



Sustainability of school-located influenza vaccination programs in Florida



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ABSTRACT

Background: School-located influenza vaccination (SLIV) programs are a promising strategy for increasing vaccination coverage among schoolchildren. However, questions of economic sustainability have dampened enthusiasm for this approach in the United States. We evaluated SLIV sustainability of a health department led, county-wide SLIV program in Alachua County, Florida. Based on Alachua's outcome data, we modeled the sustainability of SLIV programs statewide using two different implementation costs and at different vaccination rates, reimbursement amount, and Vaccines for Children (VFC) coverage.

Methods: Mass vaccination clinics were conducted at 69 Alachua County schools in 2013 using VFC (for Medicaid and uninsured children) and non-VFC vaccines. Claims were processed after each clinic and submitted to insurance providers for reimbursement (\$5 Medicaid and \$47.04 from private insurers). We collected programmatic expenditures and volunteer hours to calculate fixed and variable costs for two different implementation costs (with or without in-kind costs included). We project program sustainability for Florida using publicly available county-specific student populations and health insurance enrollment data.

Results: Approximately 42% ($n = 12,853$) of pre-kindergarten – 12th grade students participated in the SLIV program in Alachua. Of the 13,815 doses provided, 58% (8042) were non-VFC vaccine. Total implementation cost was \$14.95/dose or \$7.93/dose if “in-kind” costs were not included. The program generated a net surplus of \$24,221, despite losing \$4.68 on every VFC dose provided to Medicaid and uninsured children. With volunteers, 99% of Florida counties would be sustainable at a 50% vaccination rate and average reimbursement amount of \$3.25 VFC and \$37 non-VFC. Without volunteers, 69% of counties would be sustainable at 50% vaccination rate if all VFC recipients were on Medicaid and its reimbursement increased from \$5 to \$10 (amount private practices receive).

Conclusions and relevance: Key factors that contributed to the sustainability and success of an SLIV program are: targeting privately insured children and reducing administration cost through volunteers. Counties with a high proportion of VFC eligible children may not be sustainable without subsidies at \$5 Medicaid reimbursement.

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What is known on this subject

- School-located influenza vaccination (SLIV) programs are shown to increase vaccination rates and reduce community transmission. Traction for wider implementation has been slow moving due to funding barriers. Limited data exists regarding successful strategies for financial sustainability.

Abbreviations: SLIV, school-located influenza vaccination; VFC, Vaccines for Children; LAIV, Live Attenuated Influenza Vaccine; ACHD, Alachua County Health Department.

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What this study adds

- This study found that SLIV programs can be sustainable by targeting privately insured children, reducing administration cost through volunteers, and obtaining high vaccination rates. Communities with a high proportion of VFC eligible children may not be sustainable without subsidies.

1. Introduction

Unvaccinated children comprise 90% of all influenza-associated pediatric deaths that occur each year in the United States [1]. Despite these high profile deaths [2,3], and six years after the Advisory Committee for Immunization Practice started recommending annual vaccination for children [4], vaccination rates remain suboptimal [5,6]. School-located influenza vaccination (SLIV) programs provide one mechanism to achieve Healthy People 2020 goals for 80% vaccination coverage rates among school-age children [7]. These programs complement provider-based vaccination by increasing the opportunity for parents to have their child vaccinated at school [8]. Several SLIV programs have achieved high vaccination rates [8–10], and have also documented a reduction in absenteeism [11,12] and influenza transmission [9,13–21].

Although support for SLIV programs is strong [22,23], limited data exists regarding their financial sustainability in the United States [23–25]. Programs heavily dependent on reimbursement from insurers can encounter staggering start-up costs, and must navigate through a complex two payer reimbursement system (private health insurance and Medicaid) and 6% of children being uninsured [26]. Although the Affordable Care Act (ACA) mandates that all new private health insurance plans must cover routine vaccination at no cost to the enrollee, some do not recognize health departments as an in network provider [23,24]. Further, it has been reported that Medicaid reimbursement is inadequate to sustain SLIV programs [24,25].

The main objective of this study was to examine the economic sustainability of a health department led, county-wide SLIV program that encompassed pre-kindergarten – 12th grade students in public, private, and charter schools in Alachua County, Florida for the 2013–2014 school year. Based upon the program's outcome data, we explored the sustainability of SLIV programs statewide using two different implementation costs (with or without volunteers), and under different parameters: vaccination rates, Medicaid reimbursement amount, and Vaccine for Children (VFC) coverage. We defined sustainability as the program cost being less than or equal to net revenue.

2. Methods

2.1. Alachua's SLIV program

For the 2009–10 to 2012–13 school years, the Alachua County program provided Live Attenuated Influenza Vaccine (LAIV) to all participating schoolchildren. The Florida Department of Health (FDOH) provided the vaccine and did not impose restrictions on its use (e.g. eligibility requirements such as income). Volunteers and community grants offset the infrastructure cost of the program. Schoolchildren ineligible for the LAIV were identified and encouraged to receive an inactivated influenza vaccine (IIV) at their medical home [8,9]. To track vaccination coverage among schoolchildren, the Alachua County Health Department (ACHD) and community pediatricians agreed to enter all influenza vaccinations into the vaccine registry. Overall, this community-based initiative has consistently achieved a pre-kindergarten – 12th grade vaccination rate $\geq 42\%$ during that time period.

For the 2013–14 school year, the FDOH restricted the use of vaccine because of ACA guidelines. The FDOH vaccine could only be given to schoolchildren eligible for the Vaccines for Children (VFC) program (schoolchildren with consent form notating they are uninsured, underinsured, Medicaid eligible, or American Indian or Alaska Native). This required the SLIV program to segregate all participating schoolchildren into two categories: VFC and non-VFC. Further, the ACHD had to purchase vaccine for non-VFC participants (schoolchildren with consent forms reporting to have private insurance). The number of non-VFC doses needed was projected from previous years. To recoup the cost of purchasing non-VFC vaccine, the SLIV program explored the option of billing private insurers for vaccine and its administration.

2.2. Alachua's billing and reimbursement

After each vaccine clinic, claims were processed and submitted to insurance providers for reimbursement. The ACHD absorbed the economic loss of insufficient, partial, and denied claims (two billing attempts were made for each denied claim). To ensure that the program remained at no cost to participants, parents/guardians were not directly billed if claims were denied or if the private insurer required a co-pay (grandfathered insurance policies that still required co-pays post ACA [27]).

2.2.1. Non-VFC vaccine

The ACHD negotiated contracts with the two large private insurance plans to gain recognition as an in-network provider at \$47.04 per dose (\$25 for vaccine and \$22.04 for its administration). Further, the ACHD attempted to bill all other private insurers to recover costs. All participants receiving a non-VFC vaccine were categorized into this group. This group included schoolchildren: with no insurance (retrospectively identified), with an in-network private insurance company, or with an out-of-network insurance. Due to this admixture of reimbursement amounts from different insurers, reimbursement could range from a net loss (from purchased vaccine and its administration) to a net gain (greater than \$0). The purchasing cost of non-VFC vaccine was \$17.50/dose for the ACHD.

2.2.2. VFC vaccine

All participants receiving a VFC vaccine were categorized into this group. This group included schoolchildren with Medicaid or meeting requirements for a VFC vaccine. The ACHD billed Medicaid for the administration of VFC vaccines among those insured. In Florida, health departments are reimbursed at \$5 per dose for all vaccine administration (vaccine is donated and therefore cannot be billed). Due to this admixture of schoolchildren with and without Medicaid, reimbursement for VFC vaccine could range from a net loss (from vaccine administration) to a net gain (if a full reimbursement of \$5 was obtained from Medicaid, and the reimbursement is higher than the program's administration costs).

2.3. Alachua's programmatic cost

To account for counties that may need to hire additional personnel to implement the SLIV program, we calculated two types of infrastructure costs: with and without in-kind costs (Table 1). To give our costs a unit value, all costs were either divided by the total number of students enrolled in Alachua (fixed cost) or the number of doses provided (variable cost).

2.3.1. Direct costs

Expenses relating to the SLIV program were obtained from ACHD's accounting of all costs relating to the program: print materials (consent forms and promotional materials), supplies (office and

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