk groups were identified that require specific attention. High uptake of MMR vaccination is required, and to close the immunity gaps observed an additional catch-up vaccination moment at adolescent age should be considered as well as offering vaccination to migrants at arrival. In light of regional measles outbreaks (in the future), sensitive disease surveillance is of utmost importance.

Publication

Seroepidemiology of Measles, Mumps and Rubella on Bonaire, St. Eustatius and Saba: The First Population-Based Serosurveillance Study in Caribbean Netherlands.
Vos RA, Mollema L, van Binnendijk R, Veldhuijzen IK, Smits G, Janga-Jansen AVA, Baboe-Kalpoe S, Hulshof K, van der Klis FRM, Melker HE.
Vaccines 2019; 7(4):137.

Figure. Age-specific seroprevalence (%) and geometric mean concentration (GMC) (with 95% confidence intervals) of measles (a), mumps (b) and rubella (c) IgG antibodies in the general population of Caribbean Netherlands, 2017. Note: Antibody concentrations ≥0.120 international units (IU)/mL for measles, ≥45.0 RIVM units (RU)/mL for mumps and ≥10.0 IU/mL for rubella were considered seropositive (dashed lines).