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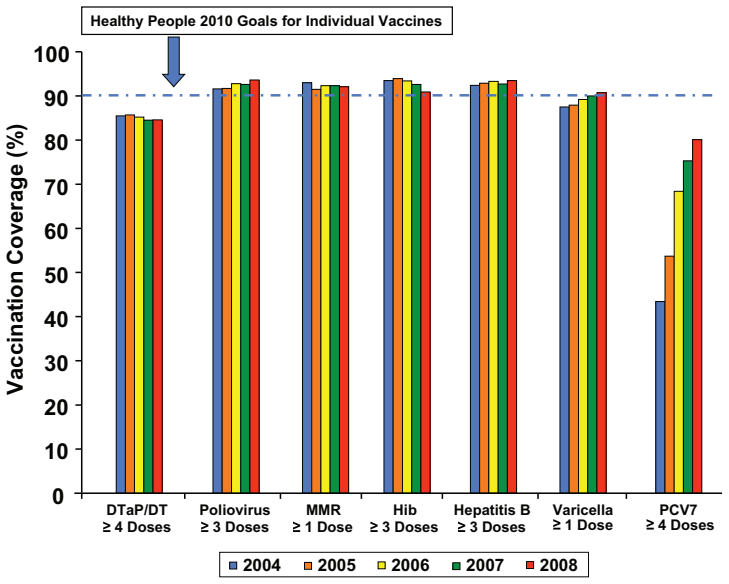
NEWSLETTER

Strategies for Improving Immunization Rates

Immunization Coverage and Barriers to Target Goals

"Prevent disease, disability, and death from infectious diseases, including vaccine-preventable diseases" is a Healthy People 2010 goal.[1] Improving immunization rates for young children, adolescents, and adults is part of this initiative. Data for vaccination coverage of children 19 to 35 months in the United States, 2004–2008 (N = 18,430), is shown in Figure 1.

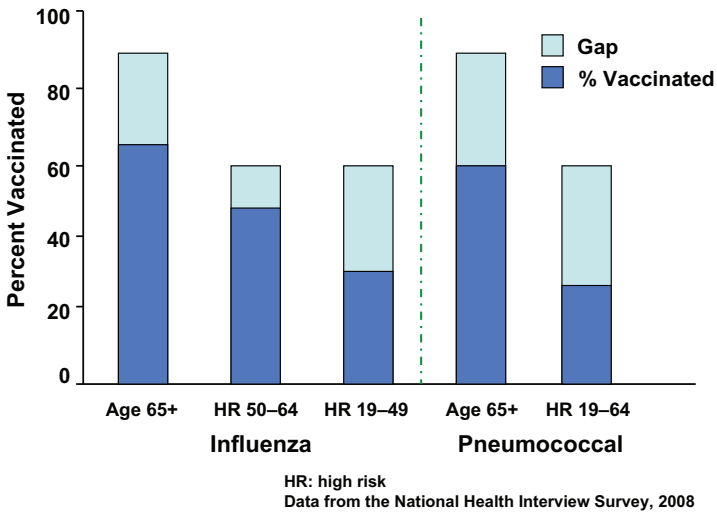
Figure 1: Vaccination Coverage Children 19 to 35 months (United States)[2]



The Healthy People 2010 immunization target for individual vaccines including diphtheria, tetanus, pertussis (DTaP, ≥ 4 doses), *Haemophilus influenzae* type b (Hib, ≥ 3 doses), hepatitis B (Hep B, ≥ 3 doses), measles, mumps, rubella (MMR, ≥ 1 dose), poliovirus (≥ 3 doses), and varicella (≥ 1 dose) is 90%.[1] Overall, immunization rates for routine vaccines in young children are generally high and pneumococcal conjugate vaccine coverage is increasing annually; however poverty status is associated with gaps in vaccination coverage.[2]

For adolescents, the Advisory Committee on Immunization Practices (ACIP) recommends 1 dose of meningococcal conjugate vaccine (MCV4-D or MenACWY-CRM197), 1 dose of Tdap, and the human papillomavirus (HPV) series for girls.[3] In addition, catch-up vaccination of adolescents for MMR, Hep B, and varicella

Figure 2: Gaps in Adults Immunization Coverage[5] (Adapted)



are also recommended by ACIP.[3] National Immunization Survey (NIS) data from 2008 for adolescents aged 13 to 17 years indicate that MMR coverage in 2008 was 89.3%, Hep B was 87.9%, MCV4 was 41.8%, Tdap was 40.8%, ≥ 1 dose of HPV was 37.2%, and ≥ 2 doses of varicella was 34.1%.[4] These values represent an increase over vaccination coverage in the previous year (2007 values were 88.9, 87.6, 32.4, 30.4, and 25.1%, respectively). Significant variability was reported in vaccination rates for adolescents by state and local areas. Healthy People 2010 target vaccination coverage for adolescents aged 13 to 15 (note this is a narrower age bracket than the survey data described previously) is 90% for universally recommended immunizations.[1]

For adults, Healthy People 2010 goals for both influenza and pneumococcal vaccination coverage are 90% for all individuals ≥ 65 years, and 60% for younger individuals at high risk.[1] However, as illustrated in Figure 2, immunization levels for adults (≥ 65

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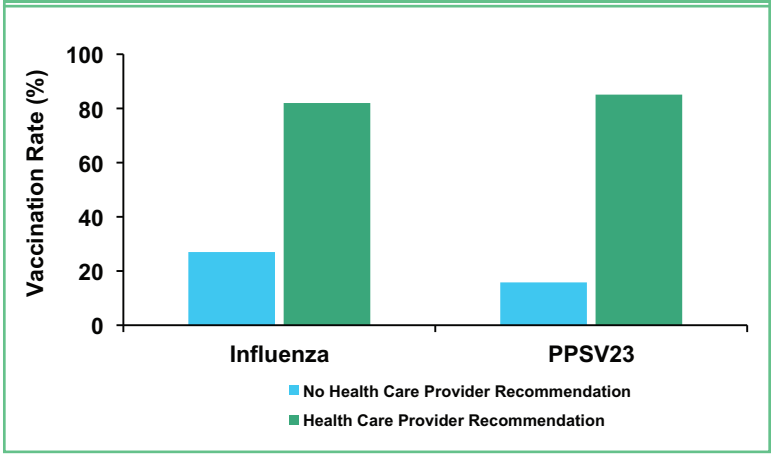
Figure 3: Importance of Provider Recommendations on Immunization Rates[14] (Adapted)



years, and younger high-risk adults) are well below target goals for both influenza and pneumococcal disease.[5]

The available data indicate that adolescent and adult immunization coverage is below recommended goals, and socioeconomic disparities exist in vaccination coverage for all age groups. The costs associated with hospitalizations and deaths of adults alone due to vaccine-preventable diseases in the US are estimated at ~$10 billion per year.[6] Isolated outbreaks of measles and mumps in recent years illustrate the ongoing threat from vaccine-preventable illnesses in children.[7,8]

Barriers to immunization vary to some degree by age group, but factors such as access to vaccinations for inner city populations, concerns regarding vaccine safety and efficacy, misinformation about vaccine safety, erroneous contraindications, and provider cost and reimbursement issues are universal barriers.[6,9-12] The increasing number of recommended vaccinations for young children, the lack of perceived threat from vaccine-preventable diseases, vaccine shortages, and provider attitude may factor into parental decisions to defer immunization of young children.[9,10]

For adolescents, the reduced frequency of preventive care visits and the locations that teens do seek medical care or services limit opportunities for immunization.[6,11,12] Vaccines may not be part of a routine visit for an athletic physical exam, and in many states minors are unable to provide consent for vaccination. A lack of knowledge regarding the recommended vaccines for adolescents, the perceived risks for this age group, and questions pertaining to optimal timing of adolescent vaccines are additional immunization barriers. The recent recommendation by the ACIP for the HPV series for girls may be controversial for many parents who struggle with the delicate issue of teen sexual behavior.

For adults, barriers to recommended vaccinations include lack of provider recommendations, underrecognition of the risk from vaccine-preventable diseases and the value of immunization, and misconceptions such as "getting the flu from a flu shot." Addressing such barriers will be particularly important with the recent ACIP recommendation for seasonal influenza vaccination to include all adults (universal influenza vaccination for all individuals > 6 months), beginning with the 2010-2011 influenza season.[13]

Strategies for Improving Immunization Rates

A pivotal factor that can greatly influence a parental or individual decision to have a vaccine is a provider recommendation. Clinicians are an important source of information regarding the risks of vaccine-preventable illness, organizational recommendations (such as the American Academy of Pediatrics, ACIP, or the Centers for Disease Control), the safety and efficacy of vaccines, and correcting vaccine-related myths or misunderstandings. Time is a precious commodity during an office visit, but the benefit of a provider recommendation for vaccination should not be underestimated. A study by Nichol et al demonstrated the importance of provider recommendations for influenza vaccine and pneumococcal polysaccharide vaccine (PPSV23) in high-risk adults who had negative attitudes regarding these immunizations **(Figure 3).**[14]

In 2000, the Task Force on Community Preventive Services published recommendations for interventions to improve vaccination coverage in children, adolescents and adults.[15,16] These recommendations were categorized in the following way: 1) interventions that increase community demand for vaccines; 2) enhancing access to vaccination services; and 3) provider-based interventions.[15] Interventions recommended (based on evidence of effectiveness) that increase community demand for vaccines include client reminder/recall, multicomponent interventions that include education, and vaccination requirements for childcare, school, and college attendance.[15] Reducing out-of-pocket costs, expanding access in health care settings, vaccination programs in women, infants and children settings, and home visits are evidence-based strategies to enhance access to vaccination services and improve vaccination coverage. Provider reminder/recall, assessment and feedback for vaccination providers, and standing orders are recommended provider-based interventions supported by evidence of effectiveness of improving vaccination coverage.[15]

Standing orders are written authorizations by physicians that specify criteria for vaccine-eligible patients (for each vaccine), and allow registered nurses, pharmacists, physician assistants, and other qualified staff to screen and vaccinate appropriate patients per protocol.[17,18] Standing orders eliminate the need for a physician exam and/or order for all immunizations, thereby providing the ability to capitalize on opportunities for vaccination. This strategy is applicable to private practice, managed care organizations, hospitals (including emergency rooms), and long-term care facilities. The Immunization Action Coalition (IAC) Web site (http://www.immunize.org/standingorders/) provides representative standing order forms by vaccine for adults, adolescents, and children.[19] The effectiveness of standing orders to improve immunization rates has been demonstrated in older adults with influenza and pneumococcal vaccines.[20-22] Standing orders are a relatively easy and impactful strategy to implement.

Figure 4: Assessment, Feedback, Incentives and eXchange (AFIX) Quality Improvement Strategy[23]	
Assessment	Assessment of vaccination coverage levels and immunization practices for a given health care provider
Feedback	Feedback of performance results to the provider combined with strategies to improve immunization rates
Incentives	Incentives to identify and reward improved performance or motivate a provider to make changes
eXchange	Exchange of information and best practices to facilitate improvement

Computerized record reminders and chart reminders are strategies to alert providers of vaccines needed at upcoming patient visits or vaccines that are past due.[17] With a computerized system and the appropriate software, reminder messages may be generated the night before a patient visit and reminders can also appear on a patient's record. Simplistic chart reminders (such as a flag or sticker on a chart) that draw attention to the need for immunization are an alternative way to increase such awareness. These strategies are effective at improving vaccination coverage, inexpensive (assuming computerized systems are in place), and are applicable to private practice, managed care organizations, hospitals, and long-term care facilities.[16,17]

Provider assessment and performance feedback is a system to retrospectively assess the delivery of vaccine(s) to specific patient populations within a group or practice, and report on the pertinent vaccination rates.[17] Incentives or performance goals can be incorporated into this process. This strategy can be relatively simple, with the immunization rate for a particular vaccine and patient group tracked weekly on an office poster. Originally introduced in Georgia, AFIX is a nationwide quality improvement strategy focused on provider assessment and performance feedback with the overall goal of improving immunization rates and best practices.[23] Information on AFIX is available online through the CDC Web site at http://www.cdc.gov/vaccines/programs/afix/default.htm. The core elements of AFIX are assessment, feedback, incentives, and exchange **(Figure 4).**

Assessment of medical records for AFIX may be performed electronically via the Comprehensive Clinic Assessment Software Application (CoCASA) or an Immunization Information System (IIS).[24] Data (quantitative and qualitative) obtained through an assessment are shared with a provider and staff (feedback), and this forms the basis for priority improvement areas. Specific strategies for improving vaccination coverage can be identified and implemented. Incentives may be formal (such as public recognition) or informal (such as resources or materials to assist with vaccination strategies). Exchange of best practices and mentoring with an "immunization champion" facilitate ongoing improvement. The effectiveness of assessment and feedback is well established, and the Task Force on Community Preventive Services recommended this provider-based intervention for improving vaccination coverage.[15-17]

Expanding access in health care settings (more locations for services, increased hours, drop-in clinics, etc) and home visits may directly reduce barriers to immunization for certain patient groups. Home visits through a home health care delivery service such as the Visiting Nurses Association (VNA) may provide education, need assessment, and immunization access for individuals living in public housing communities, rural areas, or disadvantaged situations.[17] Communication to individuals who are due for immunizations (reminders) or past due (recall) by telephone, letter, or postcard is an effective strategy for increasing vaccination coverage in all age groups.[16] In addition, personal health records/personal immunization records empower individuals to monitor the timing of preventive services for themselves and/or their children. The IAC provides numerous vaccine-related resources for clinicians; including suggestions for ways to improve immunization services.[25] A partial list of these suggestions is included in **Table 1.**

Summary

Immunization is a primary prevention strategy that spans all age groups; however gaps exist in vaccination coverage. Recognition of the barriers to immunization for different age groups is an important starting point for change. There are several strategies that may be implemented by providers to improve vaccination rates in their practices. Provider recommendations are impactful and can overcome misinformation and misunderstandings regarding vaccine safety and efficacy. Parents and patients may underestimate the risks of vaccine-preventable illness, or may lack knowledge regarding recommended vaccines for certain age groups or at-risk populations. Standing orders, computerized record reminders, chart reminders, client reminder and recall, expanding access in health care settings, drop-in clinics, and home visits are evidence-based strategies that can improve immunization rates. Provider assessment and performance feedback are systematic ways to improve vaccination coverage and implement best practices. Increasing vaccination coverage for children, adolescents, and adults is a continuing objective for Healthy People 2020. Implementation of strategies to improve immunization coverage may reduce the morbidity and mortality associated with vaccine-preventable illnesses among all age groups in the United States.

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Table 1: Selected Suggestions from the Immunization Action Coalition to Improve Immunization Services[25] (Adapted)

- In all exam rooms, post the current, official US immunization schedule for children and/or adults or variations thereof.
- Use the official "catch-up" schedule for children for advice on how to bring children up to date on their vaccinations when they have fallen behind.
- Be familiar with special vaccination recommendations for high-risk patients
- Train nursing and office staff to know how to determine valid and invalid contraindications to vaccinations, as well as the minimum intervals permissible between vaccinations. This training ensures that clinic staff miss no opportunity to vaccinate.
- Have nurses give vaccinations under standing orders (ie, they can independently screen patients and administer vaccines under pre-existing signed physician's orders).
- Maintain a comprehensive immunization record in a visible location in each patient's chart (eg the front of the chart).
- Update the patient's personal immunization record card each time vaccines are administered. If the patient doesn't have a card, give them one that contains their vaccination history.
- Prior to patient visits, review the immunization record for each patient and flag charts of those who are due or overdue.
- Provide vaccination services during some evening and/or weekend hours.
- Allow patients to walk in during office hours for a "nurse only" visit and get vaccinated.
- Use all patient encounters (including acute-care and follow-up visits) to assess and provide vaccinations.
- Provide resources to patients/parents who have questions or concerns about vaccine safety or who want more vaccine information.
- Contact all patients who are due for vaccinations with a reminder (eg, by phone or mail) and those who are past due with a recall (eg, using computerized tracking or a simple tickler system).
- Routinely assess immunization levels of your patient population, including those with high-risk indicators. (Contact state and local health department's immunization staff for assistance in performing such an assessment) Share this information with your staff and use it to develop strategies to improve immunization rates.
- Enroll in the Vaccines for Children (VFC) program in order to provide free vaccine to uninsured children (0 to 18 years) and others who are ineligible under the state's program.

Please refer to www.immunize.org for a full list of suggestions to improve immunization services

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CME INFORMATION

Needs Statement
This educational activity is designed for family physicians, internal medicine physicians, nurse practitioners, osteopathic physicians, obstetricians/gynecologists, pediatricians, physician assistants, pharmacists, and other health care professionals involved with preventing disease through immunizations.

Educational Activity Learning Objectives
After participating in this educational curriculum, health care professionals should be able to:

- Discuss the indications and recommendations for the most current vaccines and vaccine schedules for childhood, adolescent, and adult populations
- Respond to frequently encountered questions and situations during immunization discussions including safety, efficacy, and possible misinformation
- Implement strategies for improving immunization rates within one's clinical practice, taking into account current immunization schedules and guidelines

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- **Stanley E. Grogg, DO, FACOP, FAAP,** has received grant/research support from AstraZeneca, GlaxoSmithKline, MedImmune, Merck, Novartis, sanofi-aventis, and Wyeth. He has served as a consultant for Merck and Novartis. Dr. Grogg has also received honoraria from AstraZeneca, GlaxoSmithKline, Merck, Pfizer, and sanofi-aventis.
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