



Immunization Strategies for Health Care Practices and Providers

Pink Book Web-on-Demand Series

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Learning Objectives

- Describe the Advisory Committee on Immunization Practices General Best Practice Guidelines on Immunization.
- Describe an emerging immunization issue.
- For each vaccine-preventable disease, identify those for whom routine immunization is recommended.
- For each vaccine-preventable disease, describe characteristics of the vaccine used to prevent the disease.
- Locate current immunization resources to increase knowledge of team's role in program implementation for improved team performance.
- Implement disease detection and prevention health care services (e.g., smoking cessation, weight reduction, diabetes screening, blood pressure screening, immunization services) to prevent health problems and maintain health.

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**Vaccine
Coverage**

Comparison of 20th Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

Disease	20th Century Annual Morbidity [†]	2020 Reported Cases ^{††}	Percent Decrease
Diphtheria	21,053	1	>99%
Measles	530,217	13	>99%
Mumps	162,344	621	>99%
Pertussis	200,752	5,398	>97%
Polio (paralytic)	16,316	0	100%
Rubella	47,745	6	>99%
Congenital Rubella Syndrome	152	0	100%
Tetanus	580	15	97%
Haemophilus influenzae	20,000	11*	>99%
Total	999,159	6,065	

[†] JAMA. 2007;298(18):2155-2163

^{††} Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System, Weekly Tables of Infectious Disease Data.

Atlanta, GA. CDC Division of Health Informatics and Surveillance. Available at: https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp?mmwr_year=2020&mmwr_week=53. Accessed on January 7, 2021.

* Haemophilus influenzae type b (Hib) < 5 years of age. An additional 7 cases of Hib are estimated to have occurred among the 136 notifications of Haemophilus influenzae (< 5 years of age) with unknown serotype

Estimated Vaccination Coverage among Children by Age 24 Months — NIS birth years 2017 and 2018

	% Coverage*
4:3:1:3:3:1:4	70.5%

The combined 7-vaccine series (4:3:1:3:3:1:4) includes ≥4 doses of DTaP, ≥3 doses of poliovirus vaccine, ≥1 dose of measles-containing vaccine, the full series of Hib (≥3 or ≥4 doses, depending on product type of vaccine), ≥3 doses of HepB, ≥1 dose of varicella vaccine, and ≥4 doses of PCV.

Estimated Vaccination Coverage among Kindergartners — 2020-21 School Year

	% Coverage
2 doses MMR	93.9%
5 doses DTaP	93.6%
2 doses Varicella	93.6%

Seither R, Laury J, Mugerwa-Kasujja A, et al. Vaccination Coverage with Selected Vaccines and Exemption Rates Among Children in Kindergarten — United States, 2020–21 School Year. MMWR Morb Mortal Wkly Rep 2022;71:561-568

Estimated Vaccination Coverage among Adolescents Aged 13–17 Years — NIS-Teen, 2020

	% Coverage
Tdap (1 or more doses)	90.1%
HPV (M and F, 1 or more doses)	75.1%
HPV (M and F, up-to-date)	58.6%
MenACWY (1 or more doses)	89.3%
MenB (1 or more doses)	28.4%

Pingali C, Yankey D, Elam-Evans LD, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2020. MMWR Morb Mortal Wkly Rep 2021;70:1183–1190.

Estimated Vaccination Coverage among Adults — NHIS, 2018

	% Coverage
Influenza	46.1%
Pneumococcal (19-64 yrs at increased risk)	23.3%
Pneumococcal (65 years and older, 2 or more doses)	32.3%
Zoster (50 years and older)	24.1%
Tetanus (any dose during preceding 10 years)	62.9%

Estimated Influenza Vaccination Coverage among Adults by Race/Ethnicity — NHIS, 2018

	% Coverage
Influenza	46.1%
White	49.3%
Black	39.0%
Hispanic	37.5%
Asian	50.7%
Other	41.4%

Knowledge Check

- Which of the following adolescent vaccinations has the lowest coverage?
- A. Tdap
- B. HPV
- C. MenACWY



Answer

- Which of the following adolescent vaccinations has the lowest coverage?

- ~~A. Tdap~~
- **B. HPV**
- ~~C. MenACWY~~



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Strategies

Immunization Strategies Overview

- **Many available strategies**
- **Some targeted to public and/or non-health-care settings**
 - School immunization requirements
 - Women, Infant, and Children (WIC) services
 - Home visits
- **Today's focus on health care settings**

Strategies for High Vaccination Coverage

- Immunization Information Systems (IISs)
- Reminder and recall systems
- Reduction of missed opportunities
- Reduction of barriers to immunization
- Record keeping
- Strong vaccine recommendation



Immunization Information Systems (IISs)

- **Confidential, population-based, electronic database that records all vaccine doses administered by participating providers to persons residing within a given jurisdiction.**
 - May be linked to medical record
- **A single data source for all community vaccination providers**
 - Enabling them to access records of persons receiving vaccinations from multiple providers



Immunization Information Systems (IISs)

- At the *point of clinical care*, an IIS can provide consolidated immunization histories for use by a provider in determining appropriate patient vaccinations.
- At the *population level*, an IIS provides aggregate data on vaccinations for use in surveillance and program operations and for guiding public health action, with the goals of improving vaccination coverage and reducing rates of vaccine-preventable diseases.



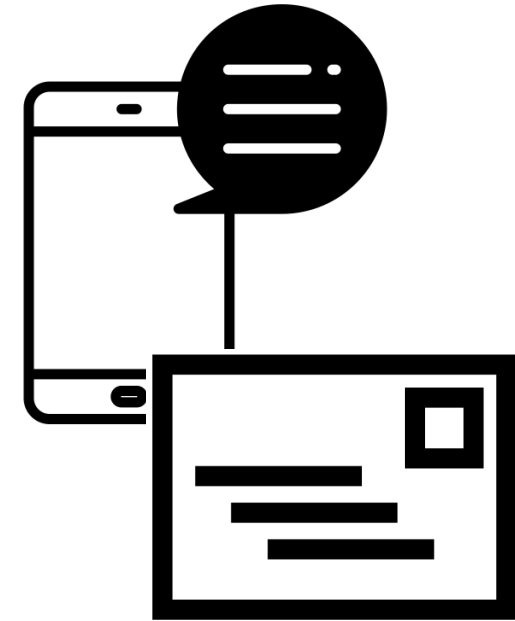
Reminder and Recall Systems

■ Patients

- Notification that immunizations are:
 - Due soon (reminder)
 - Past due (recall)

■ Providers

- Computer-generated list
- Stamp in chart
- Prompt in electronic medical record



Missed Opportunity

- A health care encounter in which a person is eligible to receive vaccination but is not vaccinated completely



Reasons for Missed Opportunities

- Lack of simultaneous administration
- Unaware patient needs additional vaccines
- Invalid contraindications
- Inappropriate clinic policies
 - Not vaccinating siblings
 - Only vaccinating at well-child visits
- Reimbursement issues

TABLE 4-2. Conditions incorrectly perceived as contraindications or precautions to vaccination (i.e., vaccines may be given under these conditions)	
Vaccine	Conditions commonly misperceived as contraindications or precautions
General for all vaccines, including DTaP, pediatric DT, adult Td, adolescent-adult Tdap, IPV, MMR, Hib, hepatitis A, hepatitis B, varicella, rotavirus, PCV13, IIV, LAIV, PPSV23, MenACWY, MPSV4, HPV, and herpes zoster	Mild acute illness with or without fever Lack of previous physical examination in well-appearing person Current antimicrobial therapy ^(a) Convalescent phase of illness Preterm birth (hepatitis B vaccine is an exception in certain circumstances) ^(b) Recent exposure to an infectious disease History of penicillin allergy, other nonvaccine allergies, relatives with allergies, or receiving allergen extract immunotherapy History of GBS ^(c)
DTaP	Fever within 48 hours after vaccination with a previous dose of DTP or DTaP Collapse or shock-like state (i.e., hypotonic hyporesponsive episode) within 48 hours after receiving a previous dose of DTP/DTaP Seizure ≤ 3 days after receiving a previous dose of DTP/DTaP Persistent, inconsolable crying lasting ≥ 3 hours within 48 hours after receiving a previous dose of DTP/DTaP Family history of seizures Family history of sudden infant death syndrome Family history of an adverse event after DTP or DTaP administration Stable neurologic conditions (e.g., cerebral palsy, well-controlled seizures, or developmental delay)
Hepatitis B	Pregnancy Autoimmune disease (e.g., systemic lupus erythematosus or rheumatoid arthritis)
HPV	Immunosuppression Previous cervical or abnormal Pap smear test

Strategies for Reducing Missed Opportunities

■ Standing orders

- Protocols whereby nonphysician medical personnel may vaccinate patients without direct physician involvement at the time of the vaccination

■ Provider education with feedback

■ Schedule the next immunization visit before the patient leaves the office

■ Reminder and recall systems

Standing orders for other vaccines are available at www.immunize.org/standing-orders.
NOTE: This standing orders template may be adapted per a practice's discretion without obtaining permission from IAC. As a courtesy, please acknowledge IAC as its source.

STANDING ORDERS FOR

Administering *Haemophilus influenzae* Type B Vaccine to Children & Teens

Purpose

To reduce morbidity and mortality from *Haemophilus influenzae* type B disease by vaccinating all children and teens who meet the criteria established by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP).

Policy

Where allowed by state law, standing orders enable eligible nurses and other healthcare professionals (e.g., pharmacists) to assess the need for and vaccinate children and teens who meet any of the criteria below.

Procedure

1 Assess children and teens in need of vaccination against Hib disease based on the following criteria:

- a. Age 6 weeks through 59 months without prior Hib vaccination or who did not complete the series
- b. Age 6 weeks through 59 months with immunoglobulin deficiency, early component complement deficiency, or are receiving chemotherapy or radiation therapy
- c. Age 6 weeks through 18 years with human immunodeficiency virus (HIV) infection
- d. Age 6 weeks or older (including adults) with anatomic or functional asplenia (including sickle cell disease) or who are undergoing elective splenectomy
- e. Age 6 weeks or older (including adults) and a recipient of hematopoietic stem cell transplant

2 Screen for contraindications and precautions

Contraindication

Do not give Hib vaccine to a child or teen who has experienced a serious systemic or anaphylactic reaction to a prior dose of Hib vaccine or to any of its components. For information on vaccine components, refer to the manufacturers' package insert (www.immunize.org/fda) or go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/exciptent-table-2.pdf.

Precaution

Moderate or severe acute illness with or without fever

3 Provide Vaccine Information Statements

Provide all patients (or, in the case of minors, their parent, or legal representative) with a copy of the most current federal Vaccine Information Statement (VIS). Provide non-English speaking patients with a copy of the VIS in their

Barriers to Immunization

■ Physical barriers:

- Clinic hours
- Waiting time
- Distance
- Cost

■ Psychological barriers:

- Unpleasant experience
- Vaccine safety concerns



Records

- **Available for inspection**
- **Easy to interpret**
- **Accurate, up-to-date, and complete**
 - Reflect all vaccines given

Strong Vaccine Recommendation

- **Recommendation from a health care provider remains the number one reason parents decide to vaccinate**
 - A parent who receives a recommendation from their child's health care provider is 4-5x more likely to get the HPV vaccine for their child
 - Initially reluctant adults are likely to receive an influenza vaccination when the health care provider's opinion of the vaccine is positive
- **Take time to answer questions**



Trust is the foundation for vaccine conversations

- **93% of parents say their child's provider is most trusted source of vaccine information**
- **Trust in the provider shown to positively or negatively affect vaccine acceptance**
- **Building trust early is important:**
 - Satisfaction in parents of young infants associated with improved vaccine uptake

What makes for a trusted provider?

Scientific competency
Spending time with patient
Listening, acknowledging, responding to questions or concerns
Caring disposition
Treating patient as an individual

Start conversations early

Use every opportunity to reach parents before the first vaccine visit



Prenatal pediatric visits



Newborn nursery rounds



Practice website and new patient packet

- **Most mothers make vaccine decisions for their child before or during pregnancy**
 - Parents who refuse vaccines more likely to start thinking about them before child's birth
- **Pregnant people want more information on vaccines from a pediatric provider**
 - With limited opportunities, frequently turn to the internet, media, or word of mouth

Initiating the conversation: Give a strong recommendation using a presumptive approach

“Joey is going to get vaccines to protect against seven diseases today: diphtheria, tetanus, whooping cough, rotavirus, Hib, pneumococcal disease, and polio”

Presumptive approach

“What do you want to do about Joey’s shots today?”

Participatory approach

Why use the presumptive approach?

- **3 to 5-fold more effective than participatory approach, even after adjusting for baseline parental hesitancy**
- **Among parents who resist after a presumptive recommendation, approximately half accept vaccines when the provider pursues their initial recommendation**
- **Presumptive approach associated with greater parental perceived urgency for vaccination and trust in the information received from the provider**

What if parents have questions?

- Even parents who accept vaccines often have questions or concerns, and are simply looking for additional information or reassurance
- When responding to parents' questions or concerns, share:
 - Personal stories
 - Balanced information on risks and benefits
 - Vaccination as the social norm
- Share educational materials tailored to their questions



“My aunt had cervical cancer. That’s why I made sure my own teenagers received the HPV vaccine”

Knowledge Check

- Which of the following is an example of using the presumptive approach?
- A. “Sophie will receive 4 vaccinations today to help keep her protected her against disease”
- B. “Would you prefer that Jose receive 2 of his vaccinations today and come back at a later time to receive the other 2 vaccinations?”
- C. “How do you feel about Ronald receiving 4 vaccination shots today?”



Answer

- Which of the following is an example of using the presumptive approach?
- A. “Sophie will receive 4 vaccinations today to help keep her protected her against disease”
- ~~B. “Would you prefer that Jose receive 2 of his vaccinations today and come back at a later time to receive the other 2 vaccinations?”~~
- ~~C. “How do you feel about Ronald receiving 4 vaccination shots today?”~~



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IQIP

Immunization Quality Improvement for Providers



■ Immunization Quality Improvement for Providers (IQIP)

- CDC's national, Vaccines for Children (VFC) provider-level immunization quality improvement (QI) program
- Promotes and supports implementation of provider-level strategies designed to increase on-time vaccination among children and adolescents

Immunization Quality Improvement for Providers

- IQIP uses a 12-month technical assistance process to support VFC providers in applying quality improvement strategies to increase vaccine uptake.
 - By improving and enhancing vaccination workflow

IQIP Strategies

- **Schedule the next vaccination visit before the patient leaves the provider location**
- **Leverage immunization information system (IIS) functionality to improve immunization practice**
- **Give a strong vaccine recommendation**
- **Strengthen vaccination communications**

IQIP Timeline

Site
Visit

Check
-In

Check
-In

Follow
-up

Initial

2 months

6 months

12 months



IQIP Site Visit

- **Observe the provider's vaccination workflow**
- **Review vaccination coverage**
- **Select appropriate quality improvement strategies**
- **Provide technical assistance to support implementation of selected quality improvement strategies**
- **Create a strategy implementation plan with action items that are tailored to meet the provider's needs**

IQIP Check-Ins (2-Month and 6-Month)

- **Review progress made on the action items in the strategy implementation plan**
- **Provide technical assistance for each strategy as needed**
- **Update the strategy implementation plan with new or revised action items for each strategy selected**

IQIP Follow-Up (12-Month)

- **Review progress made on the action items in the strategy implementation plan**
- **Provide technical assistance as needed**
- **Review year-over-year changes in vaccination coverage and compare to the coverage goals set 12 months earlier**
- **Update the strategy implementation plan**

Benefits of IQIP

- Addressing burden of vaccine-preventable diseases
- Catching up on well-child visits and recommended vaccinations
- Reducing missed opportunities
- Increasing vaccine confidence
- Using practice-based coverage assessments and performance improvement

Knowledge Check

- Which of the following is an IQIP strategy?
 - A. Track down every patient who may have left the clinic
 - B. Educate providers who have made mathematical errors with their catch-up timing
 - C. Monitor inventory for adequate storage temperature
 - D. Give a strong vaccine recommendation
 - E. Contact the manufacturer frequently to clarify ACIP recommendations



Answer

- Which of the following is an IQIP strategy?
- ~~A. Track down every patient who may have left the clinic~~
- ~~B. Educate providers who have made mathematical errors with their catch-up timing~~
- ~~C. Monitor inventory for adequate storage temperature~~
- **D. Give a strong vaccine recommendation**
- ~~E. Contact the manufacturer frequently to clarify ACIP recommendations~~



Costs of Implementing Strategies

Intervention Strategy	Median Intervention Group Size	Median cost per person per year	Median cost per vaccinated person (US\$)
Home visits	575	56	786
Client/family incentive, reducing costs	774	209	399
<u>Vac in schools, childcare</u>	<u>5,840</u>	<u>22</u>	<u>29</u>
Vac in WIC settings	4,967	16	66
<u>Client reminder/recall</u>	<u>654</u>	<u>2.13</u>	<u>15</u>
Community-based strategies in combination	429	54	15
Provider reminders/assessment/feedback	2,705	4	111
<u>Standing orders</u>	<u>11,813</u>	<u>6</u>	<u>29</u>
<u>Health care systems strategies in combination</u>	<u>20,000</u>	<u>4</u>	<u>12</u>

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