



Toolkit for Adult Immunizations & Standing Orders Programs

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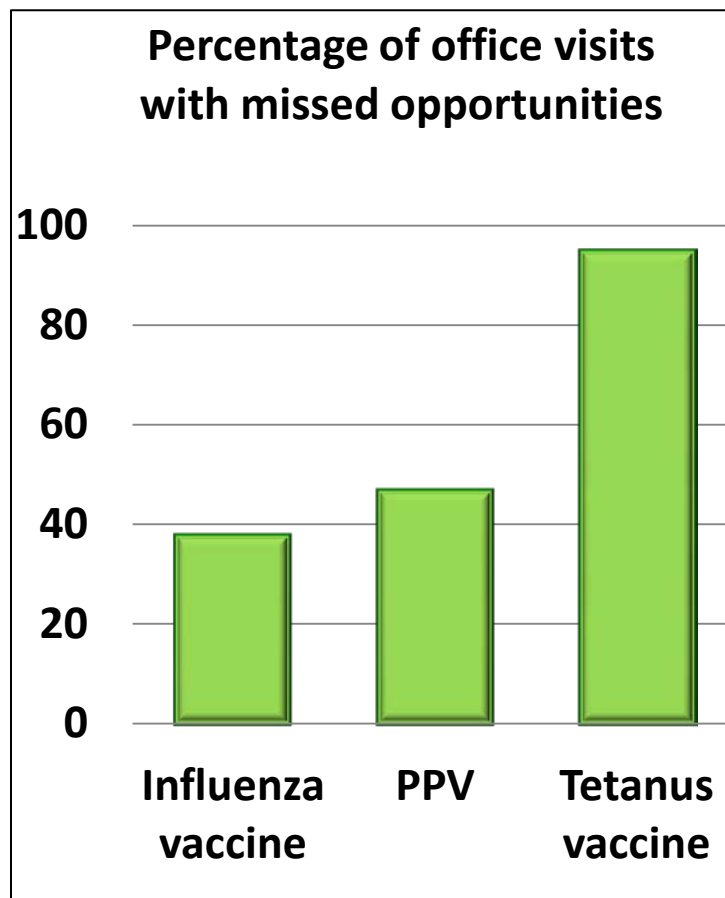
Learning Objectives for Adult Immunization and Standing Orders Programs Toolkit

1. Explain that the burden of vaccine-preventable diseases is largely due to low adult immunization rates which in turn, result from missed vaccination opportunities and inconvenient vaccination.
2. Develop a system of **convenient vaccination** that includes **expanded influenza vaccination season** and **express vaccination services** for all adult vaccines during the influenza vaccination season.
3. **Remind patients** (email, autodialer, mail, posters, and/or video) about the **importance of adult vaccines** and the **availability of the express services**.
4. Enhance **office vaccination systems** by:
 - a) **coupling other adult vaccines** with influenza immunization;
 - b) making **assessment** of vaccination status a **routine** part of the visit (e.g., during vital signs or via Best Practice Alerts); and
 - c) empowering staff to **vaccinate by standing orders programs**.
5. Implement motivation for office system change, through an **immunization champion** who **tracks weekly progress** towards a set immunization goal and communicates to all other staff members.

Are “missed opportunities” a cause of low vaccination rates in your practice?

In a Pittsburgh study of primary care medical records, missed opportunities at medical visits occurred:

More than **3 times** for influenza vaccine, **11 times** for pneumococcal polysaccharide vaccine and **11 times** for Td during a 3.25 year period. (*J Am Board Fam Pract* 2005;18: 20–7) This was occurring at both chronic care and acute care visits without assessment or administration of needed vaccines.



The purpose of this toolkit is to offer evidence-based solutions to increasing adult vaccination rates.

Evidence-Based Solutions to National Adult Vaccination Rates

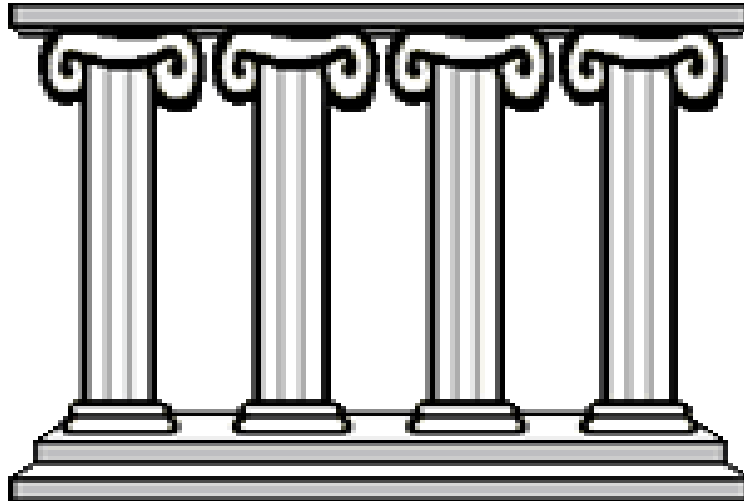
The Task Force on Community Preventive Services (Task Force) has conducted a thorough review of the evidence to improve vaccination rates. The Task Force recommends using at least 2 strategic approaches:

- 1. Increase Patient (Client) Demand**
 - a. Patient reminder and recall systems
 - b. Clinic based patient education
 - 2. Enhance Access**
 - a. Office hours express clinics
 - b. Non-office hours express clinics
 - 3. Provider Reminders and/or Modified Office Systems**
 - a. Standing orders programs (SOPs)
 - b. Best practice alerts in electronic medical records (EMRs)
- Using a combination of 2 or 3 of these strategic approaches has led to a **16% point increase** in vaccination rates.
 - Multiple interventions *within* a single strategic approach increase vaccination rates only 4% points.

<http://www.thecommunityguide.org/vaccines/index.html>

Hence, we suggest these

Four Pillars of a Successful Adult Vaccination Program:

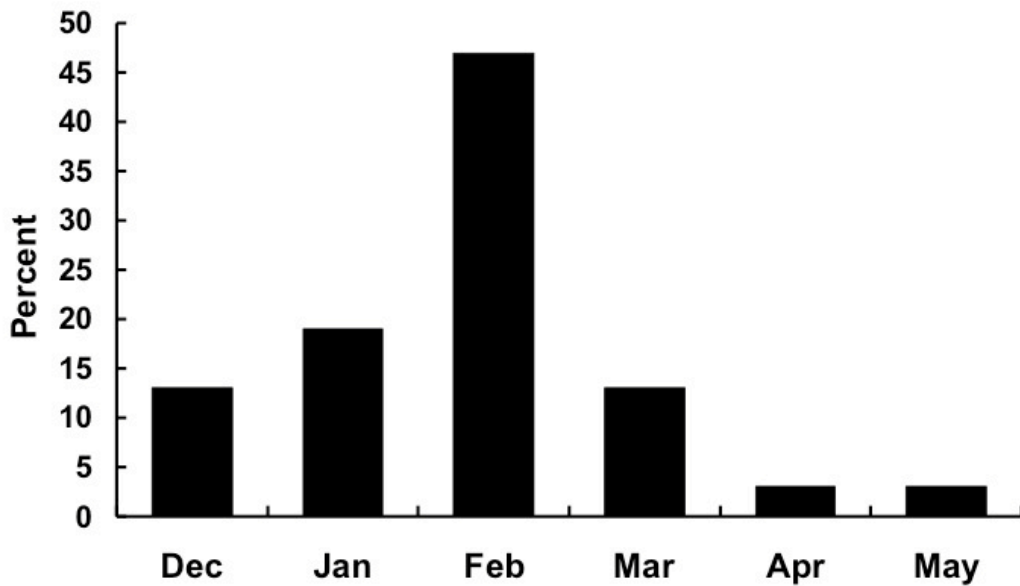


- Pillar 1** **Convenient adult vaccination services**
- Pillar 2** **Patient notification about the importance of vaccination and the availability of convenient programs**
- Pillar 3** **Enhanced office vaccination systems**
- Pillar 4** **Motivation – Office immunization champion tracks progress towards a goal**

Pillar 1: Convenient Influenza Vaccination Services

- Most adults will *not* be seen during the typical influenza vaccination season of October and November.
- **Extended Vaccination Season**
 - Use of August and September visits increases the opportunities to vaccinate and some vaccine is often available then.
 - Data show immunogenicity persists sufficiently to vaccinate early
 - Peak influenza disease season varies but often is in February; thus, extending the season into January and beyond can increase vaccination coverage and prevent illness.

Month of Peak Influenza Activity United States, 1976-2008



- **Express Vaccination Services**

- Express services (influenza vaccination clinics) allow practices to accommodate large numbers of patients and facilitate efficient office flow.
- Given busy patient schedules, convenient express services are appreciated.
 - weekend or evening vaccine clinics
 - open access vaccine scheduling during office hours
 - dedicated influenza vaccination station
- Dedicated express vaccination clinics can be systematized for efficiency
 - Offer only vaccines
 - Efficient flow systems (1-2 minutes/patient) for check-in, screening, vaccination, and record keeping are available.

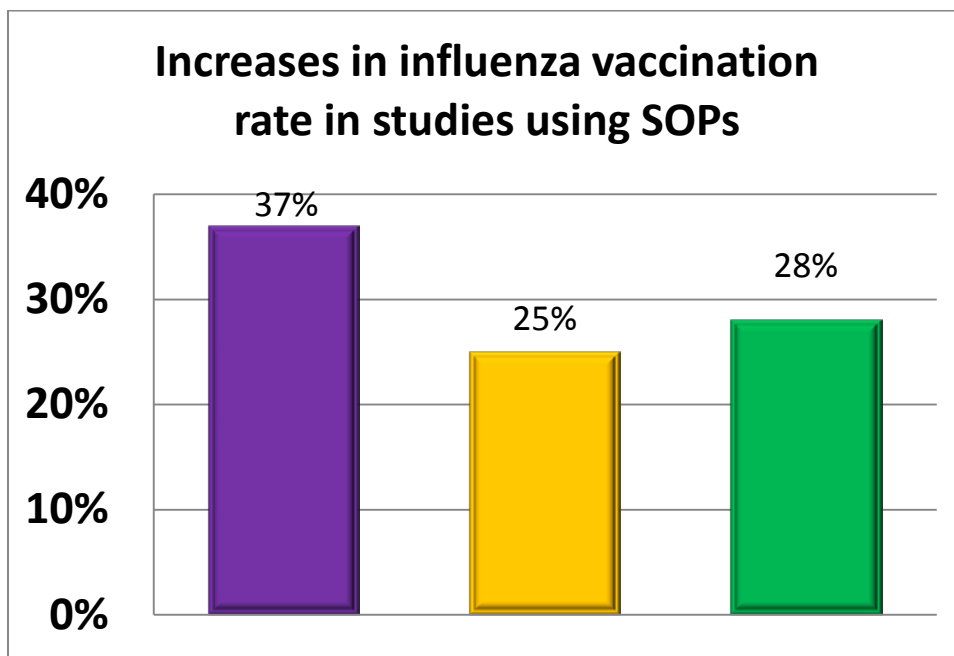
Pillar 2: Patient Notification about the Importance of Adult Vaccination and Availability of Convenient Programs

- Physician Recommendations
 - Studies show that **physician recommendation** is central to vaccine acceptance
- Patients need to know about the **importance of vaccination**
 - Patients *not* scheduled to be seen during influenza vaccination season, as well as those seen during that time should know about the importance of receiving an influenza vaccine.
- Patients should know **when convenient vaccination services are available** in your office
- Influenza vaccine messages can be delivered via:
 - Email
 - Mail
 - Autodialer (Audiocare/Televox)
 - Answering system messages while “on-hold”
 - Office posters
 - www.cdc.gov/flu/freeresources/print.htm?tab=1#TabbedPanels1
 - Social media
 - Public Service Announcements (PSAs) (See Jackie Evancho's family PSA on WTAE-TV <http://www.immunization.org/Evancho/>)



Pillar 3: Enhanced Office Vaccination Systems

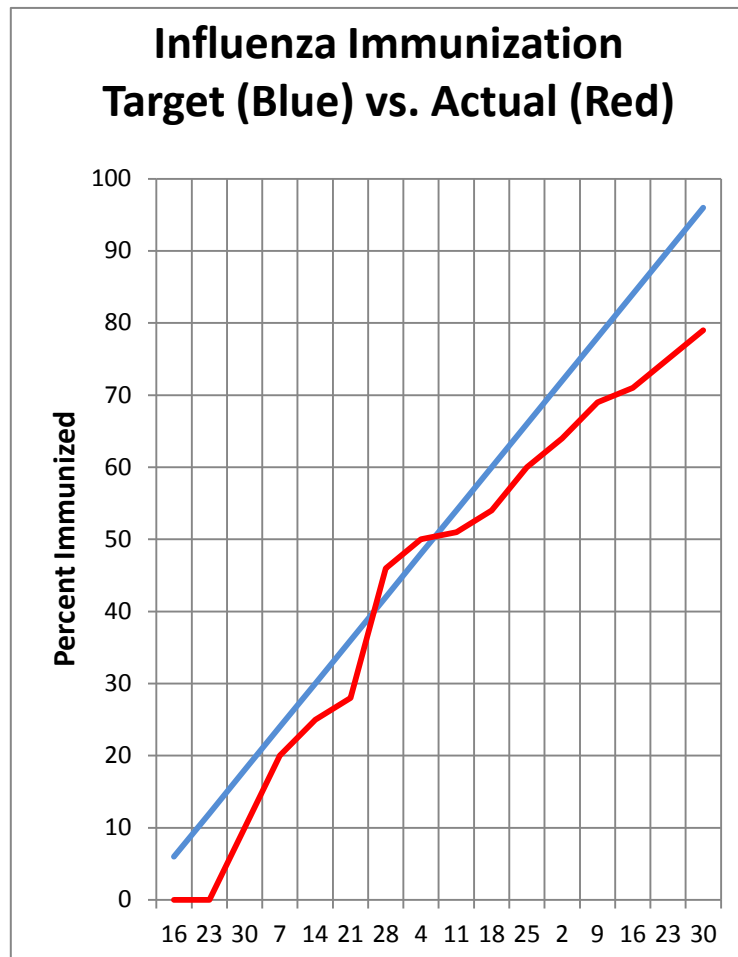
- **Office vaccination systems** to reduce missed opportunities to vaccinate have a large impact on improving vaccination rates
 - **Assessment of adult vaccination** as a **routine** part of the office visit **by nursing staff**. This should occur at all visits whether the patient is sick or well. Options include:
 - For practices with EMR capability, reminders/prompts for adult vaccines (e.g., influenza, PPV, Td) should be turned on
 - Review of the Health Maintenance or immunization tab in medical records
 - **Routinely address as part of vital signs**, “Are the patient’s immunizations up-to-date?”
 - Make assessment a “Standard Operating Procedure.”
- **Empowering staff to vaccinate by standing orders programs**
SOPs allow clinical staff, both nurses and medical assistants to assess eligibility for adult vaccines and vaccinate per protocol without the need for an individual physician’s order.
 - See sample SOPs (Supplemental Information)



- **Expanding the influenza vaccination season**
Vaccinate thru December and into January and February
- **Offer PPV and Tdap/Td to eligible patients when influenza vaccine is offered**

Pillar 4: Motivation – Office immunization champion tracks progress towards a goal

- Ongoing motivation is key to success
- **Immunization champion** is needed to foster motivation and track progress
- To monitor progress:
 - **Set a goal that is a 20% to 25% increase** over last year – either as percent immunized or number of doses to be given
 - Divide goal over number of weeks that you plan to track this and create the blue line
 - Research team can help with PowerPoint or Excel blank
 - Track progress on weekly basis from doses administered from inventory or from Epic reports; use red line
 - Share progress with team
 - Monitoring provides satisfaction if achievement is good and motivation to change if achievement is lacking
 - Allows competition among teams, awards, etc.
- With a team effort and a multi-pronged approach, solutions to influenza vaccination barriers can be successfully implemented to improve adult vaccination rates.



Standing Orders Protocol Document for Seasonal Influenza Vaccine

Policy: Standing Orders for Seasonal Influenza Vaccine

Procedure:

1. **Identify influenza vaccine** types available in facility and modify the following based on type availability.
2. **Determine patient eligibility by vaccine type** (live attenuated influenza vaccine (LAIV), trivalent inactivated influenza vaccine (TIV), high dose TIV, intradermal TIV, and age-based specifics of TIV formulation):

Influenza Vaccines Licensed for Children in the U.S.

Influenza Vaccine Type	Administration Route	Age Group	Health status
Trivalent inactivated (TIV)	Intramuscular	≥6 months; varies by manufacturer & formulation	All, including pregnant and high-risk conditions for influenza complications
High dose TIV	Intramuscular	≥65 years of age	All, including high-risk conditions for influenza complications
Intradermal TIV	Intradermal	18-64 years	All
Live attenuated (LAIV)	Intranasal	2-49 years of age	Healthy only

3. If eligible for more than one vaccine type, **ask patient preference** as to type.
4. **Screen for contraindications and precautions** by selected vaccine type.

a. Contraindications to Any Influenza Vaccine:

- Severe hypersensitivity reaction (e.g., anaphylaxis) to eggs (e.g., after ingesting eggs), a previous dose of influenza vaccine or an influenza vaccine component. For a list of vaccine components, go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf. Guidance on vaccinating persons with a history of egg allergy is addressed below:
 - Individuals who can eat lightly cooked eggs without a reaction should be vaccinated by the usual protocol
 - Individuals who develop only hives in response to eating eggs or egg containing foods can be vaccinated with TIV by a provider familiar with potential manifestations of egg allergy but should be observed for 30 minutes.
 - Persons who develop cardiovascular changes (e.g., hypotension), angioedema, respiratory distress (e.g., wheezing), gastrointestinal symptoms (e.g., vomiting), a reaction requiring epinephrine or a reaction requiring emergency medical attention should be referred to a physician with expertise in management of allergies for further evaluation.

b. Contraindications to Live Attenuated Influenza Vaccine:

- Chronic medical disorders including chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, neurological/neuromuscular, hematological, or metabolic disorders (including diabetes mellitus);
- Immunocompromised (including immunosuppression caused by medications or by HIV);
- Children aged 2–4 years, report from parents or caregivers that a health-care provider told them during the preceding 12 months that their child had wheezing or asthma, or medical record that indicates a wheezing episode during the preceding 12 months;
- Children or adolescents aged 6 months–18 years, receipt of aspirin or other salicylates (because of the association of Reye syndrome with wild-type influenza infection);
- Pregnancy
- egg allergy

c. Precautions for Any Influenza Vaccine:

- Current moderate or severe acute illness with or without fever;
- History of Guillain Barré syndrome within 6 weeks of a previous influenza vaccination;

d. Precautions for LAIV only:

- Close contact with an immunosuppressed person when the person requires protective (reverse) isolation
- Not licensed for age <2 years or ≥ 50 years;

5. **Provide** patients with the most current federal **Vaccine Information Statement** (VIS). Document in the patient’s medical record or office log, the publication date of the VIS and the date it was given to the patient. VISs are available from www.cdc.gov/vaccines/pubs/vis/default.htm#flu. Provide non-English speaking patients with a copy of the VIS in their native language, if available and preferred; these can be found at www.immunize.org/vis. A patient signature is not required.
6. **Determine TIV dosage** if applicable: Dosage is 0.25mL for children 6-35 months; 0.5mL for older children and adults; the intradermal preparation comes as a single-dose 0.1mL prefilled microinjection syringe.
7. **Determine number of doses.** For children <9 years of age, those who had at least 1 prior dose in 2010-2011 should receive one 1 dose this season. Children < 9 years of age who have not been previously vaccinated in 2010-11 should receive two doses of influenza vaccine spaced 4 weeks, see <http://www.cdc.gov/flu/professionals/acip/>.
8. **Administer vaccine.** If TIV or high-dose TIV selected, administer in the deltoid to adults and older children with a needle length of ≥ 1 " (>25 mm) because shorter needles might not reach muscle tissue in some persons, particularly if the subcutaneous tissue layer is thick. For elementary school age and other younger children who have enough deltoid muscle for use of that site, a needle length of

7/8" to 1.25" is recommended by ACIP. Infants and young children (e.g, toddlers) without much deltoid muscle should be vaccinated in the anterolateral aspect of the thigh. For children <12 months of age, the needle length is 7/8" to 1". If intradermal TIV selected, insert over the deltoid and then inject. If LAIV selected, administer 0.2 mL of intranasal LAIV; 0.1 mL is sprayed into each nostril while the patient is in an upright position.

9. **Document** each patient's vaccine administration information including date of administration, manufacturer and lot number, the vaccination site and route, and the name and title of the person administering the vaccine. If vaccine was not given, record the reason(s) for non-receipt of the vaccine (e.g., medical contraindication, patient refusal).
10. **Be prepared to manage a medical emergency** related to the vaccine administration with a written protocol, equipment and medications.
11. Report adverse reactions requiring medical attention to the Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or (800) 822-7967.

Standing Orders Protocol Document for Pneumococcal Polysaccharide Vaccine

Policy: Standing Orders for Pneumococcal Polysaccharide Vaccine (PPSV)

Procedure:

1. Determine patient eligibility:

- a) Age ≥ 65 years with no or unknown history of prior receipt of PPSV
- b) Persons 19 to 64 years with no or unknown history of prior PPSV and any of the following:
 - i) Certain chronic diseases:
 - (1) cardiovascular (e.g., congestive heart failure, cardiomyopathy)
 - (2) chronic pulmonary disease (e.g., emphysema, COPD, asthma)
 - (3) diabetes
 - (4) alcoholism
 - (5) chronic liver disease (e.g., cirrhosis)
 - (6) cerebrospinal fluid leaks
 - (7) candidate for or recipient of cochlear implant
 - ii) Functional or anatomic asplenia (e.g., sickle cell disease, splenectomy)
 - iii) Immunocompromising condition (e.g., HIV, congenital immunodeficiency, malignancy) or immunosuppressive therapy (e.g., long-term systemic corticosteroids, radiation therapy)
 - iv) Organ or bone marrow transplantation
 - v) Chronic renal failure or nephrotic syndrome
 - vi) Cigarette smoker
- c) Persons in need of a second (and final) dose of PPSV if ≥ 5 years have elapsed since the previous dose of PPSV and the patient meets one of the following criteria:
 - i) Age ≥ 65 years or older and received prior PPSV vaccination before age 65 years
 - ii) At highest risk for serious pneumococcal infection or likely to have a rapid decline in pneumococcal antibody levels (e.g., asplenia, immunocompromised, solid organ transplantation, renal failure, nephrotic syndrome)

2. Screen for contraindications and precautions by selected vaccine type.

- a. **Contraindications to PPSV:** hypersensitivity reaction (e.g., anaphylaxis) to a previous dose of PPSV or a vaccine component. For a list of vaccine components, go to <http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf>
- b. **Precautions:** current moderate or severe acute illness with or without fever.

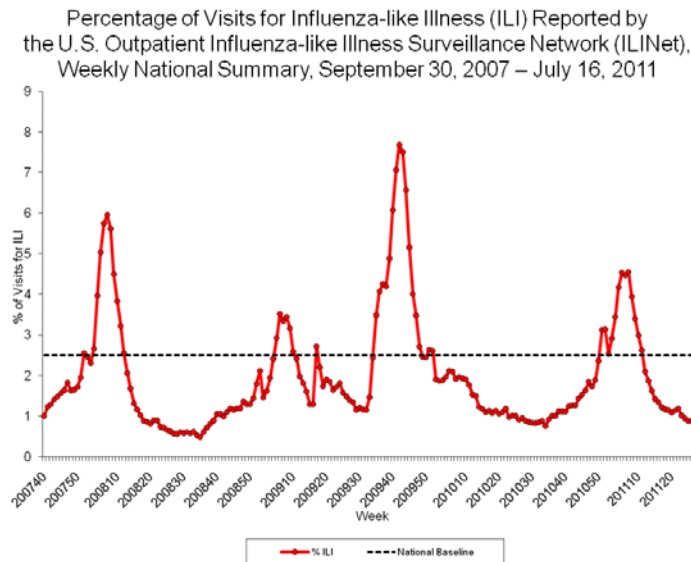
3. Provide patients with the most current federal **Vaccine Information Statement** (VIS). Document in the patient's medical record or office log, the publication date of the VIS and the date it was given to the patient. VIS is available from <http://www.cdc.gov/vaccines/pubs/vis/#ppv23>. Provide non-English speaking patients with a copy of the VIS in their native language, if available and preferred; these can be found at www.immunize.org/vis.

4. **Administer 0.5 mL PPSV vaccine** either intramuscularly (IM, 22–25g, 1–1½" needle) in the deltoid muscle or subcutaneously (23–25g, 5/8" needle) in the posterolateral fat of the upper arm. For IM injections, use ≥ 1 " (>25 mm) because shorter needles might not reach muscle tissue in some persons, particularly if the subcutaneous tissue layer is thick.
5. **Document** each patient's vaccine administration information including date of administration, manufacturer and lot number, the vaccination site and route, and the name and title of the person administering the vaccine. A patient signature is not required.
6. **Be prepared for management of a medical emergency** related to the vaccine administration with a written protocol, equipment and medications.
7. Report adverse reactions requiring medical attention to the Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or (800) 822-7967.

Supplemental Information

Impact of Influenza and Pneumococcus

- In one economic analysis, the average annual burden of seasonal influenza among adults aged 18--49 years without a medical condition that conferred a higher risk for influenza complications was estimated to include the following:
 - 5 million illnesses;
 - 2.4 million outpatient visits;
 - 32,000 hospitalizations; and
 - 680 deaths (*Vaccine* 2007;25:5086--96).
- During seasonal influenza epidemics from 1979--1980 through 2000--2001, the estimated annual number of influenza-associated hospitalizations in the U.S. ranged from approximately 55,000 to 431,000 (mean: 226,000) (*JAMA* 2004;292:1333-40).
- In the US each year there are an average 23,607 influenza-associated deaths.
- Each year in the U.S., there are an estimated 175,000 hospitalized cases of pneumococcal pneumonia.
- Pneumococcus causes 50,000 cases of bacteremia and 3,000 - 6,000 cases of meningitis annually.
- Invasive pneumococcal disease causes more than 6,000 deaths annually.



Influenza Vaccine Safety

Trivalent Inactivated Influenza Vaccine (TIV or Flu Shot):

Today's inactivated influenza vaccines are considerably purer than vaccines produced prior to 1968 and cause fewer adverse events. TIV can cause local reactions such as soreness at the injection site that lasts <2 days. In persons previously exposed to influenza disease or vaccination, studies comparing current vaccine with placebo show similar rates of systemic reactions such as fever. Among children and adults with asthma the only side effect reported more often after TIV than after placebo was myalgia (25% vs. 21%; *N Engl J Med.* 2001; 345:1529-1536).

TIV does not include live virus, it cannot cause influenza.

Live Attenuated Influenza Vaccine (LAIV or Flu Nasal Spray):

The LAIV is a trivalent, cold-adapted, temperature-sensitive vaccine. Master donor viruses are developed by serial passage at sequentially lower temperatures until the viruses have attained 3 genetic changes:

- 1) cold-adaptation with good replication at 25°C (below human core temperatures);
- 2) temperature sensitivity with poor replication at human core body temperature (37°C); and
- 3) attenuation so as not to produce classic influenza symptoms.

Among adults, runny nose or nasal congestion (28%-78%), headache (16%-44%), sore throat (15%-27%) have been reported more often among vaccine recipients than placebo recipients. In a trial, other symptoms reported more frequently among vaccinees than placebo recipients included cough (14% and 11%, respectively), chills (9% and 6% respectively), and tiredness/weakness (26% and 22%, respectively).

Pneumococcal Polysaccharide Vaccine

The most common adverse reactions following pneumococcal polysaccharide vaccine are local reactions, with 30%–50% of vaccinees reporting pain, swelling, or erythema at the site of injection. These reactions usually last less than 48 hours. Systemic reactions such as fever are rare.

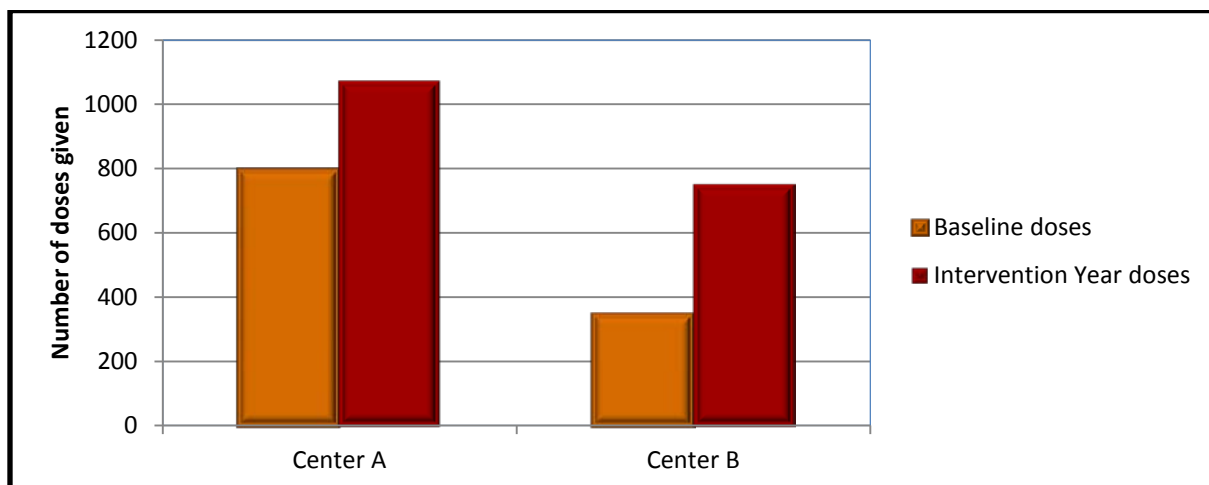
Case Studies and Best Practices in Raising Adult Immunization Rates Using Standing Orders Programs

Case 1: Two inner-city, faith-based neighborhood health centers in Pittsburgh

The intervention sites were faith-based health centers which serve disadvantaged persons, mostly of color, in inner-city neighborhoods. Each health center implemented a multi-modal approach that they chose from the menu of options that were based on recommendations from the Task Force for Community Preventive Services, including patient-, provider-, and system-oriented interventions. All sites implemented the following:

- standing orders,
- a provider reminder system,
- reduced-fee or free vaccines for patients,
- patient education posters,
- staff education, and
- at Health Center A, nursing prompt as part of vital signs in the electronic medical record and electronically pulling vaccination status into the nursing note for easy review.

According to vaccination data among all patients reported by sites, Health Center A increased influenza vaccinations by 34% from 797 in 2000 to 1071 doses in 2001. At Health Center B, the doses administered increased 114%, from 350 in 2000 to 750 in 2001. Vaccination rates at Health Center A increased from 24% to 30% among 50-64 year-olds ($P \leq 0.001$) and from 45% in 2000 to 53% in 2001 among persons ≥ 65 years of age ($P \leq 0.001$).



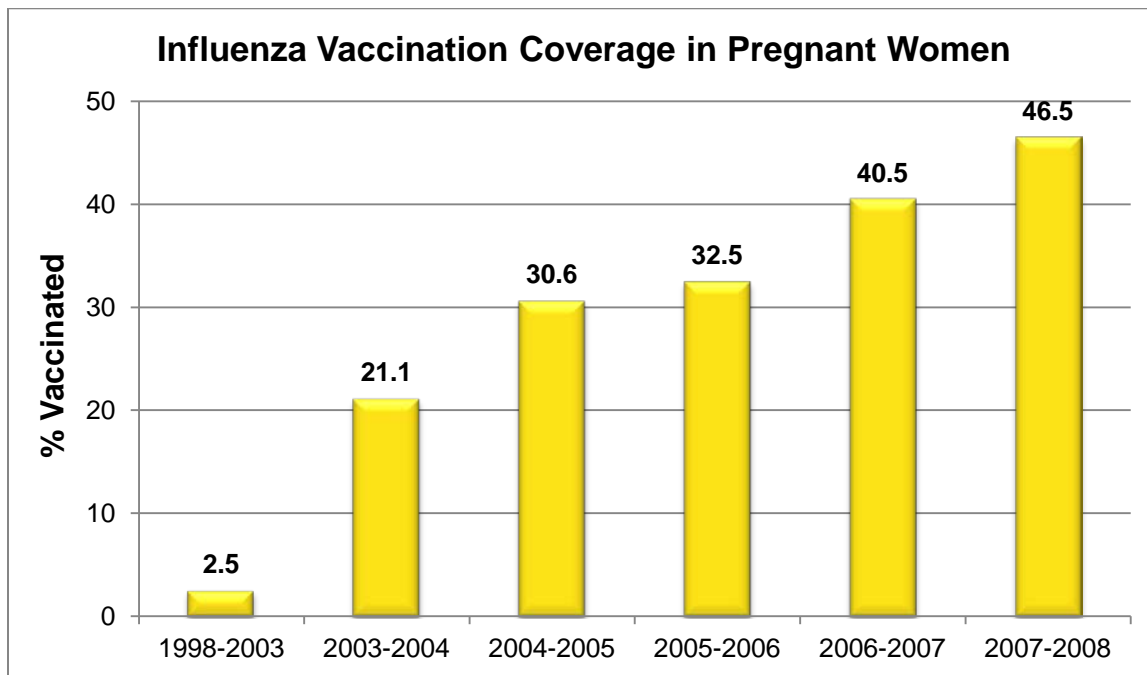
Reference: Zimmerman RK, Nowalk MP, Raymund M, Tabbarah M, Hall DG, Wahrenberger JT, Wilson SA, Ricci EM: Tailored interventions to increase influenza vaccination in neighborhood health centers serving the disadvantaged. *Am J Pub Health* 2003; 93:1699-1705. PMID: 14534225

Case 2: Vaccination of Pregnant Women in the Kelsey-Seybold Clinic

A multi-specialty clinic that included 29 obstetricians who deliver about 2500 infants annually began a program to vaccinate against influenza during pregnancy. A set of strategies was implemented to vaccinate pregnant women against influenza:

1. Vaccination was encouraged and modeled by an immunization champion, the Chief of the Obstetrics and Gynecology Department.
2. Educational updates on influenza vaccination in pregnancy were provided to obstetricians, nurses, and staff.
3. Standing orders were implemented for influenza vaccination in pregnancy.
4. Education was provided to obstetric nurses who were encouraged to take the initiative in vaccinating patients.
5. Regular vaccination rate assessments were provided at quarterly meetings.

Influenza vaccination coverage rates in pregnant women increased from 2.5% at baseline in 2003-2004 to 46.5% in 2007-2008.



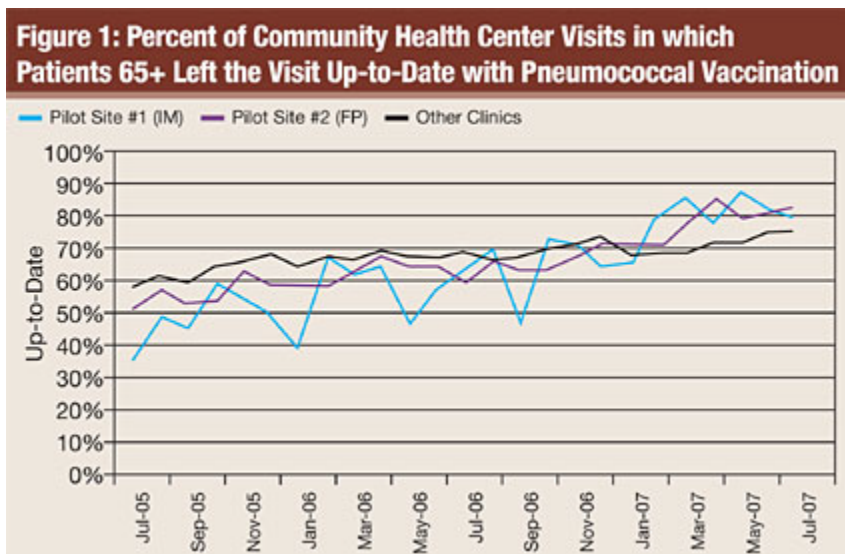
Reference: Mouzoon ME, Flor MM, Greisinger AJ et al. Improving Influenza Immunization in Pregnant Women and Healthcare Workers. *Am J Man Care* 2010;16:209-216.

http://www.ajmc.com/media/pdf/AJMC_10marMouzoon_209to216.pdf

Case 3: The Denver Health and Hospital Authority (DHHA)

The DHHA analyzed data from the immunization registry, revealing variation in immunization rates among its 8 community health centers. Furthermore, although vaccine history from patient “check-in” was entered into an electronic clinical record, it was not linked to the immunization registry. A quality improvement effort was started:

1. Gathering stakeholders and staff.
2. Developing clinical decision support tools for standing orders and linking the immunization registry with the clinical record. Distinct algorithms for each adult vaccine were written.
3. Developing and adopting a standing orders protocol. This policy authorized medical assistants to administer adult vaccines using the clinical decision support tools as standing orders.
4. Pilot-testing occurred at 2 sites in early 2007, after formation of implementation teams and barrier analysis.
5. Feedback of immunization rates occurred on a monthly basis.



After the pilot was completed, the project was rolled out to 6 other sites.

Used with permission: Appel A, Swenson C, Hammer A, Phibbs SL, Main DS, Sheehan M: **Improving Adult Immunization Delivery with Policy Changes and Clinical Support Technology.** Patient Safety & Quality Healthcare; Sept/Oct 2008
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