

Pediatric Influenza Vaccination by Office-Based Pediatricians and Family Physicians During the 2010–2011 Influenza Season

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Background

- Since 2008, the Centers for Disease Control and Prevention Advisory Committee on Immunization Practices (ACIP) has advised that all children 6 months to 18 years of age receive annual vaccination against influenza as soon as vaccine becomes available.¹
- Children aged 6 months to 8 years may require 2 doses of influenza vaccine based on their prior vaccination status.²
- Pediatricians (PDs) and family practice physicians (FPs) are the principal physician specialties that provide influenza vaccine for children in the United States.³
- Past studies have shown significant differences in how PDs and FPs view the severity of influenza and its complications, their knowledge of national guidelines, and their use of strategies to identify children eligible for vaccination.^{4–6}
- Limited data are available regarding the delivery of influenza vaccines to children by providers, particularly in FP offices.

Objective

- To compare pediatric influenza vaccination practices of US PDs and FPs

Methods

- A prospective, observational study was conducted during the 2010–2011 influenza season among 105 PD and 13 FP offices that vaccinate children against influenza.
- Vaccination-related activities and influenza vaccinations given by age group in children <18 years of age were tracked; data were entered into an electronic database semimonthly from August 1, 2010, through March 31, 2011.
- Surveys at study start and completion captured patient population by age group and office demographics and characteristics.
- Vaccine coverage (percentage of children receiving ≥1 dose) and 2-dose compliance (percentage of children requiring 2 doses who received a second dose) were calculated for each study office.
- Data were analyzed with descriptive statistics.

Results

- The characteristics of all offices and children assessed in this study are presented in **Table 1**.
- PD offices began vaccination earlier and ended later in the season than FP offices, increasing availability (239 vs 212 days; $P=0.003$; **Table 2**).

Table 1. Characteristics of Offices and Vaccinated Children

Characteristics	Pediatric Practices	Family Practices
Office		
Number of offices	105	13
Physicians, mean (range), n	3.5 (1–12)	2.3 (1–7)
Nurses, mean (range), n	3.5 (0–24)	1.4 (0–4)
Nurse practitioner/physician assistant, mean (range) n	0.8 (0–7)	0.7 (0–3)
Other, mean (range), n	3.1 (0–15)	3.5 (0–11)
Total patients, n	722,069	26,862
Pediatric patients per physician, mean (range), n	1954 (433–9982)	926 (89–3898)
Electronic medical record, n (%)	40 (38.1)	10 (76.9)
Location within the US,* n (%)		
Northeast	18 (17.1)	3 (23.1)
South	49 (46.7)	2 (15.4)
West	19 (18.1)	3 (23.1)
Midwest	19 (18.1)	5 (38.5)
Office demographics, n (%)		
Rural	19 (18.1)	2 (15.4)
Suburban	68 (64.8)	6 (46.2)
Urban	18 (17.1)	5 (38.5)
Distribution of practices by percentage of doses from the VFC program, n (%)		
0	18 (17.1)	5 (38.4)
1–25	30 (28.6)	2 (15.4)
26–50	34 (32.4)	1 (7.7)
51–75	10 (9.5)	2 (15.4)
76–100	12 (12.4)	3 (23.1)
Offered inactivated vaccine, n (%)	105 (100)	13(100)
Offered intranasal live attenuated influenza vaccine, n (%)	105 (100)	3 (23)
Vaccinated children		
Age of vaccinated children, %		
6–23 mo	19.1	15.1
24–59 mo	24.4	20.1
5–8 y	24.8	22.8
9–18 y	31.7	42.1
First-dose administration rate for all ages, median, %	23.8	14.3
Full-vaccination rate for all ages, median, %	20.4	13.6
2-dose compliance for all ages, median, %	55.5	57.1

VFC=Vaccines for Children.

*The American Medical Association estimates that 23%, 22%, 35%, and 19% of US pediatricians and 14%, 25%, 36%, and 26% of US family practitioners reside in the Northeast, West, South, and Midwest, respectively.⁷

- Both specialties gave most influenza vaccines during well visits (PDs, 40%; FPs, 55%) and in clinics during routine office hours (PDs, 20%; FPs, 20%; **Table 2**).
- PDs administered a higher percentage of vaccinations during sick visits than did FPs (15% vs 10%; $P<0.05$).
- PD offices more commonly employed standing orders (PDs, 63%; FPs, 46%; **Table 2**) and second-dose reminder systems (PDs, 63%; FPs, 39%).

Table 2. Office Influenza Vaccination Practices

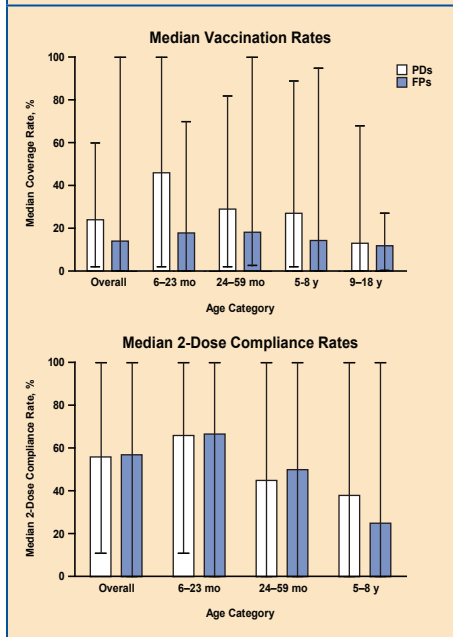
Office Vaccination Practices	Pediatric Practice (N=105)	Family Practice (N=13)
Number of hours vaccine made available, median (range)		
Monday	9 (2–13)	9 (8–11)
Tuesday	9 (4–13)	9 (8–11)
Wednesday	9 (4–13)	9 (8–11)
Thursday	9 (2–13)	9 (4–11)
Friday	9 (2–13)	9 (5–9)
Offices offering vaccine on weekends, % (median duration, h)		
Saturday	39.0 (3.0)	23.1 (4.0)
Sunday	3.8 (4.5)	0
Number of days vaccine available to patients per year, median (range)	239 (60–302)*	212 (107–283)
First day, median (range)	Aug 15, 2010 (Jul 1, 2010, to Oct 15, 2010)	Sep 7, 2010 (Aug 15, 2010, to Nov 11, 2010)
Last day, median (range)	Apr 11, 2011 (Dec 14, 2010, to Jun 30, 2011)	Apr 1, 2011 (Jan 14, 2011, to May 25, 2011)
How vaccines were administered, median (range), %		
During routine health maintenance visits	40 (0–100) [†]	55 (30–100)
At vaccine clinics during normal office hours	20 (0–100)	20 (0–60)
During sick visits	15 (0–80) [†]	10 (0–30)
At vaccine clinics outside normal office hours	0 (0–80)	0 (0–5)
Standing order for influenza vaccine, %	62.9	46.2

* $P<0.01$ for pediatric vs family practice offices.

[†] $P<0.05$ (Wilcoxon rank sum test) for pediatric vs family practice offices.

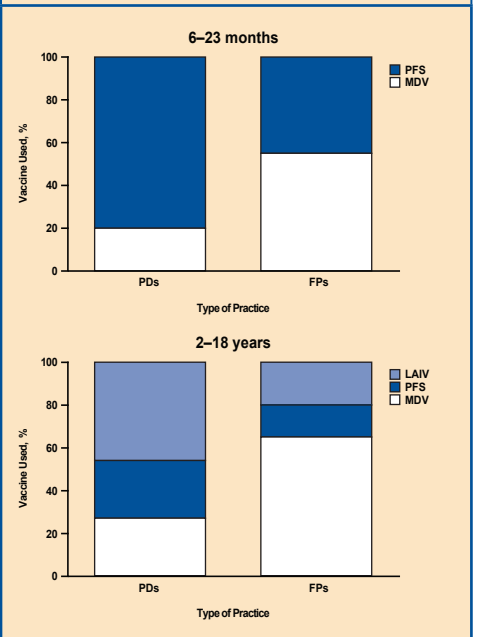
- PDs had a higher median vaccination coverage rate for all children (PDs, 24%; FPs, 14%; **Figure 1**).
- PDs and FPs had similar vaccination coverage rates in children 9–18 years of age (PDs, 13%; FPs, 12%; **Figure 1**).
- Both specialties had similar compliance with the recommended 2-dose regimen for previously unvaccinated children aged 6 months to 8 years (PDs, 56%; FPs, 57%; **Figure 1**).
- Both specialties had a similar pattern of diminishing coverage and compliance rates with increasing age (**Figure 1**).
- PDs used more preservative-free vaccine than FPs for children aged <2 years (80% vs 45%; **Figure 2**).
- Among children aged 2–18 years, PDs most commonly used the intranasal vaccine (46%), whereas FPs most commonly used the multidose vial (65%; **Figure 2**).

Figure 1. Influenza Vaccination Rates by Age Group



FP=family practice physician; PD=pediatrician.
Error bars indicate range.

Figure 2. Percentage of Vaccine Administered by Vaccine Type



FP=family practice physician; LAIV=live attenuated influenza vaccine; MDV=inactivated preservative-containing vaccine in multidose vial; PD=pediatrician; PFS=inactivated preservative-free vaccine in prefilled syringe.

Conclusions

- Significant differences exist in influenza vaccination-related behaviors exhibited by US PDs and FPs.
- A greater understanding of these differences may allow for the creation of more effective strategies to improve influenza vaccination rates within each specialty.

References

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