Improved Timing of Availability and Administration of Influenza Vaccine Through the Vaccines for Children Program From 2007 to 2011

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Background

- Delivery of annual influenza vaccinations is especially challenging because the vaccine must be distributed and administered during a limited time interval.
- The Vaccines for Children (VFC) program aims to provide all recommended childhood vaccines free of charge to eligible children and provides approximately half of all vaccines provided to children in the United States.
  - The positive impact of the VFC program on vaccination rates among uninsured children has been well documented.[1-6]
- All children 6 months through 18 years of age are recommended to be vaccinated annually against influenza. Children <9 years of age are recommended to receive 2 doses of vaccine if previously unvaccinated.
  - However, vaccination coverage and compliance with the 2-dose recommendation are suboptimal.[7,8]
- A previous study of US pediatric offices in 2007–2008 and 2008–2009 demonstrated a delay in the delivery and administration of VFC influenza vaccine relative to privately purchased (non-VFC) vaccine.[9]
  - The delay was linked to lower 2-dose compliance among the VFC population.

Objective

- To compare the timing of delivery and administration of VFC vs non-VFC influenza vaccine in US pediatric offices in 2010–2011 relative to the previously described 2007–2008 and 2008–2009 influenza seasons

Methods

- A prospective observational study was conducted in 42, 84, and 105 US pediatric offices during the 2007–2008, 2008–2009, and 2010–2011 influenza seasons, respectively.
- A random sample of outpatient pediatric offices from the American Medical Association list of pediatricians was recruited to represent a geographically balanced sample.
- Offices prospectively captured all influenza vaccinations by age group, first or second influenza vaccination dose, and VFC status.
- At the end of the study, offices reported influenza vaccine shipment quantities and arrival dates by VFC status.
- 2-dose compliance for each age group was calculated for children requiring 2 doses by dividing total second vaccinations by total first vaccinations.

Results

- In all seasons, the median arrival date of an office's first shipment was earlier for non-VFC vs VFC vaccine **(Table 1)**.

Table 1. Median First Shipment Date

Influenza Season	Non-VFC Vaccine	VFC Vaccine
2007–2008	9/15/2007	10/15/2007
2008–2009	8/20/2008	10/1/2008
2010–2011	8/10/2010	9/8/2010

VFC=Vaccines for Children program.

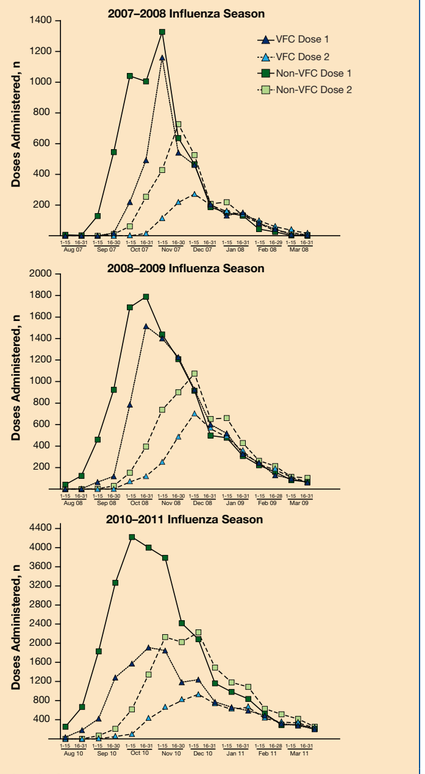
- Administration of VFC vaccine was delayed compared with non-VFC vaccine by approximately 1 month in 2007–2008 and 2008–2009, and 0.5 months in 2010–2011 **(Figure 1)**.
  - The delay in first-dose administration resulted in a subsequent delay in second-dose administration for children requiring 2 doses.
- 2-dose compliance rates for VFC compared with non-VFC populations tended to be lower in each influenza season **(Table 2; Figure 2)**.
  - However, the difference in 2-dose compliance for the VFC and non-VFC populations was greatly reduced in 2010–2011.

Table 2. 2-Dose Compliance Rates for VFC Compared With Non-VFC Populations

Influenza Season	Non-VFC Population	VFC Population
2007–2008	47.5%	38.5%*
2008–2009	55.1%	45.9%*
2010–2011	52.9%	50.0%

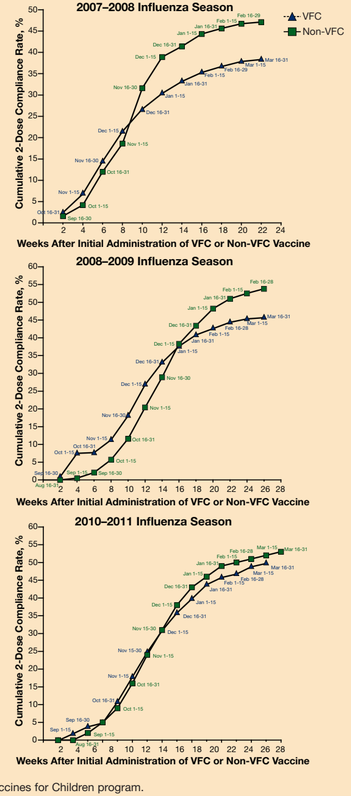
VFC=Vaccines for Children program.
*$P<0.001$ Non-VFC vs VFC.

Figure 1. Timing of First and Second Influenza Doses Administered to Children Eligible for 2 Doses by VFC Status



VFC=Vaccines for Children program.

Figure 2. Cumulative 2-Dose Compliance by VFC Status by Week After Initial Vaccination



VFC=Vaccines for Children program.

Conclusions

- **Delivery of VFC influenza vaccine was consistently delayed relative to non-VFC influenza vaccine, which is expected owing to the additional requirements and complexity of the VFC distribution system.**
- **In 2010–2011, VFC shipments arrived earlier than in previous years, which reduced the administration delay and enabled greater equity in 2-dose compliance rates between the VFC and non-VFC populations.**
- **Arrival of VFC influenza vaccine by early September appears to mitigate the effects of delayed VFC vaccine shipment.**

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