**BACKGROUND**

Vaccine in a cost-effective public health intervention and can reduce morbidity and mortality associated with infectious diseases, especially in children. Vaccine refusal, poor vaccine coverage, and vaccine hesitancy have been increasingly recognized, which has led to variations in vaccine coverage rates in some states, locally, and even globally. Vaccine refusal is defined as refusing to accept vaccination. Vaccine postenrollment is defined as acceptance of the vaccine, but deferring to a later visit.

**OBJECTIVE**

To evaluate patterns of coverage and product utilization for measles, mumps, rubella, and varicella containing vaccines between 2006-2016.

**RESULTS**

- The analyses included 850,779 and 1,403,139 children in the 1st and 2nd dose cohorts, respectively.

**CONCLUSIONS**

- A total of 17% of the 1st dose cohort and 24% of the 2nd dose cohort were not vaccinated on time with either MMR or V, per the ACIP vaccination recommendations.

**DISCUSSION**

- Despite trends showing an increase in receipt of MMRV and V vaccines from 2006-2016, the 1st year of vaccine administration for MMRV and V vaccines was not used as 1 of the vaccine doses in more recent years. Further research is needed to understand the reasons why parents are not vaccinating their children on time with the MMRV and V vaccines.

**METHODS**

- The data used in this study were obtained from the MarketScan Commercial Claims and Encounters Database from 2006-2016. The population was limited to children who were privately insured for the entire study period. Children included in the analysis had to be privately insured and have continuous enrollment during the entire study period. Only the first 2 doses of MMRV and V vaccines were included in the analysis, and children with these vaccines on time. The 3 categories of vaccine hesitancy identified by the World Health Organization were used to define vaccine hesitancy. The analysis included 850,779 and 1,403,139 children in the 1st and 2nd dose cohorts, respectively.

**Figure 1. Proportion of Children in the First Dose Cohort by the Number of Days Postponement Between Receiving the MMR and V Vaccines for (A) All Vaccines and (B) Postponed Vaccines Only**

**Figure 2. Time Interval Between the MMR and V Vaccinations for Children in the First Dose Cohort Who Received the Two Vaccines at Different Dates Between 12-18 Months of Age: (A) Median and (B) Mean Days**

**Figure 3. Proportion of Children in the Second Dose Cohort by the Number of Days Postponement Between Receiving the MMR and V Vaccines for (A) All Vaccines and (B) Postponed Vaccines Only**

**Figure 4. Time Interval Between the MMR and V Vaccinations for Children in the Second Dose Cohort Who Received the Two Vaccines at Different Dates Between 4-6 Years of Age: (A) Median and (B) Mean Days**