Evaluating Quality of Immunization Information Systems (IIS) by Matching to the National Immunization Surveys (NIS)
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Background:
As immunization information systems (IISs) mature, they provide a potentially powerful tool to support collaboration between vaccination providers and public health agencies. Many immunization programs use their IIS to estimate state, local, and provider-level vaccination coverage. The validity of these estimates depends on accuracy of the population of children included in the IIS and of their vaccination records. The National Immunization Surveys (NIS) provide an opportunity for IISs to assess the population coverage and vaccination history.

Objectives:
To describe an evaluation opportunity available which allows states and some local areas and territories to receive a report assessing the differences between vaccination status of children from the jurisdiction’s IIS and from the NIS-Child for children aged 19-35 months, and from the NIS-Teen for adolescents 13-17 years.

Methods:
For children/adolescents with parental/guardian consent from the NIS and matched to the IIS, we compared IIS vaccination histories with those reported by providers to the NIS. The analysis compared known demographic information to determine which characteristics may be associated with population undercoverage (i.e., children/adolescents not matched to the IIS), as well as characteristics associated with vaccination underascertainment (i.e., children/adolescents who matched to the IIS but had fewer vaccination doses compared to NIS provider records). Since 2008, 18 states have completed 27 NIS-Child reports and 15 NIS-Teen reports.

Results:
Results varied by state, with some IISs having both high population coverage and largely complete vaccination histories. Other IISs lagged behind with a lower percentage of NIS children/adolescents matched to the IIS database and fewer vaccination doses compared to histories found through the NIS process.

Conclusion:
Matching IIS with the NIS provides an external check on the readiness of an IIS to generate valid vaccination coverage estimates. This can provide insights on interpreting IIS-based vaccination coverage estimates and identifying areas for improvement.
Background:
Vaccination coverage estimated by the National Immunization Survey-Child (NIS-Child) and Immunization Information Systems (IIS) often diverge due to potential bias in either system, e.g., under-ascertainment of vaccinations by the IIS. Methodological differences could also contribute to the inconsistencies, as NIS-Child is a two-phase survey and estimates a weighted average of daily point in time (PIT) coverage during the year, while IIS-based methods typically measure population-based coverage at a PIT.

Objectives:
We sought to assess three methods that approximate the NIS-Child design using IIS children aged 19–35 months from five high performance IIS Sentinel Sites in 2013 and 2016.

Methods:
Method 1, we calculated vaccination coverage at July 1, the middle of the annual NIS data collection period, and at December 31. Method 2, we simulated NIS-Child probability sampling to select eligible IIS children. Method 3, we calculated and averaged the 365 daily PIT coverage during the year, which conceptually approximates what the NIS-Child would be measuring if the entire population was assessed instead of a sample. We define results from these methods consistent with the NIS-Child if the estimated value falls within the NIS-Child 95% confidence interval.

Results:
Among 15 vaccines/series from 2013 assessed, all December 31 PIT (75/75) and 97% of July 1 PIT coverages were higher than the simulation coverages. Among vaccines/series assessed, 83% of July 1 PIT, 77% of December 31 PIT, and 61% of simulation coverages were consistent with NIS estimates. The average daily PIT estimates will be compared to the single-day PIT and simulation estimates, and to the NIS-Child estimates.

Conclusion:
Our preliminary findings suggest that July 1 PIT estimates may be a feasible approach for constructing IIS coverages for comparison to NIS-Child that accounts for major methodologic differences. Further evaluation based on comparison to the average daily PIT estimates will be presented.