Maternal RSV vaccination and reduced risk of hospitalisation for babies in England, 2024/25

M. Wilson, H. Whitaker, J. Walker, E. Heymer, A. Cobbold, C. Watson, N. Andrews.
UK Health Security Agency - London (United Kingdom)

Background

Bivalent PreF maternal vaccination against respiratory syncytial virus (RSV) was introduced in England on 1 Sep 2024 for pregnant women from 28 weeks' gestation. We used linkage of routine datasets to build a retrospective cohort and study the association of vaccination with rates of RSV-associated lower respiratory tract infection (LRTI) hospitalisation in infants between September 2024 and March 2025.

Methods

Data were extracted from maternity services, immunisation, hospital admission and laboratory testing datasets. Outcome ascertainment was based on RSV and LRTI hospital ICD-10 codes and positive RSV laboratory tests. Exposure (maternal vaccination) was determined by linkage to immunisation data. Full vaccination was defined as receipt of a vaccine in the pregnancy at least 14 days before birth. Poisson regression was used to compare rates in fully vaccinated and unvaccinated groups, adjusted for week of season, age of infant, region and mother's parity.

Results

Vaccine coverage reached around 55% for babies born from mid-December onwards (Figure 1). We observed 4,594 RSV-LRTI hospitalisations in 289,399 infants, contributing over 80,000 person-years of follow-up, with crude rates of 8.0 and 1.1 per 100 person-years in unvaccinated and fully vaccinated groups, respectively. After adjusting for co-variates, vaccine effectiveness (VE) was estimated at 81.3% (95% CI: 78.9, 83.4) in the fully vaccinated group. In cases with 10 to 13 days between vaccination and birth, VE was 50.0% (36.4, 61.4). VE reached 84.9% (82.3, 87.2) if received at least 28 days before birth (figure 2).

VE in preterm infants born before 32 weeks or at 32 to <37 weeks' gestation was 64.4% (-70.7, 98.0) and 70.6% (60.5, 78.6%), respectively. Overall, VE in preterm infants was 69.4% (59.0, 77.6; figure 3).

Conclusions

Maternal RSV vaccination in England is highly effective at preventing RSV-LRTI hospitalisations in infants.

VE estimates increase with increasing time from vaccination to birth, and providers should therefore seek to vaccinate early in licensed range of gestational weeks.

Vaccination as late as 10 days before birth provides good protection, supporting the use of opportunistic late-term vaccinations.

Figure 1. Maternal vaccine coverage by infant date of birth throughout 2024/25 RSV season, stratified by time from vaccination to birth

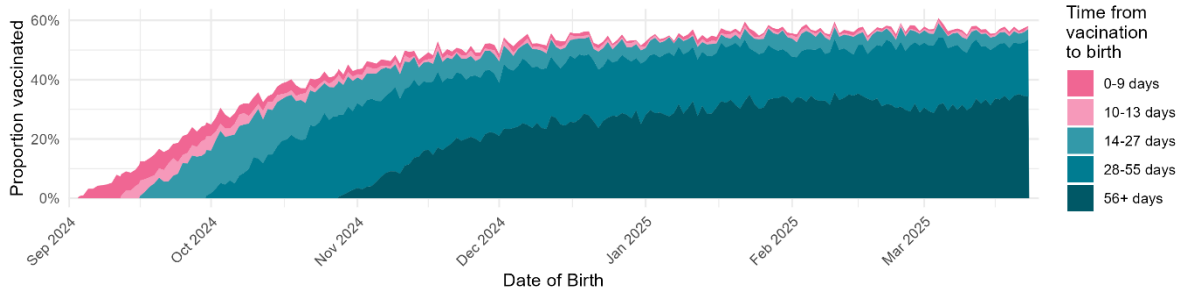

Figure 2. Vaccine effectiveness estimates stratified by time from vaccination to birth

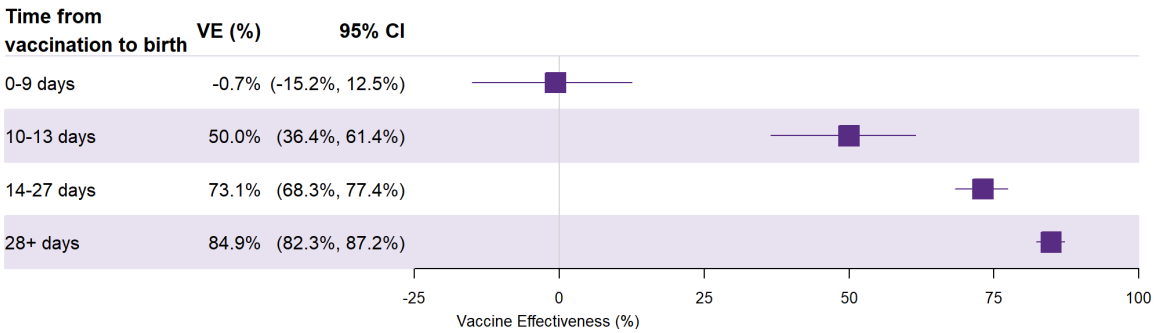

Figure 3. Vaccine effectiveness estimates stratified by gestational age at birth