



INSTITUTE FOR CLINICAL SYSTEMS IMPROVEMENT

Guideline Impact Study Summary: Pediatric Immunization

In 1993, ICSI developed an evidence-based guideline on pediatric immunization. At the time the work group was convened, it was routine practice to delay administration of the fourth DTP and third OPV until age 18 months. The ICSI guideline recommended the completion of all primary immunizations by 15 months of age, a change consistent with standards developed by the National Vaccine Advisory Committee. The pediatric immunization guideline was implemented by ICSI medical groups beginning in April, 1994.

A retrospective study to assess the immunization status of children was conducted in 1993 by the Institute for Research and Education HealthSystem Minnesota (formerly the Park Nicollet Medical Foundation). Immunization rates were determined for a random sample of children who turned 2 years old in 1991 and who had received their care at Park Nicollet Clinic (PNC). To determine if immunization rates changed following implementation of the ICSI pediatric immunization guideline, ICSI commissioned the Institute for Research and Education to replicate the 1993 study, reviewing the immunization status of children who turned 2 years of age during the first six months of 1995. The study was led by Renner S. Anderson, M.D., and Margaret L. Healey, Ph.D.

The ICSI pediatric immunization guideline had a substantial impact on clinical practice within a year of being implemented. There was a significant increase in the immunization rate for children 24 months of age, and the rate of simultaneous administration of vaccines rose significantly. Because of the preventive nature of these services, the study did not evaluate the impact of the guideline on clinical outcomes or cost.

This summary includes the key features, findings and caveats described in the study.

Methods

The study was designed to replicate a study conducted by Anderson and Kind¹ prior to implementation of the guideline so that immunization rates of the two study populations could be compared. To define the population of children who received their primary care at PNC, the operational definition developed by the Centers for Disease Control and Prevention (CDC) and the Minnesota Department of Health (DOH) was adopted. A child was considered eligible for the study if the child:

- made at least one visit to a PNC primary care physician;
- had documentation of at least one immunization in his or her medical record; and
- did not have any documentation of transfer of care to another medical facility.

¹ Anderson, RS, Kind, EA. Improving Childhood Immunization Rates: Findings and Recommendations of a PNMC Study of Rates Among Two-Year-Olds. *The Bulletin*. 1995;38:98-103.

Children were also excluded if they were enrolled in a research study for an experimental vaccine during the audit period.

PNC administrative encounter data were used to identify the study sample. All encounters from 1/1/93 through 8/30/95 were examined to identify children born between 1/1/93 and 6/30/93 who had at least one encounter at PNC by 26 months of age. A total of 2,843 records eligible for review were identified. Eligibility was confirmed and immunization status was determined by medical record review. Inter-rater reliability was assessed by pretesting an audit tool on a random sample of 50 medical records. Agreement among the three chart abstractors was 99.8%.

A second random sample of 700 records was chosen from the remaining 2,793 records. Of those, 379 met all of the criteria for inclusion in the study.

Results

Results in bold type are statistically significant.

Question: How did immunization rates at PNC for children who turned 2 years old in 1995 compare with rates reported for children who turned 2 years old in 1991?

Result:

<i>Children up-to-date on their immunizations:</i>	<i>Pre-implementation (1991)</i>	<i>Post-implementation (1995)</i>
⇒ at 24 months	56%	82%

Question: Immunization rates were significantly higher for a subsample of children in the 1991 study who had at least one encounter at PNC between 22 and 26 months of age than the rates in the full sample of children. The authors defined “actively receiving health care at PNC” as a health supervision visit at 15 or 24 months of age (± 2 months). What were the immunization rates for children who were actively receiving their health care at PNC?

Result:

<i>Children up-to-date on their immunizations having at least 1 health supervision visit at PNC between 22 and 26 months of age</i>	<i>Pre-implementation (1991)</i>	<i>Post-implementation (1995)</i>
⇒ at 24 months	69%	92%

Discussion

This study was conducted using data from one medical group and specific results cannot be generalized to any other medical group. However, the approach to implementation used by PNC is easily reproduced in most clinic-based medical practices, and it is reasonable to assume that similar results could be obtained in those settings.

As part of the ICSI guideline measurement process, the Quality Resources staff at PNC also assessed immunization rates. Immunization rates at age 24 months for children who had turned 24 months of age in the previous six months, were members of a pre-paid health plan, and had a visit to PNC prior to 21 months of age increased from 68% in January, 1994 (just prior to guideline implementation) to 95% in July, 1995. A repeated

measurement in January, 1996 demonstrated that the 95% rate was maintained. These rates are not different from those reported for children with a recent health supervision visit in the 1995 study.

The ICSI guideline recommends the simultaneous administration at age 15 months of the fourth DTP with the MMR. The study investigators evaluated the extent to which this recommendation was adopted and compared immunization rates for those who received the MMR and fourth DTP simultaneously with those who received these immunizations separately. (The rate of simultaneous administration of the fourth DTP and the MMR was not directly measured in the 1991 study, but it was not routine practice at the time.) Compliance with the recommendation for simultaneous administration of the fourth DTP with the MMR was predictive of up-to-date immunization status at 24 months, as shown in the following table:

<i>Percentage of children who were up-to-date on their immunizations who received:</i>	<i>age 17 months</i>	<i>age 24 months</i>
⇒ MMR with 4th DTP (84%)	87%	97%
⇒ MMR without 4th DTP (16%)	13%	57%