

Real-world evidence of 4CMenB vaccine effectiveness against meningococcal B disease and gonorrhoea in adolescents

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There is growing evidence of effectiveness of 4CMenB against gonorrhoea in young people, as well as meningococcal B disease, through cross protective antibodies. A meningococcal B (4CMenB) vaccine program was implemented in South Australia in October 2018. It is the only large expansive program globally funding 4CMenB vaccine (Bexsero®) for nine age level cohorts including three catch up cohorts and two ongoing cohorts in infants, young children, adolescents and young adults. Vaccine coverage is high, achieving 96% coverage for one dose and 93% for two doses in children up to 1 year of age and 77% for one dose and 70% for two doses in 16 year olds. Two years after implementation of the 4CMenB vaccine program, there was a 60% (aIRR=0.40; 95%CI 0.23 to 0.69%) reduction in the incidence of meningococcal B disease in infants aged 12 weeks to one year and a 73% (aIRR=0.27; 95%CI 0.06% to 1.16%) reduction in adolescents aged between 15-18 years. There were no cases of invasive meningococcal B disease in vaccinated adolescents at 2 years providing a vaccine effectiveness of ~100%.

There was a relative reduction in the incidence of gonorrhoea in adolescents aged 15-17 years of age of 24% (95%CI -22% to 52%) at 2 years when adjusted for changes in gonorrhoea incidence over this time in unvaccinated cohorts applying a Poisson Regression model. The adjusted vaccine effectiveness (VE) against gonorrhoea using chlamydia controls was 32.6% (95%CI 10.6% to 49.1%) for people who received at least one dose in comparison with people who were unvaccinated. The VE against gonorrhoea was 32.7% for people who received exactly two doses in comparison with people who were unvaccinated (95%CI 8.3% to 50.6%). Using the screening method VE was 70.7% (95%CI 62.2% to 77.3%) against gonorrhoea for at least one dose of vaccine. These results provided real world evidence that 4CMenB vaccine is highly effective in preventing meningococcal B disease in adolescents, as well as providing moderate cross-protection against gonorrhoea. Based on these findings the Health Minister, SA health has approved the 4CMenB vaccine program indefinitely to protect infants, children and adolescents against meningococcal B disease and potentially gonorrhoea.

A three year evaluation of outcomes will be undertaken in South Australia. Additionally, the "B partofit NT" study measuring the effectiveness of 4CMenB vaccine on gonorrhoea in the Northern Territory, where rates of gonorrhoea are highest in 15-19 year olds and up to 17,000/100,000 in some communities, is currently recruiting young people aged 14-19 years of age. South Australia and Northern Territory findings will be combined to provide definitive data of the impact of 4CMenB on gonorrhoea in the largest cohort of adolescents to be vaccinated with 4CMenB worldwide.